(Pages : 4) **M – 2717**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Mathematics

Complementary Course for Computer Science

MM 1231.10 : MATHEMATICS – II

(2014-2018 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – I

All the **first** question are compulsory. Each questions carries **1** mark. Answer in one world to maximum of **two** sentences.

1. Draw the truth table for $p \wedge q$.

2. Define a the term tautology.

3. Give any two properties of a characteristics function.

4. Find A^3 for the set $A = \{1, 2\}$.

5. Define kernal of a fuzzy set.

6. Define a semi group.

7. Find the identity elements in Q the set of rational numbers with binary operator $*$ where $*$ is defined as $a * b = \frac{ab}{2}$.

P.T.O.

8. Let $A = \{1, 2, 3, 4, 5\}$ and $B = \{a, b, c, d\}$. Consider the following relation from A to B $R = \{(1, a), (1, c), (2, b), (2, c), (3, a), (3, b), (3, d), (4, a), (4, d), (5, a), (5, c)\}$. Find M_R.

9. Find the number of edges in a tree of 11 vertices.

10. Draw a complete graph with 4 vertices.

(10 × 1 = 10 Marks)

SECTION – II

Answer **any eight** questions each question carry **2** marks.

11. Define Converse, Contrapositive and Inverse of $p \to q$.

12. Show that $p \wedge q \equiv \neg(q \to \neg p)$.

13. What are the main steps involved in Direct proof?

14. Let $A = \{1, 2, 3, 4, 5\}$ and $B = \{3, 5, 6, 7, 8, 9\}$. Show that

$|A \cup B| = |A| + |B| - |A \cap B|$.

15. Let $\tilde{A}$ and $\tilde{B}$ be two fussy subsets of a reference set S. Define the following

(a) $\tilde{A}$ is included in $\tilde{B}$

(b) $\tilde{A}$ equal to $\tilde{B}$.

16. Show that the two sets (1, 2, 3) and (2, 3, 4) are incomparable with partial ordering $\subseteq$.

17. Let $f(x) = x^3 - x$ find its roots in Z_6.

18. Define ring homomorphism.

19. What do you mean by Noice in a communication model?

20. Give an example of relation which is neither symmetric nor anti-symmetric but it is associative.

21. Define an Euler Graph.

22. Write the significance of using Depth-First Search.

(8 × 2 = 16 Marks)

SECTION – III

Answer **any six** questions each question carry **4** marks.

23. Prove by the method of contradiction that sum of a rational number and an irrational number is irrational.

24. Obtain the disjunctive normal form of

$\neg(P \vee Q) \Leftrightarrow (P \wedge Q)$

25. Explain the terms.

(a) Tautology

(b) Contradiction.

26. If $f : R \to R$ by $f(x) = 3x^3 - 2x + 1$ and $g : R \to R$ by $g(x) = \sin(x) + \cos(x)$. Show that $g \circ f \neq f \circ g$.

27. Let $A = \{a, b, c, d\ e\}$ and a relation $R = \{(a, a), (a, b), (c, e), (c, d), (d, e)\}$. Compute R^2 and R^∞.

28. Let S be a non empty set. Show that $P(S)$, the power set of S forms a commutative semigroup under set union with identity element.

29. Let $f : G \to G'$; G is a group of real numbers under addition and G' is a group of positive real numbers under multiplication. Show that f is an isomorphism.

30. Show that the number of edges in a complete graph with n vertices is $\frac{n(n-1)}{2}$.

31. Find the number of edge disjoint Hamiltonian Circuits in a complete graph with
    (a) 4 edges
    (b) n edges.

($6 \times 4 = 24$ Marks)

SECTION – IV

Answer **any two** questions each question carry **15** marks.

32. (a) Prove that $m^2 = n^2$ if and only if $m = n$ or $m = -n$.

    (b) Show that the hypothesis ‘‘A student in this class has not read the book,’’ and ‘‘Everyone in this class passed that first exam’’ imply the conclusion ‘‘Someone who passed the first exam has not real the book’’.

33. (a) Item Let R be a relation on Set

    $S = \{1, 2, 3, 4\}$

    given as $R = \{(2, 1), (2, 3), (3, 1), (3, 4), (4, 1), (4, 3)\}$

    Find transitive closure of R using Warshall’s Algorithm.

    (b) Suppose $A = \{0, 1, 2, ..., 10\}$ Let $a \sim_R b$ mean that $a \equiv b \pmod{11}$. Show that $\sim_R$ is an equivalence relation.

34. Show that the set $\mathbb{Q}^+$, the set of positive rational numbers with operation $*$ defined as $a * b = \frac{ab}{2}$ is an abelian group.

35. Explain Dijikstra’s algorithm for shortest path with example.

($2 \times 15 = 30$ Marks)

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(Pages : 3) **M – 2718**

Reg. No. : .....

Name : .....

Second Semester B.Sc./B.C.A. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Computer Applications

CS 1221/CP 1241 : COMPUTER ORGANIZATION AND ARCHITECTURE

(2014 Admission)

Time : 3 Hours Max. Marks : 80

SECTION A (Very Short Answer type)

(**One** word to maximum of **one** sentence. Answer **all** questions)

1. Define system buses.

2. What is an instruction format?

3. Define RAM.

4. What is RISC?

5. What is segmentation?

6. What is the roll of PC register?

7. Define I/O interface.

8. What is strobe signal?

9. Define polling.

10. Define word length.

(10 × 1 = 10 Marks)

P.T.O.

SECTION B (Short answer)

Not exceed **one** paragraph. Answer any **eight** questions. **Each** question carries **2** marks.

11. What is the roll of MAR and MDR?

12. Define effective address.

13. Explain about floating point representation with example.

14. Define

    (a) Micro program

    (b) Micro subroutine

15. Explain parallel processing.

16. Explain about multiple buses in CPU.

17. Define hit and miss.

18. What is TLB?

19. Define locality of Reference.

20. What are the different types of interrupt?

21. Explain static RAM.

22. Write about programmed I/O.

(8 × 2 = 16 Marks)

SECTION C (Short essay)

Not to exceed **120** words. Answer any **six** questions. **Each** question carries **4** marks.

23. Write differences between subroutine and interrupt service routines.

24. Differentiate microprogrammed control from hardwired control.

25. Explain about asynchronous data transfer.

26. Explain page fault.

27. Differentiate SRAM and DRAM.

28. Explain about CPU registers.

29. Explain daisy chaining priority.

30. Explain about assembly language instructions.

31. Write a note on Pentium microprocessor.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks.

32. Write a note on instruction cycle.

33. Discuss the basic concepts of pipelining.

34. Explain the different types of mapping function in cache memory.

35. What are the handshaking signals? Explain the handshake control of data transfer during input and output operation.

(2 × 15 = 30 Marks)

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(Pages : 4) **M – 2719**

Reg. No. : .....

Name : .....

Second Semester B.Sc./B.C.A. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Group 2(b) Computer Science/ Computer Applications

CS 1241/CP 1243 : DATA STRUCTURES

(2014 – 2017 Admn)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer Type)

(One word to maximum of one sentence. Answer **all** question)

1. What is a data structure?
2. What is the postfix form of the following prefixes: $-*ABC+\hat{}DE$
3. What is the main difference between ARRAY and STACK?
4. What are linear data structures
5. Define the terms node, address, null pointer and next pointer for linked list.
6. Which characteristic of the data that binary search uses but the linear search ignores?
7. What is hashing?
8. Define a binary tree.
9. What are Graphs?
10. What are different ways of traversing a tree?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B (Short Answer)

(Not to exceed one paragraph. Answer any **eight** questions. Each question carries **2** marks)

11. What are the different classifications of data structures? Explain.
12. Explain about dynamic Data Structures
13. Write an algorithm for binary search with example.
14. Explain multiple stacks and queue.
15. Explain circular queue? Write an algorithm and function to push an element into a circular queue.
16. Differentiate between linked list and array.
17. What is hashtable search?
18. Describe the structure of linked list. Write an algorithm to insert an element at the beginning of the linked list.
19. Describe the terms related to Binary Tree: Level, Depth, Leaf Node, Root Node, forest
20. State different ways of traversing binary tree. Explain each.
21. Define the terms (a) Directed Graph (b) Weighted Graph
22. Explain depth first traversal of graphs

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

(Not to exceed **120** words. Answer any **six** questions. **Each** question carries **4** marks)

23. What is stack? Explain applications of stacks.
24. How two-dimensional arrays are stored in one dimensional memory? If an array is defined as int a [10][20] in C. Device a formula to calculate the address of an any variable say a [i][j] for any valid value of i and j.
25. Explain the implementation of linked list by pointers.

26. Write a program to find an element using selection sort.

27. What is double linked list? Write a program to count number of elements / items in a linked list.

28. Given the binary tree representation of the following expression and answer the questions.

    E=(a-b)/((c*d)+e)

    (a) Which nodes are leaf nodes?

    (b) Which is the root node?

    (c) What is the height of the node?

    (d) What is the post order traversal of tree?

29. Write a note on complete binary tree, Creation of binary search tree and strictly binary trees.

30. Compare linear and binary search, and Sequential and random file organizations.

31. What is Binary Search Tree? Draw a binary search tree when following keys are inserted in order in the initially empty binary search tree 5, 75, 19, 36, 8, 62, 49, 84, 12, 18, 25.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

32. (a) Write a program to evaluate post fix expression with example. **9**

    (b) Convert the given Infix expression to Postfix expression using Stack and show the details of Stack at each step of conversion. **6**

    Expression: (a+b*c^d)* (e+f/g). Note: ^ indicates exponent operator.

33. (a) What are the difference between dynamic and static memory allocation? **5**

(b) Write a program to add two polynomials, using user- defined functions and pass parameters. **10**

34. Compare any two sorting algorithms with examples **15**

35. (a) What are the different file organizations explain each. **8**

(b) What is hashing function? Explain **7**

(2 × 15 = 30 Marks)

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(Pages : 3) **M – 2720**

Reg. No. : .....

Name : .....

Second Semester B.Sc./B.C.A. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science/Computer Applications

CS 1242/CP 1242 : OBJECT ORIENTED PROGRAMMING

(2014 – 2017 Admn)

Time : 3 Hours Max. Marks : 80

SECTION – A (very short answer type)

(**One** word to maximum of **two** sentences. Answer **all** questions)

1. Define class and object with an example.
2. What are the different data types in c++?
3. Write the limitations of Procedural Programming?
4. What is a friend function?
5. State any three advantages of Object Oriented Programming.
6. What is an abstract class?
7. Define operator overloading.
8. List any three standard exception handling keywords.
9. Define polymorphism.
10. Define multiple inheritance.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B (Short Answer)

(Not to exceed **one** paragraph, answer any **eight** questions. Each carries **two** marks)

11. Define data abstraction.

12. Give the syntax of operator function.

13. What all are the access specifier used in c++?

14. What is virtual base class?

15. List the characteristics of static member function?

16. What is function overloading? Give on example?

17. What do you understand by default constructor?

18. What is the use of new and delete operator.

19. Define early binding and how it differs from late binding.

20. What is mean by a copy constructor?

21. What is mean by Virtual functions Give one example?

22. Write the use of protected visibility mode in C++?

(8 × 2 = 16 Marks)

SECTION – C (Short essay)

(Not to exceed **120** words, answer any **six** questions carries **four** marks)

23. What is a constructer and give one example? Write the characteristics of a constructer?

24. Explain the use of exception handling with suitable example.

25. Write the data types used in c++ with suitable examples.

26. Write a program to illustrate the working of pointers in derived classes.

27. Explain unary and binary operator overloading with example.

28. Explain the concept of polymorphism through virtual function.

29. Write the difference between procedural and structured programming?

30. Explain about Inheritance.

31. State the rules for operator overloading.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

32. Write the basic concepts of Object Oriented Programming.

33. Explain different methods of type conversions in a class. Illustrate the working with example.

34. Write a program to explain the working of binary operator overloading using friend function.

35. Define inheritance. Write the type of inheritance with syntax and suitable examples.

(2 × 15 = 30 Marks)

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(Pages : 3) **M – 2721**

Reg. No. : .....

Name : .....

Second Semester B.Sc./B.C.A. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Computer Applications

Foundation Course/Core Course

CS 1221/CP 1241 : ENVIRONMENTAL STUDIES

(2015 - 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions in **one** or **two** sentences. **Each** question carries **1** mark.

1. Write down the meaning of poaching of wildlife.
2. What do you mean by ecological pyramids?
3. What is overgrazing?
4. What do you mean by pollutant?
5. How does energy flows in an eco-system?
6. Name any one endangered species.
7. What do you mean by landslides?
8. What is nuclear holocaust?
9. Give the meaning of hotspots of Bio -diversity.
10. What is food chain?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer any **eight** questions in not exceeding **one** paragraph. **Each** question carries **2** marks.

11. Give the meaning of solid waste management.

12. Define sustainable development.

13. What is environmental ethics?

14. What is wasteland reclamation?

15. What are the various levels of bio diversity?

16. What is rain water harvesting?

17. Give any two effect of air pollution on plants.

18. Distinguish between biotic and abiotic components.

19. Give the meaning of Ex-situ conservation.

20. What cause wildlife conflict?

21. What is desertification?

22. What is population explosion?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions in not exceeding **one** pages each. **Each** question carries **4** marks.

23. Explain the types of natural resources?

24. What are the sources of air pollution?

25. Explain the cause and effect of flood?

26. Discuss control measures on industrial waste.

27. Give a brief account of various family welfare programmes.

28. Explain the value of bio diversity

29. Write a detailed note on ozone layer depletion.

30. Discuss biogeographic classification of India.

31. Write a note on role of individual in prevention of pollution.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions in not exceeding **four** pages each. **Each** question carries **15** marks.

32. Discuss the structure and function of an eco-system

33. Briefly explain the threats to bio diversity.

34. What are the cause, effect and controls of noise pollution?

35. How does human population affect the environment

(2 × 15 = 30 Marks)

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(Pages : 3) **M – 2722**

Reg. No. : .....

Name : .....

Second Semester B.Sc./B.C.A.. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Computer Applications

Foundation Course/Core Course

CS 1221/CP 1241 : ENVIRONMENTAL STUDIES

(2018 and 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Write short answers to the below **ten** questions in **one** or **two** sentences. **Each** question carries **1** mark.

1. List out the various disciplines that give input to environmental studies.
2. What is renewable energy? Give examples.
3. What are the three causes of deforestation?
4. When is a biodiversity termed as a hotspot?
5. Define man-wildlife conflict.
6. What are biogeography zones?
7. Define pollution.
8. What does air pollution mean?

P.T.O.

9. What is a biological disaster?

10. Define rehabilitation.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions in not exceeding **one** paragraph. **Each** question carries **2** marks.

11. Mention the scope of environmental studies in short.

12. Mention the biotic components of an ecosystem.

13. How are natural resources classified on the basis of availability?

14. List out and explain the types of desert ecosystem.

15. Explain the Nitrogen Cycle.

16. What are manmade and natural pollutants?

17. Write a short note on environmental impact of dams.

18. List out some of the cultural and social services provided by biodiversity.

19. What are the major causes and consequences of ozone layer depletion?

20. What are the various acts related to air pollution?

21. What are the objectives and nature of Chipko movement?

22. What are the different types of fire protection systems?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions in not exceeding **120** words. **Each** question carries **4** marks.

23. List out and explain the importance of environmental studies.

24. What are the functions of an ecosystem?

25. What are the functions of aquatic ecosystem?

26. Explain the significance of a healthy biodiversity.

27. List out and explain the causes of soil erosion.

28. Write the 7R’s of Recycling.

29. List out the various acts related to water pollution.

30. What are the five stages of rehabilitation? Explain them in short.

31. Write about the role of Indian culture in environmental conservation.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions in not exceeding four pages each.. **Each** question carries **15** marks.

32. Write a detailed note on types of ecosystem.

33. What are tropic levels in a food chain? Explain them in detail.

34. Write a detailed note on water pollution control.

35. What is the impact of population growth on environment?

(2 × 15 = 30 Marks)

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(Pages : 3) **M – 2723**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Computer Science

CS 1241 : DATA STRUCTURES IN C

(2018 and 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Answer **all** questions. Each question carries **1** mark.)

1. What is Polish Notation?
2. What is an array? What is its importance?
3. Explain hash table search.
4. What is graph? Give an example?
5. What are the basic terminologies of tree? Explain.
6. Explain merging operation of binary tree with example.
7. Explain acyclic graph.
8. Define an ordered tree.
9. Explain a connected graph.
10. Explain Adjacency representation of graph.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

(Answer **any eight** questions, not exceeding a paragraph of **50** words)

11. What is a stack? Explain primitive operations of stack?

12. Why do you need of sorting? Explain.

13. Explain CPU Scheduling algorithm in multi programming.

14. Explain Insertion and Deletion operation in Linked list.

15. What are Advantages and Disadvantages of Doubly Linked list over Single Linked list?

16. Write a Algorithm for MERGE two linked list to single one.

17. Explain Linear Representation of Binary tree.

18. Write a algorithm of BFS.

19. Explain Depth First search with example.

20. Explain In order Traversal technique.

21. Draw a binary tree for the following inorder and post order traversal.

    n1 n2 n3 n4 n5 n6 n7 n8 n9 (In order)

    n1 n3 n5 n4 n2 n8 n7 n9 n6 (post order)

22. Explain Dynamic Memory allocation.

(8 × 2 = 16 marks)

SECTION – C

(Answer **any six** questions in a paragraph of **100** words)

23. Explain applications of stacks, How do you implement Factorial using stack?

24. Explain different searching methods.

25. What is hashing ? Explain closed hashing.

26. Write a algorithm of memory representation of queue.

27. Explain Dequeue.

28. Explain Dynamic Storage management.

29. Explain Non-Linear data structure.

30. Explain Complete and AVL Tree.

31. Define Graphs. What are the applications of graphs. List the various graph traversals.

(6 × 4 = 24 Marks)

SECTION – D

(Answer **any two** questions, not exceeding **4** pages)

32. Explain data structure operations LIFO and FIFO.

33. Explain circular linked list with example.

34. Write a note for Height Balanced Binary Tree.

35. What is Shortest path problem? Explain DIJKSTRA's algorithm with example.

(2 × 15 = 30 Marks)

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(Pages : 3) **M – 2724**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science

CS 1242 – WEB PROGRAMMING

(2018 and 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions in one or two sentences.

1. What is URL?
2. What is the purpose of
 tag in HTML?
3. What is the use of SRC attribute in IMG tag.
4. What is the use of scripting language?
5. What is the purpose of the target attribute of the anchor tag?
6. Write a note on internet.
7. What is Markup language?
8. Write an example for internal CSS statement.
9. What are the rules for creating variables in JavaScript?
10. What is the use of Cookies?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer **any eight** questions, not exceeding a paragraph of **50** words.

11. Define Client side Scripting language.
12. What is DHTML?
13. Explain different relational operators in JavaScript.
14. Explain MARQUEE tag in HTML.
15. Explain basic text styles in HTML.
16. Explain switch statement in JavaScript.
17. Write about <video> tag in HTML.
18. Write a note on onBlur event handler in JavaScript.
19. What is a confirm box?
20. Explain how can you reset a form using Javascript.
21. How to define internal style sheet?
22. Explain the purpose of LINK tag.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions, in a page of **100** words.

23. Explain <BODY> tag in HTML.
24. Explain alert and prompt popup boxes in JavaScript.
25. Explain image mapping concept in HTML.
26. Explain different List tags in HTML.

27. What are arrays in JavaScript? Write a program to find the largest element in an array using JavaScript.

28. Explain TABLE tags in HTML.

29. Explain Document Object Model.

30. Explain how <DlV> and <SPAN> tags are used to set CSS properties.

31. Explain various BORDER attributes in CSS with examples.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions, not exceeding **4** pages.

32. Explain the following tags in HTML
    (a) Heading tags
    (b) STYLE attribute
    (c) EMBEDED tag
    (d) DIV and SPAN tag.

33. Explain validation mechanism in JavaScript? Write a program to check User input fields are blank or not. (Atleast 2 Textbox).

34. Explain the following in JavaScript

    (a) Functions

    (b) User defined objects.

35. What are CSS? Explain its advantages? Explain CSS Rule Syntax and CSS class concept?

(2 × 15 = 30 Marks)

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(Pages : 4) **M – 2725**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Mathematics

Complementary Course for Computer Science

MM 1231.10 : MATHEMATICS II – DISCRETE MATHEMATICS

(2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – I

Answer **all** questions, **each** question carries **one** mark.

1. Define tautology.
2. Define disjunctive normal form (DNF).
3. State Rule T of the rules of inference.
4. What is a free variable?
5. State the Rule ES (Existential Specification).
6. Define the least upper bound (lub) of a subset of a poset.
7. State the laws of absorption of a lattice.
8. Define order of a group *G.*

P.T.O.

9. What is an encoder?

10. Define a homogeneous linear recurrence relation.

(10 × 1 = 10 Marks)

SECTION – II

Answer any **eight** questions, each questions carries **2** marks.

11. Prove that $\neg(p \vee q) \Leftrightarrow \neg p \wedge \neg q$.

12. Obtain the PDNF of $p \vee \neg q$.

13. Check whether $(\neg q \wedge (p \rightarrow q)) \rightarrow \neg p$ is a tautology.

14. Write the dual of $\neg(p \vee q) \vee ((\neg p) \wedge q) \vee p$.

15. Symbolize the statement “Everybody loves somebody”.

16. Prove that the following argument is valid. “If Rita is baking a cake, then she is not practicing her flute. If she is not practicing her flute, then her father will not buy her a new car. Rita is baking a cake. Therefore Rita’s father will not buy her a new car”.

17. Express the negation of the following statement using quantifiers and translate into English sentence. “If the teacher is absent, then some student do not keep quiet”.

18. State whether true or false with justification. “All partially ordered sets are lattices”.

19. Find the order of every element of the group $(\{1, -1, i, -i\}, \times)$.

20. Show that the identify element of a group is unique.

21. If $x = 110101$ and $y = 101101$, then find the Hamming distance $H(x, y)$.

22. Write the characteristics equation of the recurrence relation $a_{n+2} - 6a_{n+1} + 9a_n = 3(2)^n$.

(8 × 2 = 16 Marks)

SECTION – III

Answer any **six** questions, **each** question carries **4** marks.

23. Without using truth tables prove that $p \to (q \to p) \equiv \neg p \to (p \to q)$.

24. Prove the equivalence by proving the equivalence of duals $\neg((\neg p \wedge q) \vee (\neg p \wedge \neg q)) \vee (p \wedge q) \equiv p$.

25. Show that $t \wedge s$ can be derived from the premises $p \to q, q \to \neg r, r$ and $p \vee (t \wedge s)$.

26. Prove that $\exists x(C(x) \wedge J(x))$, $\forall x(J(x) \to H(x))$ implies $\exists x(C(x) \wedge H(x))$.

27. Determine whether the poset $\{(1, 3, 6, 9, 12), D\}$ where D denoted the relation of division in Z^+ is a lattice.

28. Draw the Hasse diagram of the lattice $\{P(S), \subseteq\}$ in which join and meet are the operations $\cup$ and $\cap$ respectively where $S = \{a, b, c\}$. Find the lub and glb of each pair of elements.

29. Find the code words generated by the encoding function $e : B^2 \to B^5$ with respect to the parity check matrix $H = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 1 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$.

30. Solve the recurrence relation $a_n - 2a_{n-1} = 3^n$ given $a_1 = 5$.

31. Use the method of generating function to solve the recurrence relation $a_n = 3a_{n-1} + 1$ given $n \geq 1$, $a_0 = 1$.

(6 × 4 = 24 Marks)

SECTION – IV

Answer any **two** questions, **each** question carries **15** marks.

32. (a) Use indirect method to show that $r \to \neg q$, $r \vee s$, $s \to \neg q$, $p \to q \Rightarrow \neg p$.

(b) Construct the truth table for the compound proposition $\neg(p \vee (q \wedge r)) \leftrightarrow ((p \vee q) \wedge (p \to r))$.

33. Show that the conclusion $\forall x(P(x) \to \neg Q(x))$ follows from the premises $\exists x(P(x) \wedge Q(x)) \to \forall y(R(y) \to S(y))$ and $\exists y(R(y) \wedge \neg S(y))$.

34. (a) Show that the set Q^+ of all positive rational numbers forms an abelian group under the operation * defined by $a * b = \frac{ab}{2}$, $a, b \in Q^+$.

(b) Draw the Hasse diagram of the poset $\{S_{42}, D\}$ and prove that it is a lattice.

35. (a) Find the corresponding parity check matrix and use it to decode received words 111101, 100100, 111100, 010100 and hence find the original message, given the generator matrix $G = \begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 0 & 1 \end{bmatrix}$ corresponding to the encoding function $e : B^3 \to B^6$.

(b) Solve the reccurence relation $a_n = 4a_{n-1} - 3a_{n-2} + 2^n + n + 3$, $n \geq 2$, $a_0 = 1, a_1 = 4$.

(2 × 15 = 30 Marks)

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(Pages : 4) **M – 2726**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Mathematics

Complementary Course for Computer Science

MM 1231.10 MATHEMATICS II –– DISCRETE MATHEMATICS

(2020 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – I

All the first **ten** questions are compulsory. They carry **1** mark each.

1. Define a conditional proposition.
2. What is a tautology?
3. State Dominant law of propositions.
4. State the rule of Universal Specification (Rule US).
5. Define a “formal proof”.
6. Define a poset with an example.
7. Define a lattice.
8. State absorption property of lattices.
9. Define an encoder.
10. Define parity digits.

P.T.O.

SECTION – II

Answer any **eight** questions from among the questions **11** to **26**. They carry **2** marks each.

11. Define disjunctive normal form (DNF) of a proposition with an example.

12. Derive the Principal Conjunctive Normal Form (PCNF) of $(p \leftrightarrow q)$.

13. Construct a truth table for $(q \rightarrow \neg p) \leftrightarrow (p \leftrightarrow q)$.

14. State the inference rules of Modus ponens and Hypothetical syllogism.

15. Negate the statement. “Every student in this class is intelligent”, in two different ways.

16. Define inconsistent premises.

17. State the Resolution rule.

18. If $A(x): x$ is an animal, $B(x): x$ is black and $C(x): x$ is a cat, translate $\forall x[C(x) \rightarrow A(x)]$ in words.

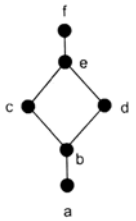
19. Symbolize the statement: “There is a student in this class who owns a personal computer”.

20. Define a non-abelian group.

21. Show that the identity element of a group $(G, *)$ is unique.

22. If the relation R on the set of integers Z is defined by aRb if $a \equiv b \pmod 4$ find the partition induced by R.

23. Determine whether the poset represented by the following Hasse diagram is a lattice. Justify your answer.



24. Define group code.

25. A binary symmetric channel has probability p = 0.05 of incorrect transmission. If the code word c = 011011101 is transmitted, what is the probability that we receive r = 011111101?

26. Define odd parity parity check.

SECTION – III

Answer any **six** questions from among the questions **27** to **38**. They carry **4** marks each.

27. Show that the propositions $\neg(p \wedge q)$ and $\neg p \vee \neg q$ are logically equivalent.

28. Without using truth tables, prove that $\neg p \rightarrow (q \rightarrow r) \equiv q \rightarrow (p \vee r)$.

29. Establish Modus tollens using truth tables.

30. Prove the equivalence by proving the equivalence of duals:

$(\neg p \rightarrow (\neg p \rightarrow (\neg p \wedge q))) \equiv p \vee q$.

31. Express the negation of the statement “All students keep quiet and the teacher is present”.

32. Verify the validity of the argument:

“Everyone who takes some fruit is healthy. Rosh is not healthy. Therefore Rosh does not take fruit doily.

33. If R is an equivalence relation on A = {a, b, c, *d, e}* given by R = {(a, a), (a, b), *(b, a), (b, b)(c,* c), *(d, d), (d, e*), *(e, d).* (*e*, *e*)}, determine the partition of A induced by R^{-1}.

34. List the ordered pairs in the equivalence relation R produced by the partition [{0}, {1,2}, {3,4,5}] of the set {0,1,2,3,4,5}.

35. Prove that the relation $\subseteq$ of set inclusion is a partial ordering on any collection of sets.

36. Solve the recurrence relation $a_{r+2} - 3a_{r+1} + 2a_r = 0$, given $a_0 = 3$, $a_3 = 10$.

37. Given the encoding functions e(0 0) = 0 0 0 0, e(1 0) = 0 1 1 0 , e(0 1) = 1 0 1 1, e(1 1) = 1 1 0 0, find the minimum distance between the code words, error-detecting and error-correcting capabilities.

38. Decode the words 0 1 1 1 1 0 and 1 1 0 1 1 1 using the encoding function $e : B^3 \rightarrow B^6$ given by e(000) = 000 000, e(001) = 001 011, e(010) = 010 101, e(100) = 100 111,e(011) = 011 110, e(101) = 101 100, e(110) = 110 010, e(111) = 111 001, assuming that no error or signal error has occurred.

SECTION – IV

Answer any **two** questions from among the questions **39** to **44**. They carry **15** marks each.

39. (a) Constructing truth table, determine whether the statement.

$((p \to (q \to r)) \to ((p \to q) \to (q \to r)))$ is a tautology or contradiction.

(b) Without using truth tables, find the PDNF of $(p \wedge \neg q) \vee (q \wedge \neg p) \vee (r \wedge p)$.

40. Show that the premises
$(p \to q) \wedge (r \to s)$
$(q \to t) \wedge (s \to u)$
$\neg(t \wedge u)$ and
$(\mathrm{p} \to \mathrm{r})$
logically implies $\neg p$.

41. Prove the derivation
$\exists x P(x) \to \forall x[(P(x) \vee Q(x)) \to R(x)]$
$\exists x P(x)$ *and*
$\exists x Q(x)$
$\Rightarrow \exists x \exists y[R(x) \wedge R(y)]$

42. (a) If $S = \{a, b, c\}$, show that $(P(S), \subseteq)$ is a lattice.

(b) Prove that the set {0, 1, 2, 3,4} is a finite abelian group of order 5 under addition modulo 5 as composition.

43. (a) Draw the Hasse diagram of $\{S_{24}, D\}$.

(b) If $*$ is defined on Z such that $a * b = a + b + 1$ for $a, b \in Z$ show that $(Z, *)$ is an abelian group.

44. (a) Find the code words generated by the parity check matrix $H = \begin{bmatrix} 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 \end{bmatrix}$, when the encoding functions is $e : B^2 \to B^5$.

(b) Solve the recurrence relation $a_{n+2} - 6a_{n+1} + 9a_n = 3(2^n) + 7(3^n)$, $n \geq 0$ given that $a_0 = 1$ and $a_1 = 4$.

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(Pages : 4) **M – 2727**

Reg. No. : .....

Name : .....

Second Semester B.Sc./B.C.A. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Group 2(b)–Computer Science/Computer Applications

Foundation Course/Core Course

CS 1221/CP 1241: ENVIRONMENTAL STUDIES

(2020 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer type)

(One word to maximum of **two** sentences, Answer **all** questions)

1. Define environment
2. What are abiotic resources?
3. Define biodiversity.
4. What is the meaning of extinct species?
5. What is environmental pollution?
6. Name the sources of air pollution.
7. What is an acid rain?

P.T.O.

8. What are the natural factors for floods?

9. Define population.

10. Define fire.

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer)

(Not to exceed one paragraph, Answer any **eight** questions. **Each** question carries **2** marks.

11. What is manmade environment?

12. What are the four categories of environment?

13. What is wind energy?

14. Distinguish between abiotic and biotic substances.

15. Explain the following a) Species diversity b) Ecosystem diversity.

16. Name any five endangered species in India.

17. What is In-Situ conservation?

18. What is the ethical value of biodiversity?

19. What are the various sources of soil pollution?

20. What is ozone depletion?

21. What are the objectives of Water Act -1974?

22. Differentiate between biodegradable wastes and non biodegradable wastes.

23. What are the effects of earthquakes?

24. Classify the various classes of fire.

25. Outline the role of information technology in environment and health.

26. What is food web?

(8 × 2 = 16 Marks)

SECTION – C

(Short essay)

(Not to exceed 120 words, answer any **six** questions. **Each** question carries **4** marks)

27. What are environmental studies?

28. What are renewable and non renewable resources? Explain with suitable examples.

29. Explain the usefulness of surface and ground water. Discuss their environmental importance.

30. Write a note on genetic diversity.

31. India is one of the meg-diversity countries. Why?

32. Describe the various method of conservation.

33. What are the different types of pollutants?

34. Explain the sources and effect of water pollution. How can we control water pollution?

35. Explain on climate change and global warming.

36. Discuss on cyclone.

37. Describe the effect of environment on the health of human beings.

38. Enumerate on environmental ethics.

(6 × 4 = 24 Marks)

SECTION – D

(Long essay)

(Answer any **two** questions. **Each** question carries **15** marks)

39. Explain the multidisciplinary nature of environment studies.

40. Write an essay on different types of forest ecosystem.

41. Write briefly about biosphere reserves, national parks and wildlife sanctuaries in India.

42. Write an essay on types of pollution.

43. Explain a nuclear accident with a case study.

44. Write an essay on Chipko movement and Silent valley movement.

(2 × 15 = 30 Marks)

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(Pages : 3) **M – 2728**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group2(b) – Computer Science

Core Course

CS 1241 : DATA STRUCTURES IN C

(2020 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer)

(**One** Word to Maximum of **two** Sentences. Answer **all** questions)

1. Define the term search.
2. Define linear search.
3. Define self referential structure.
4. Define child node.
5. What is the space complexity of a stack data structure of n elements?
6. What is depth of a node?
7. What is the maximum degree of a binary tree?
8. Define undirected graph.
9. Define multi graph.
10. Explain the degree of a node.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B (Short answer type)

(Not to exceed **one** paragraph. Answer any **eight** questions. Each question carries **2** marks)

11. Define graph.
12. What is in-place algorithm?
13. Write the advantages of Doubly Linked List
14. Explain FIFO.
15. What is a acyclic graph?
16. Define linked list
17. Write polish notation for the expression a / b + c / d.
18. What is a forest?
19. Explain Dynamic data structure with example.
20. Write a program segment for Inserting a node x after a node pointed by ptr in a doubly linked list.
21. Describe any two applications of graph.
22. Write an algorithm for post order traversal of a binary tree.
23. What are the additional conditions for a BST compared to the binary tree?
24. Define structure with an example.
25. What is underflow condition of a stack?
26. Consider the following list 8, 20, 9, 10, 11,19, 12, 13. What is the partially sorted list after the first pass of bubble sort?

(8 × 2 = 16 Marks)

SECTION – C (Short Essay type)

(Not to exceed **120** words. Answer any **six** questions. Each question carries **4** marks)

27. What are the limitations of a linked list
28. Explain the rules for linear representation of a binary tree

29. Explain any two restrictions associated with array data structure

30. Write algorithm to create a doubly linked list

31. Write algorithm to add a node at the head of a circular linked list without travel

32. Explain steps involved in binary search

33. Explain pre order traversal of binary tree with an example

34. Write algorithm for DFS traversal

35. Write algorithm to add an item in to a stack

36. Analyze selection sort

37. Explain BFS with suitable example

38. Write a detailed note on deque.

(6 × 4 = 24 Marks)

SECTION – D

(Answer any **two** questions. Each Question Carries **15** Marks)

39. Write a program that travels a circular linked list and counts number of nodes.

40. Write a program to implement linear search

41. Write a program to delete a node from a linked list.

42. Describe linked representation of a graph with the support of an example.

43. Discuss the Preorder traversal in detail with the support of an example.

44. Write an algorithm to Insert items in to a binary search tree.

(2 × 15 = 30 Marks)

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(Pages : 3) **M – 2729**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) — Computer Science

Core Course

CS 1242 : WEB PROGRAMMING

(2020 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer)

(**One** word to maximum of **two** sentences. Answer **all** questions)

1. Define Internet.
2. Differentiate <H1> and <H2> tag.
3. ———————— tag is used to mark a space in HTML.
4. Define paired tag.
5. HREF stands for ————————
6. Define access key.
7. Write the syntax of prompt tag.
8. List the four components of DHTML.
9. Expand XML.
10. Define ‘clear’ property in CSS.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

(Short Answer Type)

(Not to exceed **one** paragraph. Answer **any eight** questions. **Each** question carries **2** marks)

11. Expand and Explain WWW.
12. Differentiate <sub> and <sup> tags.
13. What is the use of <Body> Tag?
14. How can we comment a statement in HTML?
15. Explain about color Names in HTML.
16. What is the use of Layer tag?
17. Write the purpose of frameset tag.
18. Write the role of embed tag.
19. What are the features of POST method?
20. How can we make a tooltip?
21. Differentiate Java and Javascript.
22. Write a note on Object in Javascript.
23. What is the use of confirm boxes?
24. What do you mean by cookie?
25. Write in detail about <DlV> tag.
26. Explain about selectors in XML.

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay Type)

(Not to exceed **120** words. Answer **any six** questions. **Each** question carries **4** marks)

27. Discuss the rules of HTML.
28. Explain about following tags : <i>, <u>, <p>,
.
29. What is the use of marquee tag? Explain with example.

30. Write a note on anchor tag.

31. Explain in detail about image map.

32. What do you mean by floating frame? Explain.

33. Write in detail about any two browser specific form accessibility improvement.

34. Why Javascript is called an untyped language. Explain.

35. Write about anonymous functions in Javascript.

36. Explain about error handling in DHTML.

37. List and explain any four border-styles in CSS.

38. Write a note on Document inheritance.

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay Type)

(Answer **any two** questions. **Each** question carries **15** marks)

39. Write a detailed note on various List tags in HTML.

40. Write the HTML code for display Mark list using Table tag.

41. Write in detail about URL.

42. Discuss the form tag and it's attributes in detail.

43. Explain about various loop statements in Javascript.

44. Write a note on basic components of style sheet.

(2 × 15 = 30 Marks)

(Pages : 3) **N – 2941**

Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree Examination, March 2022

Career Related First Degree Programme under CBCSS

Computer Science/Computer Applications

Core Course

CS 1341/CP 1343 : COMPUTER ORGANISATION AND ARCHITECTURE

(2015–2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very short answer type)

One word to maximum of **two** sentence, Answer all questions. Each question carries **1** mark

1. What is meant by fetching an instruction?
2. What does TLB mean?
3. What is CISC?
4. What is a word in a memory?
5. What is instruction format?
6. What is DMA?
7. What is primary cache memory?
8. What is hit rate in cache memory?

P.T.O.

9. What is virtual memory?

10. What is meant by interrupt service routine?

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

Not to exceed **one** paragraph, Answer any **eight** questions. Each Question carries **2** marks.

11. How floating-point number is represented?

12. What are the steps in the floating-point addition?

13. What is the main use of I O processor?

14. What is meant by parallel processing?

15. What is assembly instruction set?

16. What is the difference between segmentation and paging?

17. What is non pipelining in computer architecture?

18. What is a RISC system?

19. What are the steps to handle the page fault?

20. What are USB and RS232?

21. Differentiate computer organization and computer architecture

22. What are the classification of CPU registers?

(8 × 2 = 16 Marks)

SECTION – C (Short essay)

Not to exceed **120** words, Answer any **six** questions. Each Question carries **4** marks

23. What are the basic functional units of a computer system.

24. What are the steps involved in an instruction cycle?

25. With a neat diagram explain ALU.

26. What is UART and how it works?

27. What do you mean by hit ratio of cache memory?

28. What are the differences between synchronous and asynchronous data transfer?

29. How many buses are there in CPU? Explain

30. How do you fetch a word from memory and store a word in memory?

31. Explain advantages of Booth's algorithms.

(6 × 4 = 24 Marks)

SECTION – D (Long essay)

Answer any **two** questions. **Each** question carries **15** marks.

32. What is Booth's algorithm explain with an example.

33. With a neat diagram explain the internal architecture of CPU.

34. Explain DMA controller with a neat block diagram.

35. Explain the memory hierarchy in a computer system with block diagram.

(2 × 15 = 30 Marks)

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(Pages : 3) **N – 2942**

Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree Examination, March 2022

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science/Computer Applications

Core Course

CS 1341/CP 1344 –– PROGRAMMING IN JAVA

(2018 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer Type) (One word maximum of **one** sentence. Answer **all** questions. **Each** question carries **1** mark)

1. Enlist any two access specifiers in Java.

2. An architecture for both using and building components in Java is called _____.

3. Define JVM.

4. What is an Exception?

5. Define class.

6. Enlist any two methods for creating a thread.

7. What is an event in Java?

P.T.O.

8. What is process in Java?

9. Define garbage collection.

10. Which function is used to find out whether a thread is still running or not?

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer type) (Not to exceed one paragraph .Answer any **eight** questions. **Each** question carries **2** marks)

11. Define Encapsulation.

12. What is the purpose of commit statement?

13. What are the ways in which a thread can enter the waiting state?

14. Differentiate between the methods notify( ) and notifyAll( ).

15. What is the difference between Swing and AWT components?

16. Write the syntax of try...catch statement.

17. Write a Java program to illustrate single level inheritance.

18. Define the life cycle of a thread.

19. Define package. Where it can be used?

20. Differentiate ‘‘==” and equals() in String methods.

21. Write a note on polymorphism.

22. What is the difference between a break statement and a continue statement?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay) (Not to exceed 120 words. Answer any **six** questions. **Each** question carries **4** marks)

23. Write a note on throw, throws and finally is exception handling.

24. Write a program to initialize object of a class student using parameterized constructor.

25. Explain features of Java.

26. What is multithreading in Java? Explain it with suitable example.

27. Explain the following line used under Java Program public static void main (String args[ ]).

28. Write a Java program to implement the exception handling for dividing two numbers?

29. Explain method overloading and method overriding with example.

30. Explain the event listeners in Java.

31. Write a note on any four graphics methods.

(6 × 4 = 24 Marks)

SECTION – D

(Short Essay) (Answer any **two** questions. **Each** question carries **15** marks)

32. What is inheritance? Explain it in detail with examples.

33. What are the various looping statements available in Java? Explain it with suitable example.

34. Define an Applet. How is an Applet different from an application? Describe the lifecycle of an applet.

35. Explain JDBC drivers.

(2 × 15 = 30 Marks)

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(Pages : 3) **N – 2944**

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, March 2022

Career Related First Degree Programme under CBCSS

Group2(b) – Computer Science

Core Course

CS 1342 : SOFTWARE ENGINEERING

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

(One word to maximum one sentence. Answer **all** questions)

1. The ———————— represents the series of identifiable stages through which it evolves during its life time.

2. Linear sequential model for software engineering is also known as ————————.

3. The spiral model was originally proposed by ————————.

4. Black box testing is also known as ————————.

5. The objective of software testing is ————————.

6. The best type of cohesion is ————————.

7. Why is it important to test boundary values while testing a function?

P.T.O.

8. Give an example for multivariable cost estimation model.

9. What are the four dimensions of Dependability?

10. If two modules communicate using a composite data item, the modules are said to have ———————— coupling.

(10 × 1 = 10 Marks)

SECTION B [Short Answer]

(Not to exceed one paragraph, answer **any eight** questions. Each question carries **2** marks.

11. What are the limitations of waterfall model?

12. Describe the hierarchy of COCOMO models.

13. What is modularity?

14. Describe the various steps for requirement engineering process.

15. Define project, process and product.

16. What does Level 0 DFD represent?

17. Give the characteristics of a good design.

18. What are the components of an SRS?

19. What are the features of an ER diagram?

20. Differentiate between Risk Analysis and Risk control.

21. What are the core aspects of software development?

22. Define LOC and its importance.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

(Not to exceed **120** words, answer **any six** questions. Each question carries **4** marks)

23. Explain technical and operational feasibility.

24. Explain different types of cohesion.

25. Differentiate between top-down and bottom-up approaches.

26. Write a note on equivalence class partitioning.

27. Explain object-oriented design in detail.

28. Differentiate between unit testing and integration testing.

29. What is black-box testing? Explain any one method.

30. Explain different levels of CMM.

31. What is software requirement? What are the types of requirements?

($6 \times 4 = 24$ Marks)

SECTION – D [Long Essay]

(Answer **any two** questions. Each questions carries **15** marks)

32. Explain waterfall model in detail.

33. Define dataflow diagram. Explain its different levels with help of an example.

34. Briefly explain :

    (a) Sequence diagram

    (b) Class diagram

35. Describe white-box testing in detail with suitable case study.

($2 \times 15 = 30$ Marks)

———————

(Pages : 3) **N – 2945**

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, March 2022

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science

Core Course

CS 1342 –– SOFTWARE ENGINEERING

(2018 Admission)

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** questions. Each question carries **1** mark.

1. Define software product.

2. What is the need of life cycle model?

3. What is COCOMO?

4. What are the main activities carried out during requirements analysis and specification phase?

5. What is unit testing?

6. Define modularity.

7. Define data dictionary.

8. Define system testing.

P.T.O.

9. What is the difference between product metrics and process metrics?

10. What is software as a service (SAAS)?

(10 × 1 = 10 Marks)

PART – B

Answer any **eight** of the following. Each question carries **2** marks.

11. Differentiate software development process and software development methodology.

12. Explain scrum model.

13. Write a note on prototype model.

14. What are the attributes of bad SRS documents?

15. What is the difference between functional and non-functional requirements?

16. Write a note on empirical estimation techniques.

17. How to characterize a good software design?

18. Explain structure chart with example.

19. Differentiate analysis and design.

20. What is software reverse engineering?

21. What are the advantages of client server software?

22. Write a note on clean room testing.

(8 × 2 = 16 Marks)

PART – C

Answer any **six** questions. Each question carries **4** marks.

23. What are the characteristics to be considered for the selection of the life cycle model?

24. Explain feasibility study.

25. Define (a) LOC (b) Function Point (c) Feature point.

26. Write a note on decision tree and decision table.

27. Write a note on DFD with an example.

28. What is cohesion? Explain different classification of cohesion.

29. Explain McCabe's Cyclomatic Complexity Metric.

30. Define the terms software reliability. What are the reliability metrics of software products?

31. Write a note on debugging approaches.

(6 × 4 = 24 Marks)

PART – D

Answer any **two** questions. Each carries **15** marks.

32. Write a note on

    (a) Incremental Development Model

    (b) Evolutionary models.

33. What you meant by requirement analysis? Explain briefly about requirement analysis and specification phase in SDLC.

34. Write a note on different types of user interfaces.

35. Explain briefly about different white box testing techniques.

(2 × 15 = 30 Marks)

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(Pages : 4) **N –2947**

Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree Examination, March 2022

Career Related First Degree Programme Under CBCSS

computer science / computer applications / physics with computer applications

Core Course / Vocational Course

CS 1343 / CP 1342 / PC 1371 OPERATING SYSTEMS

(2014-2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(**One** word to maximum of **one** sentence. Answer **all** questions)

1. Define Operating System. Give an Example.
2. What you mean by CPU Scheduling?
3. What is a race condition?
4. What do you mean by safe state?
5. What is Starvation?
6. Define paging.
7. What is thrashing?
8. What do you mean by RAID?
9. Define Fragmentation.
10. Differentiate between threat.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B (Short Answer)

Not to exceed **one** paragraph. Answer any **eight** questions. Each question carries **2** marks.

11. Explain Multiprogramming Operating System
12. What is the importance of PCB?
13. Differentiate between process and thread.
14. Briefly discuss the use of Semaphores.
15. Which are the necessary conditions for occurring deadlock in a system?
16. What is MMU? Define logical address and physical address.
17. Write short note on hashed page tables.
18. Why encryption is important in communication?
19. Differentiate between internal and external fragmentation.
20. What do you mean by caching?
21. Write notes on directory implementation methods.
22. Differentiate between CPU bound process and I/O bound processes.

($8 \times 2 = 16$ Marks)

SECTION – C (Short Essay)

Not to exceed **120** words. Answer any **six** questions. Each question carries **4** marks.

23. What is a System call? Explain types of System calls.
24. Explain services of Operating Systems.
25. Which are the fundamental models of Interprocess Communication? Explain.
26. What is critical section? Brief the requirements of a solution to the critical section problem.
27. Write notes on Deadlock recovery methods.
28. Explain segmentation.

29. Discuss LRU page replacement algorithm with a proper example.

30. Explain common file types.

31. Writes notes on the following

    (a) Trojan horse

    (b) Logic Bombs

    (c) Worms

    (d) Denial of Service attack.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

32. Consider a system with five processes P_0, P_1, P_2 P_3, and P_4 Resource type A has 10 instances, resource type B has 5 instances, and resource type C has 7 instances. Suppose that, at time T0, the following snapshot of the system has been taken :

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P_0	0	1	0	7	5	3	3	3	2
P_1	2	0	0	3	2	2			
P_2	3	0	2	9	0	2			
P_3	2	1	1	2	2	2			
P_4	0	0	2	4	3	3			

Answer the following questions using Bankers Algorithm:

(a) What is the content of the matrix Need?

(b) Write safety algorithm. Is the System in a Safe State?

(c) If a request from process P_1 arrives for (1, 0, 2), can the request be granted immediately?

33. Explain the following File Allocation Methods in detail.
    (a) Contiguous Allocation
    (b) Linked allocation
    (c) Indexed allocation.

34. Illustrate the following Page Replacement Algorithms
    (a) FIFO
    (b) Optimal Page replacement
    (c) LRU page replacement.

35. Consider the following set of processes, with the length of the CPU burst given in milliseconds.

Process	Arrival Time	Burst Time
P_1	0	2
P_2	1	4
P_3	2	5
P_4	3	3
P_5	4	6

    (a) Draw Gantt charts that illustrate the execution of these processes and find the average waiting time using the following scheduling algorithms: FCFS, SJF ,RR(time quantum=3).

    (b) What is the waiting time of each process for each of these scheduling algorithms?

    (c) Which algorithm results in the minimum average waiting time?

($2 \times 15 = 30$ Marks)

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Reg. No. : .....

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Third Semester B.Sc./B.C.A. Degree Examination, March 2022

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science/Computer Applications

Core Course

CS 1343/CP 1342 : OPERATING SYSTEMS

(2018 Admission)

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** questions. Each question carries **1** mark.

1. Define system call.
2. What is a thread?
3. State what is a process?
4. Define memory compaction.
5. What is virtual memory?
6. Write the name of the different process states.
7. What is Belady's anomaly?
8. What do you mean by demand paging?

P.T.O.

9. What are Overlays?

10. Mention any five file attributes.

(10 × 1 = 10 Marks)

PART – B

Answer any **eight** questions. Each question carries **2** marks.

11. What do you mean by monitor?

12. Why is operating system called as the resource manager?

13. Differentiate between response time and turn around time?

14. What is SJN?

15. Explain the terms critical section and mutual exclusion.

16. Differentiate logical and physical address space.

17. What is static partitioned memory management?

18. State the various memory fitting strategies.

19. State the criteria for selecting a process to ‘swap in’ and ‘swap out’.

20. What do you understand by file system structure?

21. What is RAID?

22. What is the use of access matrix?

(8 × 2 = 16 Marks)

PART – C

Answer any **six** questions. Each question carries **4** marks.

23. Explain the functions of OS as processor management function.

24. Define the term degree of multiprogramming.

25. Describe FCFS scheduling.

26. State the Banker's algorithm.

27. What is meant by a safe state? Give example.

28. Explain the significance of swapping.

29. What is locality of reference?

30. What is meant by contiguous allocation of files? State the merits and demerits.

31. What are the different techniques used for free space management?

($6 \times 4 = 24$ Marks)

PART – D

Answer any **two** questions. Each question carries **15** marks.

32. Explain how memory management module deals with fragmentation?

33. What is deadlock? How it can be handled?

34. Explain in detail any three page replacement policies.

35. What are the different types of operating systems?

($2 \times 15 = 30$ Marks)

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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, March 2022

Career Related First Degree Programme Under CBCSS

Group 2(b) : Computer Science

Core Course

CS1344 : INTERNET PROGRAMMING

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer Type)

One word to maximum of **one** sentence. Answer **all** questions.

1. What is the Full form of WWW?
2. Who is the father of WWW?
3. List two search engines.
4. Write any two XML tags.
5. Expand VRML.
6. Expand PERL
7. What is Javascript?
8. Write any two SSI control commands.

P.T.O.

9. When destroy () method of servlet gets called?

10. When service () method of servlet gets called?

(10 × 1 = 10 Marks)

SECTION – B (Short Answer Type)

(Not to exceed one paragraph. Answer any **eight** questions. Each question carries **2** marks)

11. Explain HTML<map> tag.

12. Explain HTML<link> tag.

13. Distinguish External style sheet and internal style sheet in CSS.

14. Explain different data types in Perl.

15. Explain Perl “next” statement with an example.

16. Write short note on “echo” directive in Server Side Includes.

17. What is the importance of Javascript events?

18. Write short note on Javascript arrays?

19. Write short note on CGI environment variables.

20. When init() method of servlet gets called?

21. When doGet() method of servlet to be called?

22. How to redirect a request from a servlet to another servlet?

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

(Not to exceed **120** words. Answer any **six** questions. Each question carries **4** marks)

23. Explain <layer> tag in HTML with suitable example.

24. Write short note on text formatting elements of HTML.

25. Write a HTML program to create a table with 3 rows and 4 columns with borders.

26. Distinguish hoverable table and striped table with suitable examples.

27. Write a simple JavaScript program to check odd or even numbers with example.

28. Write a javascript program to find factorial using recursive function.

29. What are the different methods associated with string objects?

30. Explain the architecture of Java servlets.

31. Explain GET and POST methods.

($6 \times 4 = 24$ Marks)

SECTION – D (Long Essay)

(Answer any **two** questions. Each question carries **15** marks)

32. Give a brief introduction to Internet and WWW.

33. Describe about various control structure and data types in Perl.

34. Briefly explain about arrays and objects in Javascript with suitable examples.

35. Explain the architecture of Java servlets. Write short note on Sessions

($2 \times 15 = 30$ Marks)

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Reg. No. : .....

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Third Semester B.Sc. Degree Examination, March 2022

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science

Core Course

CS 1345 : MICROPROCESSOR AND PERIPHERALS

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer Type)

One word to maximum of **one** sentence. Answer **all** questions.

1. What is the purpose of AX register?
2. What is BIU?
3. What is the importance of Pin 19 in 8086?
4. What is BHE?
5. What is ALE?
6. What is DEN?
7. What is the use of JMP instruction?
8. Expand VRAM.
9. Give an example for direct addressing mode.
10. What is the hexadecimal equivalent of 15?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B (Short Answer)

Not to exceed **one** paragraph, answer any **eight** questions. Each question carries **2** marks.

11. Name the various conditional flags used in 8086.

12. What is the significance of the pins AD0-AD15?

13. What is RESET?

14. What happens when LOCK in 8086 is active?

15. What is DT/R?

16. Name the logical operation instructions of 8086.

17. What is the purpose of the instruction JE/JZ?

18. What is TASM?

19. What is TSR?

20. What is immediate addressing mode? Give an example.

21. Name any four assembly directives.

22. What is the use of Pin 32 in 8086?

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not to exceed **120** words, answer any **six** questions. Each question carries **4** marks.

23. Explain various control flags used in 8086.

24. Differentiate INTR and INTA.

25. What is HOLD and HLDA?

26. Explain the importance of the pins M/IO and WR in 8086.

27. Explain the following instructions.

    (a) ADD

    (b) ADC

    (c) SUB

    (d) SBB

28. Explain the instructions for string manipulation in 8086.

29. Draw the timing diagram for write cycle in minimum mode.

30. Differentiate minimum mode and maximum mode 8086 system.

31. Explain hardware interrupts in 8086.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

Answer any **two** questions. Each question carries **15** marks.

32. Explain the functional units of a microprocessor.

33. Explain data transfer instructions of 8086.

34. Explain the features of 80286, 80386 and 80486 processors.

35. Explain the pin diagram of 8257 DMA controller.

(2 × 15 = 30 Marks)

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(Pages : 3) **N – 2954**

Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree Examination, March 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Computer Applications

Core Course

CS 1345/CP 1343 – DATABASE MANAGEMENT SYSTEMS

(2018 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

(One word to maximum of one sentences, Answer **all** questions). **Each** carries **1** mark.

1. Define the self-describing nature of a database.
2. Explain logical data independence.
3. What is the role of precompiler in DBMS architecture?
4. Distinguish between single value multivalued attributes.
5. Explain degree of a relationship.
6. Compare candidate key and super key.
7. What is the purpose of LIKE clause in SQL?
8. Explain with an example how to find the number of records in a table.

P.T.O.

9. Define delete anomaly with an example.

10. What do you mean by closure of functional dependency?

(10 × 1 = 10 Marks)

SECTION – B [Short Answer Type]

(Not to exceed one paragraph, answer **any eight** questions. Each question carries **2** marks.

11. Explain (a) DBMS schema (b) DBMS instance.

12. Explain (a) Entity (b) Attribute.

13. Explain cardinality ratio constraint in ER model with example.

14. What are the responsibilities of the DBA?

15. Define transitive dependency with an example.

16. Explain the purpose of SQL aliases.

17. Explain referential integrity in detail.

18. Explain weak entity types with an example.

19. Explain select operation in relational algebra.

20. Explain Cartesian product operation of relational algebra with an example.

21. With a proper example show that intersection operation is commutative.

22. “A table in 3NF is already in 1NF and 2NF”. Do you agree? Support your argument with relevant example.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

(Not to exceed **120** words, Answer **any six** questions. **Each** question carries **4** marks.

23. What are the different types of database end users? Discuss the main activities of each type of users.

24. Define an attribute? Explain different types of attributes in ER model.

25. Explain various constraints in Relational Model.

26. Explain the various relational operations in relational algebra from set theory.

27. Explain different DML statements in SQL.

28. Explain ORDER BY and GROUP BY clause in SQL.

29. Explain the following statements in SQL
    (a) UPDATE
    (b) DELETE
    (c) SELECT
    (d) INSERT.

30. Explain functional dependency with examples

31. Explain Armstrong inference rules.

($6 \times 4 = 24$ Marks)

SECTION – D [Long Essay]

(Answer **any two** questions. **Each** question carries **15** marks).

32. What is DBMS? Describe the architecture of DBMS in detail.

33. Define ER Model. Explain the ER model with an example in detail.

34. What is relation algebra? Explain generalized projections, aggregate functions and joins in relation algebra.

35. What is normalization? Explain different normal forms in detail.

($2 \times 15 = 30$ Marks)

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(Pages : 3) **N – 2955**

Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree Examination, March 2022

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science/Computer Applications

Core Course

CS 1341/CP 1344 : PROGRAMMING IN JAVA

(2019 & 2020 Admission)

Time : 3 Hours Max. Marks : 80

PART – A (Very Short Answer Questions)

Answer **all** questions. Each question carries **1** mark.

1. Name any one feature of Java.
2. Expand AWT.
3. Write two library Font class functions in Java.
4. What is bytecode?
5. What is a class path?
6. What is the use of import statement?
7. Write syntax of try catch statement?
8. What do you mean by abstract class?

P.T.O.

9. What is a thread?

10. What do you mean by exception?

(10 × 1 = 10 Marks)

PART – B (Brief Answer Questions)

Answer any **eight** questions. Each question carries **2** marks.

11. Write Java program to find sum of n numbers using class.

12. Write notes on inner classes.

13. Mention about array declaration in Java.

14. Write notes on features of Java.

15. What do you mean by logical operators?

16. What do you mean by applets? Write syntax to define an applet in Java.

17. What are the various Exception classes in Java?

18. Write note on any four String class methods?

19. Write about <applet> tag.

20. Write Java program to add two complex numbers.

21. What is the use of swing classes?

22. Write Java program to implement method overriding.

23. Write notes on Event handlers in Java.

24. How to declare objects in Java?

25. What are the differences between exception and errors?

26. Mention about any four built in Java classes?

(8 × 2 = 16 Marks)

PART – C (Short Essay Type Questions)

Answer any **six** questions. Each question carries **4** marks.

27. Describe the operators in Java.
28. Explain any two AWT controls in Java.
29. Explain any four features of object-oriented programming language.
30. Write short note on packages.
31. Explain data types in Java.
32. Differentiate betweens object and class with example.
33. Write short note on the history of java.
34. Explain the concept of method overloading.
35. Explain 'final' keyword in Java.
36. Write notes on stream classes.
37. Write short note on graphics class in Java.
38. Explain the use of constructors in java.

($6 \times 4 = 24$ Marks)

PART – D (Long Essays)

Answer any **two** questions. Each question carries **15** marks.

39. Briefly explain various layout managers in Java.
40. Explain various control statements in Java.
41. Discuss on the concept of interfaces in Java.
42. Explain exception handling in Java.
43. Explain the use of 'super' keyword with example.
44. Write a Java program to implement concept of multithreading.

($2 \times 15 = 30$ Marks)

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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, March 2022

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science

Core Course

CS 1342 –– SOFTWARE ENGINEERING

(2019 and 2020 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer. One word to maximum of two sentences. Answer **all** questions. **Each** carries **1** mark)

1. LOC stands for _____.

2. What is a non-functional requirement?

3. GUI stand for _____.

4. COCOMO stands for _____.

5. _____ model is called a meta model.

6. What is a prototype?

7. What is a command language based interface?

8. SRS stands for _____.

P.T.O.

9. _____ coupling exists between two modules, if their code is shared.

10. In a DFD, a function is represented using a _____.

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer Type. Not to exceed one paragraph. Answer any **eight** questions. Each question carries **2** marks)

11. Explain control coupling and common coupling.

12. What is fan-in?

13. Name any two strategies used for risk containment.

14. What is synchronous operation of two bubbles in a DFD?

15. What do you mean by requirement inconsistency?

16. Define rate of occurrence of failure.

17. What is corrective maintenance?

18. State any four building blocks of a structure chart.

19. What do you mean by phase containment of errors?

20. Define modeless interface.

21. Explain acceptance testing.

22. Write about estimation of development time.

23. Write note on unit testing.

24. Explain any two techniques available to structure a large number of menu items.

25. Write note on single variable heuristic estimation model.

26. Explain any two shortcoming of DFD.

(8 × 2 = 16 Marks)

SECTION – C

(Short essay type. Not to exceed 120 words. Answer any **six** questions. Each question carries **4** marks.

27. Explain briefly the organization of an SRS document.

28. Differentiate between stress testing and regression testing.

29. Write note on risk identification.

30. Explain the essential activities of project planning.

31. Explain any two approaches to designing black box test cases.

32. Write note on feasibility study.

33. Explain any three shortcomings of waterfall model.

34. Write note on any three advantages of evolutionary approach.

35. Give any four characteristics of a good user interface.

36. Write note on transaction analysis.

37. Explain context diagram with an example.

38. Write note on data dictionary.

(6 × 4 = 24 Marks)

SECTION – D

(Long essay type. Answer any **two** questions. **Each** question carries **15** marks)

39. Write note on function point metric.

40. Explain the characteristics of a good SRS document.

41. Explain Spiral model.

42. What is coupling? Explain its classification.

43. Explain Prototyping model in detail.

44. Write note on integration testing.

($2 \times 15 = 30$ Marks)

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(Pages : 4) **N – 2957**

Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree Examination, March 2022

Career Related First Degree Programme under CBCSS

Group 2(b)-Computer Science / Computer Applications

Core Course

CS 1343/CP 1342 : OPERATING SYSTEMS

(2019 & 2020 Admission)

Time : 3 Hours Max. Marks : 80

PART – A (Very Short Answer Questions)

Answer **all** questions.

Each question carries **1** mark.

1. What is multi-threading?
2. What is a system call?
3. What do you mean by preemptive scheduling?
4. Write any 2 file attributes.
5. Name an Operating system.
6. What do you mean by operating system interfaces?
7. What is a critical section?
8. What do you mean by swapping?

P.T.O.

9. What do you mean by deadlock?

10. Name any four operating system functions

(10 × 1 = 10 Marks)

PART – B (Brief Answer Questions)

Answer any **eight** questions.

Each question carries **2** marks.

11. Explain various uses of thread.

12. Explain process synchronization.

13. What do you mean by semaphores?

14. Write note on deadlock prevention.

15. Write notes on any one memory management technique.

16. Write the need for protection.

17. What is the use of a kernel?

18. Give a short note on directory structure.

19. Give a short note on various security threats.

20. What is dining philosopher's problem?

21. Mention two non-preemptive scheduling mechanisms.

22. Mention two operations on process?

23. What do you mean by demand paging?

24. Explain logical address space.

25. What is a Process Control Block?

26. Mention various system calls.

(8 × 2 = 16 Marks)

PART – C (Short Essay Type Questions)

Answer any **six** questions.

Each question carries **4** marks.

27. Explain about various types of operating system.

28. Discuss on reader writer problem.

29. Explain disk structure.

30. Explain the concept of thrashing.

31. Explain about memory mapping.

32. Explain any one deadlock avoidance mechanism.

33. Write a Short note on critical section problem.

34. Explain File system structure.

35. Write note on segmentation.

36. Give a Short note on deadlock.

37. Give a short note on process scheduling.

38. Explain Resource Allocation Graph.

(6 × 4 = 24 Marks)

PART – D (Long Essays)

Answer any **two** questions.

Each question carries **15** marks.

39. Describe various protection and security mechanisms.

40. Explain banker's algorithm.

41. Explain non contiguous memory allocations.

42. Discuss on disk scheduling.

43. Explain various demand paging algorithms.

44. Elaborate on the concept of thread and multithreading.

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree Examination, March 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Computer Applications

CS 1344/CP 1331 : VALUE EDUCATION

(2019 & 2020 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Write short answers to the below **ten** questions in **1** or **2** sentences. Each question carries **1** mark.

1. What is the aim of NSS programme?
2. What do you mean by self-esteem?
3. How many hours the students are supposed to involve in NSS activities in an academic year?
4. What is positive stress called?
5. Which Ministry at the National level deals with NCC?
6. What is the qualification for joining NCC?
7. What does the Deep Blue depicts in the NCC Crest?
8. Mention any two common geophysical natural disasters.
9. What is a hazard?
10. What are the two types of organ donation?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer **any eight** questions in not exceeding **1** paragraph each. Each question carries **2** marks.

11. Explain the purpose of village adoption work done by NSS.
12. What is the composition of Directorate General NCC?
13. Write a short note on the adoption of welfare institutions by NSS.
14. What are the qualities of goals in goal setting?
15. What are the benefits of joining NCC?
16. Describe some of the social service and community activities carried out by NCC.
17. Write about any two camp trainings given for NCC cadets.
18. Discuss
    (a) TSC and
    (b) Nau Sainik Camp
19. What are the five pillars of resilience?
20. How do you define a hazardous material? Explain the types.
21. What are the three broad categories of hazard?
22. List out the major psychological impacts of disaster.
23. How coastal flooding is caused?
24. What are the common causes of corneal blindness?
25. How is evaluation of donor eligibility done in organ donation?
26. What is the condition in which deceased donation can be done?

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions in not exceeding **120** words. Each question carries **4** marks each.

27. List out some of the major objectives of National Youth Policy.
28. Write a note on the constraints faced in NSS.
29. What are the main objectives of NSS?

30. What are the suggestions given for selection of slums to be adopted by NSS?
31. Classify stresses.
32. What are the various types of Camps in NCC?
33. How is the selection process for YEP done?
34. List out some of the causes of earthquake.
35. Discuss the consequences of floods.
36. Explain the situations that demand a liver transplant.
37. What are the legal aspects of a registered donor?
38. What do you think are the major issues related to organ transplant?

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions in not exceeding **4** pages each. Each question carries **15** marks.

39. Discuss in detail the various activities undertaken by NSS for the students at the University level.
40. What are the various Youth Development Programmes conducted at the National level? Explain them in detail.
41. Write any five major stress management techniques.
42. Write in detail the activities undertaken in NCC.
43. Discuss the four phases of disaster management in detail.
44. Write a detailed note on ethical issues related to organ donation.

(2 × 15 = 30 Marks)

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(Pages : 4) **N – 2959**

Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree Examination, March 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – COMPUTER SCIENCE/COMPUTER APPLICATIONS

Core Course

CS 1345/CP 1343 – DATABASE MANAGEMENT SYSTEMS

(2019 & 2020 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

(One word to maximum of one sentence. Answer **all** questions)

1. What is schema?
2. Expand SQL.
3. What is universe of discourse?
4. Define database.
5. What is a key?
6. Which DDL command is used to delete a table?
7. What is cardinality?

P.T.O.

8. What is DML?

9. What is a record?

10. What is ORACLE?

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

(Not to exceed one paragraph. Answer **any eight** questions)

11. How do application programmers interact with database?

12. Differentiate between single user system and multi-user system.

13. What are database anomalies?

14. Write short note on RDBMS.

15. How is a relation is mathematically defined?

16. List any four advantages of DBMS.

17. Write a note on SQL.

18. What is the use of SELECT statement?

19. Write SQL query for creating a table with the name STUDENT having attributes ROLLNO, NAME and DEPARTMENT where ROLLNO should be used to identify each student uniquely.

20. Write the difference between UNIQUE and DISTINCT constraints.

21. What is the advantage of interactive SQL?

22. What is subquery? Write an example for a subquery in SQL.

23. What do you mean by logical data independence?

24. What is equi join?

25. What is trivial dependency?

26. Write a note on loseless decomposition.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

(Not to exceed **120** words. Answer **any six** questions)

27. Write a note on three level architecture.

28. Discuss on cardinality of relations in DBMS.

29. Explain the set operations union, intersection and difference on relations.

30. What do you mean by data independence? Write a note on types of data independence.

31. What is specialization in E-R model? How does it differ from generalization?

32. Explain different types of attributes with proper examples.

33. What is the use of ALTER statement? What are the changes we can apply to a table using ALTER statement?

34. Explain aggregate functions in detail.

35. What do you mean by database integrity?

36. What do you know about lossy decomposition?

37. Draw E-R diagram for a student database.

38. Why is database security considered important?

(6 × 4 = 24 Marks)

SECTION – D [Essays]

Answer **any two** questions.

39. Discuss on the evolution of database system.

40. Describe the relational operators (selection, projection, equi join) with proper examples.

41. Who is a DataBase Administrator? Explain the roles of DBA in detail.

42. What is E-R model? Explain in detail.

43. Explain different types of normalization done in databases.

44. What is the use of DDL statements? Write examples for CREATE, ALTER, DROP statements for a table and explain them.

(2 × 15 = 30 Marks)

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(Pages : 4) **N – 8155**

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group2(b) - Computer Science

Core Course

CS 1442 : DATABASES

(2013 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer type)

(One word to maximum of one sentences, Answer ALL questions)

1. What is a schema?

2. Set of permitted values of each attribute is called _____

3. A command to remove a relation from an SQL database.

4. The clause in SQL that specifies that the query result should be sorted in ascending or descending order based on the values of one or more columns.

5. According to the levels of abstraction, the schema at the intermediate level is called _____.

6. Fifth normal form is concerned with _____.

7. Which aggregate function does not ignore nulls in its results?

P.T.O.

8. Explain one-to-one relationship in ER diagram.

9. Define first normal form.

10. Write the syntax of select statement.

(10 × 1 = 10 Marks)

SECTION – B (Short answer)

(Not to exceed one paragraph, answer any **EIGHT** questions. **Each** question carries **2** marks).

11. Differentiate candidate key and super key.

12. What is a DML?

13. Explain the difference between a one-to-many and a many-to-many relationship. Which logical data structures have one-to-many and which have many-to-many relationship?

14. Explain nested queries.

15. Explain hierarchical data model.

16. Define a relation.

17. What is a view in SQL? When can views be updated?

18. Define Natural join.

19. What do you mean by data redundancy?

20. Explain trigger in SQL.

21. Define projection separation.

22. Discuss the problem of Spurious tuples and how we may prevent it.

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

(Not to exceed 120 words, answer any **SIX** questions. **Each** question carries **4** marks).

23. What is a database? Describe the advantages of using DBMS.

24. Explain transitive dependency.

25. Define assertion

26. Consider the relations:

    PROJECT(proj#,proj_name,chief_architect)

    EMPLOYEE(emp#,emp_name)

    ASSIGNED(proj#,emp#)

    Use relational algebra to express the following queries:

    (a) Get details of employees working on project COMP33.

    (b) Get the employee number of employees who work on all projects.

    (c) Get details of project on which employee with name 'RAM' is working.

27. What are the various types of the update operations on relations?

28. Define multivalued dependency and Boyce Code Normal Form.

29. Briefly describe the different kinds of users of a DBMS.

30. What is database security?

31. Explain physical and logical design of database.

($6 \times 4 = 24$ Marks)

SECTION – D (Long Essay)

Answer any **TWO** questions. **Each** question carries **15** marks.

32. What is an E-R model? Draw an E-R diagram for the company database with following Descriptions:

The company is organized into departments. Each department has a unique name and aunique number with several locations.

A department controls a number of projects, each of which has a unique name, uniquenumber and a single location.

Store each employee name, social security number, address, and salary. Anemployee is assigned to one department but may work on several projects, which are not necessarily controlled by the same departments.

Keep track of the dependents of each employee for insurance purposes keep each dependent's name, age and relationship to the employee.

33. Explain the following:

(a) Normalization.

(b) Joins in relational algebra.

(c) Role of a database administrator.

(d) Second Normal Form.

34. Explain what are the constraints used while creating a table in SQL?

35. Discuss the entity integrity and referential integrity constraints. Why it is considered as important?

($2 \times 15 = 30$ Marks)

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(Pages : 3) **N – 8156**

Reg. No. : .....

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Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Core Course

CS1443 : COMPUTER NETWORKS

(2013 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer type]

Answer **all** questions. **Each** carries **1** mark.

1. What is meant by topology of a network?

2. Give an example each for simplex, half-duplex and full-duplex transmission.

3. Mention the parts of an optical fiber.

4. List any two types of unguided media.

5. What does a standard provide?

6. State the purpose of redundant bits.

7. What is a packet?

P.T.O.

8. Give the expression for calculating throughput of pure ALOHA.

9. What does an e-mail address mean?

10. State any two advantages of CSMA.

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

Answer **any eight** questions. **Each** carries **2** marks.

11. Describe bandwidth.

12. Write the factors that determine a communication system to be LAN, MAN or WAN.

13. Why are communication satellites positioned in geosynchronous orbit?

14. What are modems?

15. State the function of stop and wait ARQ.

16. How does TCP provide process to process communication?

17. What happens if a token gets corrupted?

18. Define fragmentation.

19. Describe the use of bridges.

20. How can the FECN bit inform the receiver of congestion in the network?

21. Define routing.

22. What is the use of multicast routing?

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

Answer **any six** questions. **Each** carries **4** marks.

23. Name the four basic network topologies and cite an advantage of each type.

24. Compare the two methods of serial transmission. Discuss the advantages and disadvantages of each.

25. Describe of packet switching.

26. Compare TCP and IP protocols.

27. Differentiate between persistent and non-persistent CSMA.

28. Briefly illustrate the comparison of stop and wait, stop and wait ARQ and sliding window.

29. Differentiate pure ALOHA from a slotted ALOHA.

30. How does a router differ from a bridge?

31. Describe the features of POP3 Protocol.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

Answer **any two** questions. **Each** carries **15** marks.

32. Discuss different type of networks.

33. Describe how hamming code is used for error detection.

34. With suitable diagram give a brief description of Ethernet frame format.

35. Describe the policies adopted by open loop congestion control.

(2 × 15 = 30 Marks)

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Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group 2(b) — Computer Science

Core Course

CS 1444 : PROGRAMMING IN JAVA

(2013 Admission)

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** questions. Each question carries **1** mark.

1. Define the term encapsulation.
2. Expand the term API.
3. What do you mean by JVM?
4. What is an array?
5. What is the use of multi threading?
6. Write any two Font class methods in Java.
7. Write name of java package that defines all stream classes.

P.T.O.

8. What do you mean by exceptions?

9. Write syntax of for statement in Java.

10. What is the purpose of AWT package in Java?

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions. Each question carries **2** marks.

11. What are various byte stream classes in Java?

12. Write functions of Thread class in Java.

13. What do you mean by byte code?

14. What is the use of this keyword in Java?

15. Write a java program to check display ernployee details using object and class.

16. Describe the steps of compiling a Java program.

17. What is the use of throw keyword in Java?

18. How to define a class in Java?

19. Explain the use of constructor.

20. Write methods to display a string on an applet.

21. Write syntax on how to define and import packages in Java.

22. What is the use of abstract methods?

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions. Each question carries **4** marks.

23. Discuss various I/O class methods in Java.

24. Explain constructor overloading in Java with example.

25. Explain how to create a child thread by implementing Runnable interface.

26. Explain concept of Flow Layout in Java.

27. Write short note on method overriding using suitable example.

28. Briefly explain various exception classes in Java.

29. Explain try.... catch..... finally statement in Java.

30. Write about Event classes in Java.

31. Compare various operators in Java.

($6 \times 4 = 24$ Marks)

PART – D

Answer **any two** questions. Each question carries **15** marks.

32. Explain Applet skeleton with example.

33. Explain thread life cycle in Java with methods.

34. Explain briefly various control statements in Java with example.

35. Explain concept of inheritance and interfaces in Java with suitable examples.

($2 \times 15 = 30$ Marks)

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Reg. No. : .....

Name : .....

Fourth Semester B.C.A./B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group2(b)-COMPUTER APPLICATIONS/COMPUTER SCIENCE

Core Course

CP 1444/CS 1441 – DESIGN AND ANALYSIS OF ALGORITHMS

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [VERY SHORT ANSWER]

Answer **all** questions.

1. Define Algorithm.
2. What is meant by time complexity of n algorithm?
3. What is Performance analysis of Algorithm?
4. Worst case complexity of Quick sort is ————————.
5. What is Big 0 notation?
6. What is meant by sorting?
7. What is a feasible solution?
8. ———————— is complexity of Binary search.

P.T.O.

9. What is a spanning tree?

10. What is back tracking?

(10 × 1 = 10 Marks)

SECTION – B [SHORT ANSWER]

Answer any **eight** questions.

11. Explain the Worst case complexity of an algorithm.

12. List any four characteristics of an algorithm.

13. What is meant by validation of Algorithms?

14. Write a short note on Divide and Conquer strategy

15. Write a note on Principle of Optimality

16. What are the Characteristics of greedy Algorithms?

17. What is recursion?

18. What is the difference between Algorithm and pseudo code?

19. What are the conditions of 8 Queen Problem?

20. Briefly explain the difference, between Prims and Kruskal Algorithm?

21. What are the drawbacks of dynamic programming?

22. What is meant by implicit Constraints?

(8 × 2 = 16 Marks)

SECTION – C (SHORT ESSAY)

Answer any **six** questions.

23. Explain the recursive algorithm of Binary search with an example?

24. Write a note on asymptotic notation.

25. Explain the Strassen's Matrix multiplication in detail.

26. Write a recursive algorithm to find the maximum and minimum of numbers.

27. Explain the Dijkstra's shortest path Algorithm.

28. What is a minimum cost spanning tree?

29. Discuss All pairs shortest path problem.

30. What are greedy Algorithms? Explain the Knapsack problem?

31. State a problem that is Classified as NP complete problem. What are the steps involved in establishing a new problem as NP complete.

(6 × 4 = 24 Marks)

SECTION – D [LONG ESSAY]

Answer any **two** questions.

32. Explain Prim's and Kruskal 's Algorithm in detail?

33. Write an algorithm for Quick sort. Explain with a suitable example and also find the complexities.

34. Write a Note on dynamic programming Explain the travelling sales person problem.

35. Discuss the strategy of backtracking State and explain the 8 Queen problem in detail.

(2 × 15 = 30 Marks)

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Name : .....

Fourth Semester B.Sc./B.C.A. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group2(b)-COMPUTER SCIENCE/COMPUTER APPLICATIONS

Core Course

CS 1442/CP 1443 – DATABASE MANAGEMENT SYSTEMS

(2014 - 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very short Answer type)

Answer in One word to maximum **one** sentence, Answer ALL questions

1. Define Entity and Attribute.
2. What is DML?
3. What is schema?
4. What is redundancy?
5. Define normalisation.
6. Define Dynamic SQL.
7. What is secondary key?
8. Define cardinality.

P.T.O.

9. What is a tuple?

10. What is Time stamping?

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

Not exceeding one paragraph, answer any **eight** questions, Each question carries **2** marks.

11. What is meta data? Give example.

12. What is Data Dictionary?

13. What is the use of UPDATE command? Give example.

14. Define Group-by and Order-by.

15. What is Aggregation function?

16. Define Nested queries.

17. What is deadlock?

18. What is Indexing?

19. Define Data model.

20. Write the syntax for Table creation using an example.

21. List the role of DBA.

22. What is one to mans relation in DBMS?

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not exceeding **120** words, answer any **six** questions, Each question carries **4** marks.

23. What is ER model? Give example.

24. Describe lossless join decomposition.

25. Describe the applications of DBMS.

26. Differentiate between Schema and Instance.

27. Describe two levels of Data Independence.

28. Write short notes on Relational Algebra.

29. What is the use of Project command? Give example.

30. What is the use of UNION command? Give example.

31. Write note on DCL and DDL.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

Answer any **TWO** questions. Each question carrier **15** marks.

32. Elaborate on various types of Normalization.

33. Explain the various operations in Relational Algebra.

34. Discuss on 3 schema architecture.

35. Explain the architecture of DBMS in detail.

(2 × 15 = 30 Marks)

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Name : .....

Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group2(b) – Computer Science

Core Course

CS 1443 – COMPUTER NETWORKS

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very short Answer type)

Answer in One word to maximum one sentence, Answer **ALL** questions.

1. Define digital and analog signals.
2. Define TCP/IP.
3. What is multiplexing?
4. Define protocol.
5. What is piggybacking?
6. Define baud-rate.
7. What is tunneling?
8. What is datagram?

P.T.O.

9. Define DNS.

10. What is FTP?

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

Not exceeding one paragraph, answer any **EIGHT** questions. Each question carries **TWO** marks.

11. Discuss the TCP connection management with neat diagram.

12. What is Network topology and what are its types?

13. Define flow control and error control.

14. What are Noiseless and noisy channels?

15. What are ALOHA and the slotted ALOHA?

16. Define Ethernet.

17. Define the concept of switching.

18. What is a point to point network?

19. Define fragmentation. Explain with a diagram.

20. What is the function of the transport layer?

21. Define CSMA and CSMA/CD.

22. What is packet switching?

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not exceeding **120** words, answer any **SIX** questions. Each question carries **FOUR** marks.

23. Explain the application layer of OSI model.

24. Explain Time Division Multiplexing.

25. Define Routing. Explain different types of routing.

26. Discuss the channel allocation problem briefly.

27. Explain error detection and correction methods.

28. Discuss about DNS.

29. Describe the basic difference between the OSI and TCP/IP reference models.

30. Describe Distance Vector Routing.

31. Write note on:

    (a) Bridge

    (b) Hub

    (c) Gateway

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

Answer any **Two** questions. **Each** question carries **15** marks.

32. Describe Sliding Window Protocols.

33. Explain any two congestion control Algorithms.

34. Write note on Network Topology and Discuss its types.

35. Explain different guided Transmission media in detail.

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Core Course

CS 1444 : PROGRAMMING IN JAVA

(2014-2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer type)

Answer in One word to maximum one sentence. Answer **all** questions.

1. If a method is declared as protected, where may the method be accessed?
2. A combination of character is a _____
3. Expand JDBC.
4. What is the use of in Alive () method under Thread class?
5. The full form of JDK is _____
6. Which method is used to include a component in a window?
7. _____ means data hiding.
8. _____ refers to the object that is currently executing.

P.T.O.

9. A variable can be declared as constant in Java using _____ keyword.

10. _____ is the process by which objects of one class acquire the properties of another class.

(10 × 1 = 10 Marks)

SECTION – B (Short Essay)

Not exceeding **one** paragraph. Answer any **eight** questions. Each question carries **2** marks.

11. What is the purpose of commit statement?

12. What is Dynamic Binding?

13. What is synchronization?

14. Define superclass and subclass.

15. Explain interfaces.

16. Describe the lifecycle of an applet.

17. What is Encapsulation?

18. Write any five AWT components.

19. Explain Swing in java.

20. What is garbage collection?

21. Explain JDBC application architecture.

22. Write a program to show the implementation of Arithmetic Exception in Java.

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not exceeding **120** words. Answer any **six** questions. Each question carries **4** marks.

23. What do you mean by Constructor?

24. Write a note on throw, throws and finally.

25. Differentiate between a Class and a Object

26. Explain JavaBeans. Mention any two features of JavaBeans.

27. What are interface and its uses?

28. Give a brief note on operators in java.

29. What are the various access specifiers used in java.

30. Write a note on statement classes provided by JDBC.

31. What is the difference between the methods sleep() and wait()?

(6 × 4 = 24 Marks)

SECTION – D (Short Essay)

Answer any **two** questions. Each question carries **15** marks.

32. What is inheritance? Explain in detail with examples.

33. Write a program to design an Applet showing three concentric circles filled with three different colors.

34. Explain exception handling in Java in detail.

35. What are the various looping statements available in Java? Explain it with suitable examples.

(2 × 15 = 30 Marks)

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(Pages : 3) **N – 8162**

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science

Core Course

CS 1441 : DESIGN AND ANALYSIS OF ALGORITHMS

(2018 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer Type)

Answer in **one** word to maximum **one** sentence. Answer **all** questions. **Each** carries **1** mark.

1. What is the use of algorithm?

2. Define space complexity.

3. What is worst case time complexity?

4. What is the time complexity of linear search?

5. Define graph.

6. What do you mean by internal nodes of a tree?

7. What is a weighted graph?

8. How to find depth of a node in a binary tree?

P.T.O.

9. Define Euler graph.

10. What is graph coloring?

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

Not exceeding **one** paragraph. Answer any **eight** questions. **Each** carries **2** marks.

11. What is the purpose of asymptotic notations?

12. What is meant by LC search?

13. How do we calculate time complexity of an algorithm?

14. Define fractional knapsack problem.

15. State the principle of optimality.

16. What are deterministic algorithms?

17. What is backtracking?

18. Define binary tree.

19. List different techniques used for algorithm design.

20. State the difference between a directed graph and undirected graph.

21. Define knapsack problem.

22. Write the algorithm to perform binary search.

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not exceeding 120 words. Answer any **six** questions. **Each** carries **4** marks.

23. Why algorithm analysis is important?

24. Write an algorithm to generate Fibonacci series upto a given n value

25. What is 0/1 knapsack problem? How it differs from fractional knapsack problem?

26. What is travelling sales person's problem?

27. What is the use of Prim's algorithm?

28. Write a note on dynamic programming.

29. Describe single source shortest path problem.

30. How greedy algorithms work?

31. Write a note on complexity of sorting algorithms.

(6 × 4 = 24 Marks)

SECTION – D (Long Answer)

Answer any **two** questions. **Each** carries **15** marks.

32. What is time complexity? Explain various asymptotic notations.

33. What are minimum cost spanning trees?

34. Explain how LC search makes use of branch and bound method

35. Compare and contrast NP-hard and NP-complete problems

(2 × 15 = 30 Marks)

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Name : .....

Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group 2(b) — Computer Science

Core Course

CS 1442 : MICROPROCESSORS AND PROGRAMMING

(2018 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer Type)

Answer **all** questions, Each question carries **1** mark.

1. What is a bus?
2. State the function of instruction pointer in 8086 microprocesser.
3. What is Instruction cycle?
4. Name the special registers available in 8086?
5. What are the data and address sizes in 8086?
6. Write the flags of 8086.
7. What is pipeline processing?

8. Define macro.

9. What is simulator?

10. Give the name of clock generator IC of 80286.

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer)

Answer **any eight** questions. Each question carries **2** marks.

11. Write down the basic functional blocks of microprocessor.

12. List different registers of 8086 microprocessor.

13. Explain the different maximum mode pins of 8086 microprocessor.

14. Explain the differences between the HLT and Hold States.

15. What is the difference between microprocessor and microcontroller?

16. Explain What is SIM and RIM instructions?

17. What is the difference in the execution of an 8086 inter-segment and intrasegment CALL instruction?

18. List any six features of 80286.

19. List any six assembler directives of 8086.

20. Give the rules for framing variable name in 8086.

21. What is Interrupt vector table? How address is calculated from this table?

22. List out the salient features of 80386 processor.

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

Answer **any six** questions. Each question carries **4** marks.

23. Draw and explain the timing diagram of memory write instruction machine cycle.
24. Explain any four addressing modes of 8086.
25. List different flags of 8086 and state their use.
26. Explain any five logical instructions of 8086.
27. List various interrupts of 8086.
28. Explain any two assembly language program development tools.
29. Write an assembly language program to divide a 16-bit number by an 8-bit number.
30. Write an assembly language program of 8086 to find the length of a given string.
31. Write the features of Pentium Processors.

($6 \times 4 = 24$ Marks)

SECTION – D

Answer **any two** questions. Each question carries **15** marks.

32. Write note on evolution of microprocessor.
33. Discuss architecture and pin diagram of 8086 in detail.
34. Define interrupt and explain the interrupt controller IC.
35. Explain any three 80X86 family of processor.

($2 \times 15 = 30$ Marks)

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Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer science

Core Course

CS 1443 — COMPUTER NETWORKS AND SECURITY

(2018 Admission)

Time : 3 Hours Max. Marks : 80

PART – A

(Very Short Answer Type)

Answer **all** questions. **One** word to maximum of **one** sentences, Each Question carries **1** mark.

1. Name the protocol used for email transmission.
2. Expand the term ARPANET
3. Define Bandwidth.
4. Which device is used to connect different networks with different protocol?
5. A set of layers and protocols is called?
6. Which layer contains a variety of protocols that are commonly needed by users?
7. The decoding of the encrypted data is known as ————————.
8. What is topology?
9. Which cable support the highest bandwidth and faster transmission rate?
10. In which topology is every node connected to other nodes?

(10 × 1 = 10 Marks)

P.T.O.

PART – B

(Short Answer Type)

Answer any **Eight** Questions. Each Questions carries **2** marks

11. Write a note on multicasting.
12. What is NIC? What is the importance in networking?
13. Explain the need for establishing computer networks?
14. Write a note on firewall.
15. Compare serial and parallel communication?
16. Write a note on computer virus.
17. What are the important protocols used in application layer?
18. Write a note on piggy backing.
19. Compare computer worm and spam.
20. Describe DNS service.
21. What are the services provided by the transport layer?
22. What is 4 way handshaking?

(8 × 2 = 16 Marks)

PART – C

(Short Essays)

Answer **any six** Questions. Each Question carries **4** marks.

23. Explain the functions of data link layer?
24. What is meant by network security? What are the issues related with it?

25. Explain leaky bucket algorithm.

26. Explain congestion control.

27. Explain secret key algorithms.

28. What are the features of UDP?

29. Explain transposition ciphers.

30. What is a MAC address? Compare MAC address with IP address.

31. Explain different guided media.

(6 × 4 = 24 Marks)

PART – D

(Long Essay)

Answer **any two** Questions. Each question carries **15** marks

32. Briefly describe the various communication device used in networks.

33. What is meant DES breaking? What are the methods adopted for this?

34. Explain the different transmission media used for data communication.

35. Explain the various methods for providing network security.

(2 × 15 = 30 Marks)

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(Pages : 3) **N – 8165**

Reg. No. : .....

Name : .....

Fourth Semester B.Sc./B.C.A. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group2(b) - Computer Science/Computer Applications

Core Course

CS 1444/CP 1443 – PHP AND MYSQL

(2018 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very short Answer Type)

One word to maximum of one sentence. Answer **all** questions.

1. Variable name in PHP starts with ——————

2. —————— built-in function is used to find the position of the first occurrence of a string inside another string in PHP.

3. —————— function is used to check whether variable is set or not.

4. —————— function is used to sort an indexed array in descending order.

5. $season = array (“summer”, “winter”, “spring”, “autumn”) is an example for —————— array.

6. What will be the output of the following program?

```
<?php
echo lcfirst('Welcome To PHP");
?>
```

P.T.O.

7. ———————— function is used to disconnect with MySQL database.

8. ———————— method is widely used to submit form that have large amount of data such as file upload.

9. Syntax error is also known as ———————— error.

10. ———————— function returns the matching elements of two array in PHP.

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

Not exceeding one paragraph, answer **any eight** questions. Each question carries **2** marks.

11. What is a persistent cookie?

12. What is the purpose of POST method?

13. Mention any four features of NIP.

14. Explain the array() function in PHP.

15. What is the use of header() function in PHP?

16. What is die() in PHP?

17. What is a session?

18. Explain mysqli_fetch_row() function.

19. Mention the control statements and its purpose.

20. What is imagecreate() in PHP?

21. What is the purpose of BLOB data type in MySQL?

22. Explain the use of arsort() function in PHP with an example.

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not exceeding **120** words, answer **any six** questions. Each question carries **4** marks.

23. Explain the concept of associative arrays in PHP.

24. Explain $_SESSION in PHP with an example program.

25. Explain how to make a redirect in PHP.

26. Explain pass by reference in PHP function.

27. Explain setcookie() function with its syntax.

28. Explain require() function in PHP.

29. Explain different modes of opening a file in PHP.

30. How will you create a class in PHP?

31. Write a PHP script to display the contents of a text file on a Web page.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

Answer any two questions. Each question carries **15** marks.

32. Explain decision making statements in PHP with syntax and example program.

33. Discuss various operators used in PHP.

34. Explain various data types used in MySQL.

35. Write a PUP script that takes input from PHP form and insert records into a table in MySQL database.

(2 × 15 = 30 Marks)

———————

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Reg. No. : .....

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Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group 2(b) — Computer Science

Core Course

CS 1441 : DESIGN AND ANALYSIS OF ALGORITHMS

(2019 Admission onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very short answer type)

One word to maximum of **one** sentence. Answer **all** questions. Each carries **1** mark.

1. Define an algorithm.
2. What is space complexity?
3. Define spanning tree.
4. Define trivial graph.
5. What is the purpose of edges in a graph?
6. What is leaf node?
7. The maximum number of children a node can have in a binary tree ————

8. How to find height of a binary tree?

9. Name a non-linear data structure.

10. In a graph, what is meant by loop?

($10 \times 1 = 10$ Marks)

SECTION – B

(Short Answer)

Not exceeding **one** paragraph. Answer **any eight** questions. Each carries **2** marks.

11. What is binary search?

12. What do you mean by recursive algorithm?

13. Write down the important characteristics of an algorithm.

14. How performance analysis of an algorithm is done?

15. What is Ω (Big Omega) notation?

16. List any four advantages of algorithm analysis.

17. What is principle of optimality?

18. List any four type of sorting techniques.

19. Differentiate linear search and binary search.

20. What is meant by efficiency of an algorithm?

21. Describe all pair shortest path problem.

22. What is travelling sales person's problem?

23. What are the advantages of backtracking?

24. How do you identify isomorphism in graphs?

25. What is a pivot element?

26. What is a polynomial time algorithm?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

Not exceeding **120** words. Answer **any six** questions. Each carries **4** marks.

27. Write down the properties of a good algorithm.

28. Write a recursive algorithm for searching.

29. Explain best, worst, and average case complexity of algorithms with proper examples.

30. Write an algorithm to check whether a given number is palindrome or not.

31. Write a note on principle of optimality.

32. What is the use of Prim's algorithm?

33. Explain the working of divide and conquer algorithm.

34. What is dynamic programming? What are its features?

35. What is the difference between NP-hard and NP-complete problems

36. Differentiate 0/1 knapsack and fractional knapsack problem.

37. How sorting is done in quick sort?

38. Compare deterministic and non-deterministic algorithms.

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

Answer **any two** questions. Each carries **15** marks.

39. Explain different notations which are used to describe the running time of an algorithm.

40. Discuss Strassen's matrix multiplication.

41. Write and explain algorithm for quick sort.

42. Describe the working of merge sort algorithm.

43. Explain 8 queen's problem in detail.

44. Discuss about the complexity of sorting algorithm.

($2 \times 15 = 30$ Marks)

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Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Core Course

CS 1442 — MICROPROCESSORS AND PROGRAMMING

(2019 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very short answer type)

One word to maximum of **one** sentence. Answer **all** questions.

1. What is the purpose of AX register?
2. What is BIU?
3. What is the importance of Pin 19 in 8086?
4. What is BHE?
5. What is ALE?
6. What is DEN?
7. What is the use of JMP instruction?

P.T.O.

8. What is the capacity of data bus in 80186?

9. Give an example for direct addressing mode.

10. Give the name of an advanced Pentium processor.

(10 × 1 = 10 Marks)

SECTION – B

(Short answer)

Not exceeding paragraph, answer any **eight** questions. Each question carries **2** marks.

11. Name the various conditional flags used in 8086.

12. What is the significance of the pins AD0-AD15?

13. What is RESET?

14. What happens when LOCK in 8086 is active?

15. What is DT/R?

16. What do you mean by non-maskable interrupt in 8086?

17. What is the purpose of the instruction JE/JZ?

18. Name the test registers in 80486 that allow the cache memory to be tested.

19. What is the main difference between Pentium processor and earlier microprocessors?

20. What is immediate addressing mode? Give an example.

21. Name any four assembly directives.

22. What is the use of Pin 32 in 8086?

23. What is the purpose of JMP instruction?

24. What is SHL and SHR in 8086?

25. What is MOVS instruction used for?

26. What do you mean by hardware interrupt?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

Not exceeding **120** words, answer any **six** questions. Each question carries **4** marks.

27. Explain various control flags used in 8086.

28. Differentiate INTR and INTA.

29. What is HOLD and HLDA?

30. Explain the importance of the pins M/IO and WR in 8086.

31. Explain the following instructions.

    (a) ADD

    (b) ADC

    (c) SUB

    (d) SBB

32. Explain the instructions for string manipulation in 8086.

33. Draw the timing diagram for write cycle in minimum mode.

34. Differentiate minimum mode and maximum mode 8086 system.

35. Explain hardware interrupts in 8086.

36. Explain various logical instructions used in 8086.

37. Write notes on 80186 processors.

38. Explain even and odd memory banks in 8086.

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

39. Explain the functional units of a microprocessor.

40. Explain data transfer instructions of 8086.

41. Explain the features of 80286 and 80386 processors.

42. Write an 8086 assembly language program to sort N numbers in ascending order.

43. Explain the pin description for minimum mode in 8086.

44. Explain various data transfer instructions of 8086 and its purpose.

($2 \times 15 = 30$ Marks)

———————

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Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Core Course

CS 1443 : COMPUTER NETWORK AND SECURITY

(2019 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer Type)

One word to maximum of **one** sentences, **Each** question carries **1** mark.

1. Define port.

2. An agreement between the communicating parties on how communication is to proceed is commonly referred to as ————————?

3. OSI stands for ————————?

4. The ———————— protocol has flow control but no error control

5. The hierarchical routing uses the idea of dividing routs called ————————

6. The data link layer uses a ———————— to detect an error

P.T.O.

7. Expand POP.

8. TCP is a ———————— protocol

9. Define piggy backing?

10. What is baud rate?

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer Type)

Answer any **eight** questions. **Each** question carries **2** marks.

11. What is difference between physical addressing and logical addressing?

12. What you mean by datagram?

13. Compare TCP vs UDP.

14. What is the principle behind optical fiber?

15. What are the basic elements of communication?

16. Explain the different modes of communication.

17. Define a protocol

18. Write a note on ALOHA.

19. What is flow control?

20. What is meant by routing?

21. List the file transfer protocols

22. Explain the functions of data link layer?

23. What is the purpose of a switches in networking?

24. Explain framing.

25. What is mean by congestion control?

26. Compare adaptive and non-adaptive routing?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essays)

Answer any **six** questions. **Each** question carries **4** marks.

27. Differentiate between leaky bucket algorithm and token bucket algorithm

28. Compare flow based and hierarchical routing

29. Explain the DNS service.

30. What is three way handshaking?

31. Compare adaptive and non-adaptive routing?

32. Explain token bucket algorithm.

33. State and explain the Unrestricted Simplex Protocol

34. What is meant by cryptography?

35. Explain FTP Protocol.

36. Briefly explain different network topology

37. What is a MAC address?

38. What is the public key algorithm? Explain with an example.

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

39. With suitable diagram explain ISO/OSI reference model.

40. Briefly describe the various communication device used in networks

41. What is meant by network security? What are the issues related with it?

42. Write an essay on different transmission media used in networking

43. Explain Dijkstras (shortest path) Algorithm.

44. Explain the different types of data transmission?

(2 × 15 = 30 Marks)

———————

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Reg. No. : .....

Name : .....

Fourth Semester B.Sc./B.C.A. Degree Examination, August 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Computer Applications

Core Course

CS 1444/CP 1443 : PHP AND MYSQL

(2019 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

Very Short Answer Type. One word to maximum of one sentence. Answer **all** questions.

1. _____ or _____ is used to display output in PHP.

2. _____ is the built-in function to find the length of a string in PHP.

3. _____ function is used to set cookie in PHP.

4. _____ function converts a string to all uppercase.

5. What is the output of the following program?

```
<?php
echo “Welcome” . “to” . “PHP”;
?>
```

6. _____ function is used to connect with MySQL database.

P.T.O.

7. The information sent from an HTML form using the _____ method is visible to everyone in the browser's address bar.

8. $salary=array("Sonoo" => "550000" , "Vimal" => "250000", "Ratan" => 200000"); is an example for _____ array.

9. _____ function finds the number of items in an indexed array.

10. _____ array represents an array containing one or more arrays in PHP.

(10 × 1 = 10 Marks)

SECTION – B

Short Answer. Not exceeding one paragraph, answer any **eight** questions. **Each** question carries **2** marks.

11. List the different operators used in PHP.

12. What do you mean by form validation?

13. What is settype( ) in PHP?

14. What do you mean by typecasting?

15. What is the use of isset( ) function?

16. Explain krsort( ) with example program.

17. What is the use of mysqli_fetch_array( )?

18. What is the difference between open source DBMS and proprietary DBMS? Give example for each.

19. What is fread() and fwrite() functions in PHP?

20. Mention any four superglobals in PHP.

21. Write a PHP script to delete a table stored in MySQL.

22. Mention the logical operators in MySQL.

23. Differentiate float and double data type in MySQL.

24. Mention any four features of MySQL.

25. Explain the use of LIKE operator in MySQL.

26. What do you mean by INNER JOIN in MySQL? Write the syntax.

(8 × 2 = 16 Marks)

SECTION – C

Short Essay. Not exceeding 120 words, answer any **six** questions. **Each** question carries **4** marks.

27. What are the rules for naming a variable in PHP?

28. Explain break and continue in PHP with examples.

29. Explain with an example how to create functions in PHP.

30. Explain the time() function in PHP.

31. Explain getDate() function in PHP.

32. Discuss various types of cookies.

33. How will you upload a file in PHP?

34. Explain include() function in PHP,

35. Explain $_FILES in PHP.

36. Explain the purpose of $_REQUEST.

37. Differentiate asort() and ksort() functions in PHP.

38. Explain how PHP sends mail using the mail() function.

(6 × 4 = 24 Marks)

SECTION – D

Long Essay. Answer any **two** questions. **Each** question carries **15** marks.

39. Explain with examples various data types in PHP.

40. Explain the following with examples.

    (a) Cookie management

    (b) $_GET

41. Discuss various loops used in PHP.

42. Write a PHP script to fetch and display the records stored in MySQL.

43. Explain session management in PHP.

44. Explain different types of arrays in PHP.

($2 \times 15 = 30$ Marks)

———————

(Pages : 4) **M – 2029**

Reg. No. : .....

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Fifth Semester B.Sc./B.C.A. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) — Computer Science/ Computer Application

Core Course

CS 1541/CP 1541 – FREE AND OPEN SOURCE SOFTWARES (FOSS)

(2014, 2016 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer Type)

(One word to maximum of **one** sentence. Answer **all** questions.)

1. What is PHP?
2. What is Linux?
3. What is Filter?
4. What is Kernel?
5. Define Process.
6. What is MySQL?
7. Who developed Linux?

8. What is Open Source Software?

9. How to give multiline comments in PHP?

10. What is the use of unset( ) function in PHP?

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer Type)

(Not to exceed **one** paragraph, Answer **any eight** questions. **Each** question carries **2** marks)

11. What are the common usage of PHP?

12. Explain associative and multidimensional arrays in PHP.

13. Describe the basic architecture of Linux.

14. What is session and why do we use it?

15. Mention some advantages of Open Standards.

16. What is the difference between sql and Mysql?

17. Explain with an example strpos( ) function in PHP.

18. Compare Proprietary Software and Free Software.

19. What is the difference between javascript and PHP?

20. What are the dangers Associated with proprietary standards?

21. What is the difference between unset( ) and unlink function?

22. State the reason why Linux has become popular Operating System?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay Type)

(Not to exceed **120** words, Answer **any six** questions. **Each** question carries **4** marks)

23. What is a form? Explain its uses.

24. What are the characteristics of PHP variables?

25. What are the string functions available in PHP?

26. How do we use % when performing a search query?

27. Differences between GET, POST and REQUEST methods.

28. Explain the difference between break and continue statement with an example.

29. Why do we use GROUP BY and ORDER BY function in mysql? Explain with suitable examples.

30. What are the facilities provided by the GNOME and KDE to users? Explain each of them briefly.

31. What is the difference between single quoted string and double quoted string? Explain with examples.

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay Type)

(Answer **any two** questions. **Each** question carries **15** marks)

32. Discuss on various types of shell available in Linux.

33. What are the different types of errors in PHP? Explain in detail.

34. Discuss in detail various data types available in PHP with examples.

35. (a) Write My SQL commands for creation of a table employee with fields, empno, name, designation, department, address, date of birth.

(b) Write a command to find age as on 31st Oct 2016 and use of update command to update a particular employees address.

(2 × 15 = 30 Marks)

———————

(Pages : 3) **M – 2030**

Reg. No. : .....

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Fifth Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science

Core Course

CS 1542 –– SYSTEM SOFTWARE

(2014, 2016 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [*Very Short Answer Type*]

One word to maximum of **one** sentence. Answer **all** questions.

1. Give any two examples for system software.
2. What is mask bit?
3. Which bit refers to the unused bit in SIC?
4. How are characters represented in SIC?
5. Name the three I/O instructions in SIC.
6. How many bits are used for representing integers in SIC?
7. Give two examples for assembler directives.
8. What is the purpose of a linker?

P.T.O.

9. What is ARGTAB in a macro processor?

10. What is debugging?

(10 × 1 = 10 Marks)

SECTION – B [Short answer]

Not to exceed **one** paragraph, Answer any **eight** questions. **Each** question carries **2** marks.

11. What is a simplified instructional computer?

12. Explain the instruction format of SIC.

13. List the five registers used in SIC.

14. What is an assembler?

15. What is the purpose of pass 1 in a two pass assembler?

16. Which are the three types of records in a simple SIC assembler?

17. What is register translation?

18. What is the purpose of location counter?

19. Name any two macro instructions.

20. What is the difference between macro invocation and a subroutine call?

21. Name three data structures used in macro processor.

22. What is the purpose of EXPAND in a macro processor?

(8 × 2 = 16 Marks)

SECTION – C

Not to exceed **120** words, Answer any **six** questions. **Each** question carries **4** marks.

23. Explain the translation functions of a simple assembler.

24. Explain forward reference with an example.

25. Explain address translation.

26. Explain program relocation.

27. Explain literal tables in assembler.

28. Write short notes on one pass assembler.

29. Explain the functions of a bootstrap loader.

30. Explain keyword macro parameters.

31. Write short notes on user interface for editors.

($6 \times 4 = 24$ Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks.

32. Explain the SIC machine architecture.

33. Explain the OPTAB and SYMTAB tables used in assemblers.

34. Explain the features of machine dependent assembler.

35. Explain the algorithm and data structure for a linking loader.

($2 \times 15 = 30$ Marks)

———————

(Pages : 3) **M – 2031**

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Fifth Semester B.Sc./B.C.A. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science/Computer Applications

Core Course CS 1543/CP 1542 – COMPUTER GRAPHICS

(2014, 2016 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Very Short Answer Type.

One word to maximum of one sentence. Answer **all** questions.

1. What is aspect ratio?
2. What is a bitmap?
3. What is random scan?
4. What is a pixel?
5. What do you mean by horizontal retrace?
6. What is pixmap?
7. What is viewport?

8. Expand DDA.

9. Expand HSV in HSV color model.

10. What is the purpose of control grid in a CRT?

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer)

[Not to exceed one paragraph, answer **any eight** questions. Each question carries **2** marks].

11. How do you do the transformation from world to viewing coordinates?

12. What is morphing?

13. What is the application of z-buffer algorithm?

14. What is translation?

15. What do you mean by 3D modelling in computer graphics?

16. What are the line attributes?

17. What do you mean by Perspective projection?

18. What is antialiasing?

19. What is Phong shading?

20. What do you mean by back face elimination?

21. What is a frame buffer?

22. What do you mean by point clipping?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

[Not to exceed 120 words, answer **any six** questions. Each question carries **4** marks].

23. Write short notes on b-splines.

24. Explain homogeneous co-ordinate system with an example.

25. Explain the various projections in 3D.

26. Explain principles of illumination.

27. Explain DDA line drawing algorithm.

28. Explain rotation with an example.

29. Write short notes on flood fill algorithm.

30. Write short notes on LED displays.

31. Explain the mid-point circle algorithm.

($6 \times 4 = 24$ Marks)

SECTION – D

(Long Essay)

[Answer **any two** questions. Each question carries **15** marks].

32. Briefly explain Cohen Sutherland line clipping algorithm with example.

33. Explain all the 2D transformations in detail.

34. Explain the various shading methods.

35. Explain in detail RGB, HSV and CYMK color models.

($2 \times 15 = 30$ Marks)

———————

(Pages : 4) **M – 2032**

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Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Group2(b) – Computer Science

Elective Course

CS 1561.1 – MULTIMEDIA SYSTEMS

(2014, 2016 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer Type)

(One word to maximum of one sentences. Answer **all** questions)

1. What is the use of DVD?
2. Define multimedia.
3. What is animation?
4. List any two filters.
5. Expand SECAM
6. What is analog video?
7. Write the relevance of MP3.

8. What is meant by a grey level image?

9. What is quantization?

10. What are frame rates?

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer)

(Not to exceed one paragraph, answer **any eight** questions. Each question carries **2** marks)

11. What is the use of video camera?

12. Write the history of multimedia.

13. Write a note on low pass filter.

14. Discuss the advantages of sound cards.

15. Explain about hypermedia.

16. What is meant by image resolution?

17. Write a note on audio compression.

18. How will you enhance the contrast of the image?

19. What is edge detection? Explain.

20. Write the role of negatives in image processing.

21. Write the features of OGG.

22. Discuss synthetic sounds in detail.

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

(Not to exceed 1**20** words, answer **any six** questions. Each question carries **4** marks)

23. Write a note on Multimedia hardware.

24. Explain different video equipments in detail.

25. What is PAL? Explain in detail.

26. Write the relevance of NTSC in multimedia.

27. Explain the characteristics of speech.

28. Write a note on color images.

29. Discuss different image file formats in detail.

30. Write the steps in digital video compression.

31. How will you remove the noise?

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

(Answer **any two** questions. Each question carries **15** marks)

32. Write the concepts of multimedia. Explain its role in entertainment.

33. Write a note on audio filtering.

34. What are analog video artifacts? Explain in detail.

35. Write a short note on :

(a) CD-ROM

(b) High-pass filter

(c) MIDI.

(2 × 15 = 30 Marks)

———————

(Pages : 3) **M – 2033**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science

Elective Course

CS 1561.2 – BIOINFORMATICS

(2014, 2016 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer Type)

(One word to maximum of one sentence. Answer **all** questions)

1. Expand tRNA.
2. Name two structure databases.
3. Expand PDB.
4. What is a local alignment?
5. What is exon?
6. What is a proteome?
7. What is a cell?
8. What is gap in sequence alignment?

P.T.O.

9. Name a literature database.

10. Expand EMBL.

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

(Not to exceed one paragraph, answer **any eight** questions. Each question carries **2** marks.

11. What is bioinformatics?

12. What is BLAST?

13. Differentiate DNA and RNA.

14. What do you mean by the coding region of DNA?

15. What is global alignment?

16. What are nucleotides?

17. What is SWISS-PDB viewer

18. What is Single Nucleotide Polymorphism?

19. What do you mean by hit in a database search?

20. Explain the sequence of human insulin gene.

21. Name two scoring matrices.

22. List two prediction tools used in bioinformatics.

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

(Not to exceed **120** words, answer **any six** questions. Each question carries **4** marks.

23. Explain DNA microarray.

24. Explain the secondary structure of a protein.

25. Briefly explain the double helix structure of DNA.

26. Briefly explain the codons.

27. Explain DNA polymerase.

28. Explain rnRNA, tRNA and rRNA.

29. What are the properties of genetic codes?

30. Write short notes on BLOSUM

31. Explain the metabolite database KEGG.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

(Answer **any two** questions. **Each** question carries **15** marks)

32. Explain the structure of DNA with a diagram.

33. Give a detailed account of various protein structures.

34. Explain the visualization tools RasMol and PyMol.

35. Describe the applications of bioinformatics in computer aided drug design.

(2 × 15 = 30 Marks)

———————

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science

Elective Course

CS 1561.3 : TRENDS IN COMPUTING

(2014, 2016 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer Type)

One word to maximum of **one** sentence, Answer **all** questions.

1. What are data grids?
2. List any two applications of cloud.
3. What is SOA?
4. What is soft computing?
5. What is fuzzy logic?
6. Define cross over.
7. What is genetic algorithm?
8. What is roulette wheel selection?

P.T.O.

9. Define supervised learning.

10. What is ANN?

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

Not to exceed **one** paragraph, answer any **eight** questions. Each question carries **2** marks.

11. Explain the different cloud types.

12. Write the difference between web 2.0 and cloud.

13. Explain the features of neuron.

14. What is resource sharing? Explain in detail.

15. Compare and contrast one point cross over and two point cross over.

16. Write a note on understanding threats.

17. Explain about genetic algorithm cycle.

18. Write an overview of cloud computing.

19. What is disaster recovery? Explain in detail.

20. What are web services? Explain in detail.

21. Write a note on pathway to grid computing.

22. Discuss the scope of neural network in detail.

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not to exceed **120** words, answer any **six** questions. Each question carries **4** marks.

23. Write a note on cloud based data storage.
24. Explain the difference between brain and computer.
25. Write the application of fuzzy set.
26. Compare and contrast soft computing and hard computing.
27. Explain the characteristics of support vector machine.
28. Write a note on genetic algorithm operators.
29. Discuss different components of cloud computing in detail.
30. Write a note on mutation.
31. How will you find the problem areas?

($6 \times 4 = 24$ Marks)

SECTION – D (Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

32. Compare and contrast traditional algorithm and genetic algorithm.
33. Write a note on tournament selection.
34. Write the features of unsupervised Learning. Explain in detail.
35. Discuss service oriented architecture in detail.

($2 \times 15 = 30$ Marks)

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(Pages : 3) **M – 2035**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc./B.C.A. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) — Computer Science/Computer Application &
Group 2(a) Physics with Computer Applications

CS 1551.1/CP 1551.1/PC 1551.1 : INTERNET TECHNOLOGY

(2014, 2016 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very short answer type)

(One word to maximum of **one** sentence. Answer **all** questions)

1. What is the use of Marquee tag in HTML?
2. What is meant by router?
3. Which protocol is used to transfer files in internet?
4. Name any two commonly used search engines?
5. What is WAN?
6. What is a node?
7. What is the sound tag used in html?
8. Write any four text formatting tags in HTML.
9. Which are the two main sections of html program?
10. What is IP address?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

(Short Answer)

(Not to exceed **one** paragraph, answer **any eight** questions, each question carries **2** marks)

11. What are the different advantages of networking?
12. What is the disadvantage of a star topology?
13. Explain the IP addressing system.
14. What is the use of<hr> and
tags?
15. What are the different connectivity devices used in networking?
16. What are the various parts of an e-mail address? Explain with an example.
17. Differentiate FTP and HTTP.
18. Explain IPV6 version.
19. Compare <td> ,<tr>,<th> tags in html.
20. Differentiate webpage and website.
21. How to import an image into a webpage?
22. Explain briefly the structure and purpose of a URL.

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

(Not to exceed **120** words, answer **any six** questions, **each** question carries **4** marks)

23. Explain different topologies used in networks.
24. Differentiate IPV4 and IPV6.
25. Explain the basic structure of html program.
26. Explain FTP.

27. Explain the working of Internet.

28. How to add sound and videos in a webpage?

29. What are the main interconnecting issues on networks?

30. Compare LAN, MAN, WAN.

31. What are the features of network and application layers of TCP/IP?

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

(Answer **any two** questions. **Each** question carries **15** marks.

32. Briefly discuss the different methods of connecting to Internet.

33. Explain the main IP versions in detail.

34. Briefly discuss the TCP/IP model.

35. Give short notes on the following interface devices :

    (a) Bridge

    (b) Hub

    (c) Switch

    (d) Router

    (e) Gateway.

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc./B.C.A. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Group 2 (a)/2(b) : Computer Science/Computer Applications/Physics and Computer Applications

Open Course

CS 1551.2/CP 1551.2/PC 1551.2 : LINUX ENVIRONMENT

(2014, 2016 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(**1** word to maximum of **1** sentence. Answer **all** questions)

1. Expand KDE.
2. What is the use of mv command?
3. Write any one function of Operating System.
4. List any two directory commands in Linux.
5. How do you represent comments in Linux?
6. Write any two options available with wc command.
7. Core of Linux Operating System is ————————.

P.T.O.

8. The command to create a file in Linux is ————————.

9. Multiprogramming in a computer system increases
   (a) Memory
   (b) Cost of computation
   (c) CPU utilization
   (d) All of the above

10. Write a command that will display all .txt files, including its individual permission.

(10 × 1 = 10 Marks)

SECTION – B

(Not to exceed **1** paragraph, answer **any eight** questions. Each question carries **2** marks.

11. What is a Kernel? What are its functions?

12. Describe any two types of shells.

13. How will you add headers to a document?

14. Write a short note on autocorrect option.

15. Write the steps to add and delete slides in a presentation.

16. What is the necessity of an Operating System in a computer?

17. How will you find maximum of 10 numbers using spreadsheet?

18. What are the basic components of Linux?

19. Differentiate between who and whois commands.

20. What are the kinds of file permissions under Linux?

21. What is grep command?

22. How do you terminate an ongoing process?

(8 × 2 = 16 Marks)

SECTION – C

(Not to exceed **120** words, answer **any six** questions. Each question carries **4** marks.

23. Explain resource management in Operating Systems.

24. Describe bulleted and numbered lists.

25. Explain chgrp command in Linux. How is it useful for users?

26. Explain about any four system directories in Linux.

27. Explore the following commands with examples.

    (a) rm

    (b) tty

    (c) telnet.

28. How can we use floppy and cd rom in Linux?

29. Explain any six mathematical functions available in open office calc.

30. Write the steps to add graphics in a document.

31. Write a note on GNOME.

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

(Answer **any two** questions. Each question carries **15** marks.)

32. Explain the various types of Operating Systems.

33. Write a note on pipeline and redirection concepts with suitable examples.

34. Explain in detail various features in Linux.

35. How will you create a table in open office writer? Which are the various table formatting options available?

(2 × 15 = 30 Marks)

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(Pages : 4) **M – 2038**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science

Core Course

CS 1541 –– COMPUTER GRAPHICS

(2018 and 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer)

(**One** word to maximum of **one** sentence, Answer **all** questions)

1. What is pixel?
2. List any two output primitives.
3. Expand CRT.
4. List any four application areas of computer graphics.
5. What is video adapter?
6. What are world coordinates for object representation?
7. What is meant by composite transformation?
8. What is homogeneous coordinate representation?

P.T.O.

9. What are ‘In between frames’?

10. What is illumination model?

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

(Not to exceed **one** paragraph, answer any **eight** questions. Each question carries **2** marks)

11. What is multimedia?

12. Differentiate point clipping and line clipping.

13. What is meant by projection?

14. What is back face detection?

15. What is aspect ratio?

16. What is zooming?

17. What is boundary fill algorithm?

18. Write notes on window to viewport transformation.

19. What is key frame?

20. What is panning?

21. What is Z-buffer method used for?

22. What is meant by specular reflection?

23. What is translation?

24. What is animation?

25. What is the draw back of DDA line drawing algorithm?

26. Write short notes on shading.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

Not to exceed **120** words, Answer any **six** questions. **Each** question carries **4** marks.

27. Briefly explain the CRT display technology.

28. Write composite transformation matrix for scaling followed by translation with parameters Sx, Sy and Tx, Ty respectively.

29. Explain perspective projection.

30. Describe the effect of ambient illumination and diffuse reflection at a point on the polygon surface.

31. Differentiate random scan display and raster scan display.

32. Write the Sutherland Hodgeman polygon clipping algorithm

33. Explain Phong shading.

34. Compare RGB and CMYK colour models.

35. Describe the design of animation sequence.

36. Write the transformed coordinates of a polygon ABCD with vertices A(0,0), B(0,5), C(4,5) and D(3,2) after translation using the vector [2,2].

37. Explain the 3D scaling.

38. Explain any two 2 D basic transformations.

(6 × 4 = 24 Marks)

SECTION – D [Short Essay]

Answer any **two** questions. **Each** question carries **15** marks.

39. (a) Explain DDA line algorithm.

    (b) Evaluate it for a line with end points(5,2) and *(1,5)*

40. Describe the types of hidden surface removal algorithms. Explain any two hidden surface removal algorithms.

41. (a) Explain any two visible surface detection methods and its types.

    (b) Describe scan line method and Z buffer method.

42. Explain LCD and LED as display technologies.

43. (a) Explain in detail about the concepts in the illumination model.

    (b) Discuss in detail about 3D rotation about the principal axes.

44. Discuss in detail flat, Gouraud, Phong shading methods.

($2 \times 15 = 30$ Marks)

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Group 2(b) — Computer Science

Core Course

CS 1542 : SYSTEM SOFTWARE

(2018 and 2019 Admission)

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** questions :

1. Which characteristic differentiate System software and application software?
2. Why versions of SIC defined?
3. Define word.
4. What is multiprogramming?
5. What is the main function of EQU and ORG directives?
6. What is meant by expanding the macros?
7. Define loader.

P.T.O.

8. What is the use of reference number?

9. What is specified by a grammar?

10. Define scanner.

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions.

11. Give Some Applications Of Operating System.

12. What is SIC?

13. Define immediate addressing.

14. What is object program?

15. If extended format is not specified in an instruction, how the translations take place?

16. What is the use of assembler directive LTORG?

17. What is control section?

18. What is the assembler directives used for macro definition?

19. What are the major disadvantages of absolute loader?

20. What is bit masking?

21. What is load map?

22. How ‘bootstrap’ is defined?

23. What is lexical analysis?

24. What is the use of temporary variables during code generation?

25. How is the executable instructions are represented as quadruples?

26. What is a basic block?

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions.

27. Explain the relative addressing modes available in SIC/XE.

28. Write a sequence of instructions to compare two numbers for finding maximum.

29. Describe the functions followed to translate a source program to object code.

30. Discuss the need of program relocation.

31. Explain the structure of the symbol table.

32. Describe the data structures used in macro processor.

33. Discuss the execution of bootstrap loader.

34. Discuss the uses of an automatic library search process for handling external references.

35. Discuss the concepts of program linking.

36. Explain the BNF grammar.

37. Demonstrate the shift reduce parsing technique.

38. Show the working principle of recursive descent parser.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions.

39. Explain in detail about the instructions used in SIC/XE.

40. Explain the use of expressions and its types in assembler language statements.

41. Demonstrate the functions and design of an absolute loader.

42. Explain in detail about linkage editor.

43. Explain the concepts of dynamic linking.

44. Explain in detail about finite automata.

(2 × 15 = 30 Marks)

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Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021.

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Core Course

CS 1543 – PYTHON PROGRAMMING

(2018 & 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

[Very Short Answer Type]

[One word to maximum of one sentence. Answer **all** questions]

1. List the standard data types in Python.

2. What is the output of print str[6:12] if sir = 'Hello Python!'?

3. Give an example for a dictionary.

4. Name the function used for capitalizing the first character of a string.

5. What is the output of 5 in [1,2,5]?

6. Which is the built-in function for finding the smallest item from a list?

7. Name the built-in function available in Python to convert all the characters to lowercase.

8. Name two identity operators available in Python.

9. Give the keyword used for throwing a user define exception.

10. Name the widget that is used to display short text messages.

(10 × 1 = 10 Marks)

SECTION – B

[Short Answer]
[Not to exceed one paragraph, answer **any eight** questions. Each question carries **2** marks]

11. What are tuples in Python? Give example.

12. What is the purpose of ** operator? Give example.

13. What is the use of break statement in Python?

14. Explain the logical operators in Python.

15. Explain the concept of string slicing with example.

16. What is the purpose of the built-in method pop() in list?

17. How does a tuple differ from a list?

18. What are the properties of dictionary keys?

19. What does the method dict.items() return?

20. Write a Python script to swap the first and last character.

21. What is the use of dir() function?

22. What is an anonymous function?

23. What is the purpose of a module?

24. How will you rename a file in Python?

25. What is the purpose of file.readline() method in Python?

26. Mention the methods of Button widget and its purpose.

(8 × 2 = 16 Marks)

SECTION – C

[Short Essay]

[Not to exceed 120 words, answer **any six** questions. Each question carries **4** marks]

27. Explain range () function with syntax and example.

28. Explain while loop in Python with syntax and example.

29. Write a Python program to implement linear search using for... else loop.

30. Explain the built-in list methods append() and extend() with example.

31. Explain the concept of Set in Python.

32. Explain recursive function with an example.

33. Write a Python function for implementing insertion sort.

34. Explain how to create user defined exceptions in Python.

35. Explain namespaces and scope of variables in Python.

36. Explain the concept of packages in Python.

37. Which are the different modes of opening a text file? Explain.

38. Mention the steps in building a GUI application using Tkinter.

(6 × 4 = 24 Marks)

SECTION – D

[Long Essay]

[Answer **any two** questions. Each question carries **15** marks]

39. Explain the features of Python.

40. Explain different types of function arguments with example programs.

41. Write a program to copy a text file to another file.

42. Write a Python program to implement bubble sort.

43. Explain exception handling mechanism in Python.

44. Explain Entry widget and Text widget with example programs.

(2 × 15 = 30 Marks)

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(Pages : 4) **M – 2041**

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Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme under CBCSS

Group 2 (b) : Compute Science

Elective Course

CS 1561.1 : MULTIMEDIA SYSTEMS

(2018 & 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

(One word to maximum of two sentences. Answer **all** questions. Each question carries **1** mark)

1. Define a frame.
2. Expand the term CD-ROM.
3. What is the expansion of MIDI?
4. What is an image?
5. What do you mean by resolution of an image?
6. Define image processing.
7. What is SECAM?
8. What is computer video formats?

P.T.O.

9. Define speech processing.

10. Give any two audio file formats.

(10 × 1 = 10 Marks)

SECTION – B [Short Answer Type]

(Not to exceed one paragraph, answer any **eight** questions. Each question carries **2** marks)

11. Define multimedia.

12. List the characteristics of a multimedia systems.

13. What are the characteristics of DVDs?

14. Write a note on hypermedia.

15. What are sound cards?

16. What is image data compression?

17. What is MPEG?

18. Describe image data representation.

19. Define image recognition.

20. What are frame rates?

21. What do you understand by analog video artifacts?

22. Write short notes on digital videos.

23. What are the characteristics of MIDI software?

24. Write a note on audio formats.

25. What do you mean by speech transmission index.

26. Mention the characteristics of speech signal.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

(Not to exceed **120** words, answer any **six** questions. Each question carries **4** marks)

27. What is hypertext? Mention its advantages.

28. Explain MIDI in detail.

29. Explain the significance of CD-ROM drives.

30. Compare spatial resolution and temporal resolution of images.

31. Differentiate grey level images and colour images.

32. What is animation? What are the steps to create animation?

33. What are the differences between NTSC and PAL formats.

34. Briefly explain different video equipments.

35. How does computer represent sounds?

36. Explain MIDI messages in detail.

37. Describe different MPEG standards.

38. Explain the uses of a sound cards.

($6 \times 4 = 24$ Marks)

SECTION – D [Long Essay]

(Answer any **two** questions. **Each** question carries **15** marks)

39. Explain the following multimedia hardware components.

    (a) Video Camera
    (b) Microphone
    (c) Speakers

40. Describe the applications of multimedia in

    (a) Entertainment

    (b) Education

    (c) Health

41. Explain the following image processing techniques.

    (a) image synthesis

    (b) image analysis

    (c) image transmission

42. What are image file formats'? Explain JPEG file format in detail.

43. Explain digital video compression in detail.

44. Discuss speech generation and analysis techniques in detail.

($2 \times 15 = 30$ Marks)

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(Pages : 4) **M – 2042**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science

Elective Course CS 1561.2 – MOBILE COMPUTING

(2018 and 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Very Short answer type.

One word to maximum of one sentences, Answer **all** questions.

1. What is meant by network protocol?

2. What is the Key Mechanisms in Mobile IP?

3. Name any two popular MANET routing protocol.

4. What is meant by base station?

5. Define GSM.

6. What is meant by WLAN?

7. List any one difference between GPRS and GSM.

P.T.O.

8. What is UMTS?

9. What is IOS?

10. What is TDMA?

(10 × 1 = 10 Marks)

SECTION – B

(Short answer)

Not to exceed one paragraph, Answer **any eight** questions. Each question carries **2** marks.

11. What are the characteristics of mobile computing?

12. What is firewall?

13. List the issues of wireless MAC.

14. Differentiate between MANET and VANET.

15. What is HDML?

16. What are the constraints of mobile device OS?

17. What are the objectives of MAC protocols?

18. List the sub systems of GSM.

19. What are the major design issues of MANET?

20. Write any two features of IOS.

21. What is multicasting?

22. List any two limitations of mobile computing.

23. Define Mobile Computing.

24. What is meant by route optimization?

25. What is meant by Wireless Application Protocol?

26. What is the meaning of Ad-Hoc Network?

(8 × 2 = 16 Marks)

SECTION – C

(Short essay)

Not exceeding 120 words, answer **any six** questions. Each question carries **4** marks.

27. Discuss Reservation Based Schemes in MAC protocol.

28. Explain about UTMS network architecture.

29. What is DHCP? Explain.

30. Describe the architecture of TCP/IP.

31. Explain the agent Discovery process in Mobile IP.

32. Discuss the adaptation of TCP window.

33. Explain the procedure for Service Discovery using Mobile Agents in MANET.

34. What is reverse tunneling in mobile ip? Explain its purpose.

35. What is Palm OS? Explain.

36. Explain the concept of Fixed-Assignment Schedule.

37. Write a short note on Vehicular Ad-Hoc- Network.

38. Discuss the features of Android operating system.

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

Answer **any two** questions. Each question carries **15** marks.

39. Describe the architecture of VANET in a neat diagram.

40. Write detailed notes on mobile TCP and Transaction oriented TCP.

41. Explain traditional routing protocols.

42. Explain in detail the architecture, multiple access and addressing mechanisms in 802.11 wireless MAC standard.

43. Discuss the features of MANET Routing Protocols.

44. Explain advantages of wireless and mobile computing applications by explaining the contributions of this technology in Business and Education sector.

($2 \times 15 = 30$ Marks)

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(Pages : 4) **M – 2043**

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Name : .....

Fifth Semester B.Sc. Degree Examination, December 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) — Computer Science

Elective Course

CS 1561.3 — TRENDS IN COMPUTING

(2018 & 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer Type)

(One word to maximum of **two** sentences. Answer **all** questions. **Each** question carries **1** marks).

1. Define a private cloud.
2. What is SaaS in cloud computing?
3. What is cloud computing?
4. Expand the term SOA.
5. What is a data grid?
6. List any two advantages of distributed computing.
7. Write any one disadvantage of edge computing.

8. What are neurons in neural network?

9. What is the use of activation function in artificial neural networks?

10. What is fuzzy set?

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer Type)

(Not to exceed **one** paragraph, answer **any eight** questions. **Each** question carries **2** marks).

11. What is cloud storage?

12. What is mean by web service?

13. Discuss the characteristics of SOA.

14. How does cloud storage work?

15. What do you understood by distributed computing?

16. List the advantages of grid computing.

17. What are the different types of web services?

18. What is grid computing?

19. What is middleware?

20. What is edge computing?

21. What is a membership function in fuzzy set?

22. List the features of biological neural networks.

23. How will you represent a fuzzy set?

24. Why did you use membership functions in fuzzy sets?

25. What is α-cut set of a fuzzy set?

26. What do you meant by core of a membership function?

($8 \times 2 = 16$ Marks)

SECTION – C

(Short Essay)

(Not to exceed **120** words, answer **any six** questions. **Each** question carries **4** marks).

27. What are the differences between infrastructure as a service and platform as a service?

28. Mention the components of SOA with a block diagram.

29. What are the different types of clouds in cloud computing?

30. Differentiate grid computing and cloud computing.

31. What are the advantages of edge computing?

32. What is mobile edge computing?

33. Compare edge computing and cloud computing.

34. How can you say that mobile edge computing is an important ingredient of 5G networks?

35. What are the advantages of soft computing over hard computing?

36. Compare the performances of computers and biological neural networks.

37. Differentiate supervised training and unsupervised training in neural networks.

38. What are the differences between ordinary sets and fuzzy sets?

($6 \times 4 = 24$ Marks)

SECTION – D

(Answer **any two** questions. **Each** question carries **15** marks).

39. What are the advantages and disadvantages of cloud-based data storage?

40. What are the components of cloud computing? Explain in detail.

41. What are the applications of edge computing? Explain each in detail.

42. With the help of block diagram explain the grid layered architecture.

43. Explain artificial neural networks in detail. Also explain the application areas where they used.

44. What do you understand by training a neural network? Explain.

(2 × 15 = 30 Marks)

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(Pages : 3) **P – 3071**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme Under CBCSS

Group2(b) – Computer Science

Core Course

CS 1541 : HUMANITIES II

(2013 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all ten** questions. **Each** question carries **1** mark. Answer in one word to maximum 2 sentences each.

1. Who propounded the coherence theory of truth?

2. What is Dharma?

3. Define Ashtangayoga?

4. What is the number of Purusas in Sankhya philosophy?

5. Define Charvaka.

6. Who propounded the Vishishtadvaita philosophy?

7. What is the Socratic Method?

8. What is the third Aryasatya of Buddhist philosophy?

P.T.O.

9. Name the types of conditioned learning conceptualized by Ivan Pavlov.

10. Explain the meaning of Tatvamasi.

(10 × 1 = 10 Marks)

SECTION – B

Answer **eight** questions. **Each** question carries **2** marks (not to exceed one paragraph each).

11. Write on Visita Advaitha of Ramanuja.

12. Examine the underlying principles of Idealism.

13. Explain Mimamsa system of philosophy.

14. Define Plato's theory of knowledge.

15. Analyze the various parameters used in the measurement of personality.

16. What is the role of empiricism in philosophy?

17. Differentiate between Jagath and Jeeva.

18. Comment on the Theory of causation propounded by Aristotle.

19. Examine the nature of Atman in Bhagavad Gita.

20. Write on the major characteristics of field theory.

21. Discuss materialism as a concept in philosophy.

22. Substantiate on the divisions of orthodox schools.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. **Each** question carries **4** marks (not to exceed 120 words)

23. Elucidate on the concept of Karma.

24. Critically examine the basic doctrines of Jain philosophy.

25. How does Kant anticipate existentialism?

26. Examine the cognitive theory propounded by Bruner and Piaget.

27. Analyze the noble truths of Buddhism.

28. Comment on the Dvithas of Madhava.

29. Highlight rationalism as philosophical discourse.

30. Compare and contrast between gestalt and behaviorist theory.

31. Define the five propositions of Nyaya Philosophy.

(6 × 4 = 24 Marks)

SECTION – D

Answer **two** questions. **Each** question carries **15** marks.

32. Analyze the various periods of western philosophy.

33. Explain the various theories of teaming.

34. Critically examine the teachings of Vedas and Upanishads.

35. Examine the scope and nature of philosophy as an academic discipline.

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2 (b) – Computer Science

Elective Course

CS 1561.1 – ARTIFICIAL INTELLIGENCE

(2013 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer Type)

In **one** word to maximum of **one** sentences. Answer **all** questions.

1. Define artificial intelligence.

2. What is branching factor?

3. Name the algorithm used in Al for game playing.

4. Mention the main condition which is required for alpha-beta pruning.

5. Name two types of quantifier in predicate logic.

6. Give two examples for expert system.

7. Name the theorem that allows a certain kind of reduction of first-order logic to propositional logic**.**

P.T.O.

8. Define speech recognition.

9. Mention four steps in computer vision.

10. What is ambiguity in NLP?

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

Not exceeding **one** paragraph, answer any **eight** questions. **Each** question carries **2** marks.

11. List the branches of artificial intelligence.

12. What is combinatorial explosion?

13. What is the need for heuristics in artificial intelligence?

14. What is random search?

15. What is AO* algorithm?

16. State the cannibals and missionaries on the boat problem.

17. Explain the concept of frames in Al.

18. What is the use of conceptual dependency?

19. What is a script?

20. List four types of reasoning in AI.

21. What are the five steps in NLP process?

22. What is a software agent?

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not exceeding **120** words, answer any **six** questions. **Each** question carries **4** marks.

23. Mention the features required for a machine to pass the Turing test.
24. Differentiate forward and backward reasoning.
25. Explain the concept of Depth First Search.
26. Write the algorithm for Best First Search.
27. Mention the advantages and disadvantages of A* search algorithm.
28. Explain semantic nets in Al.
29. Write short notes on speech coding.
30. Explain the purpose of pragmatic analysis in NLP.
31. Write short notes on compute vision.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

32. Explain Breadth First Search algorithm with an example.
33. Explain Hill Climbing search algorithm.
34. Write down the truth tables for all logical connectives in propositional logic.
35. Explain knowledge base and inference engine of an expert system.

(2 × 15 = 30 Marks)

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Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme Under CBCSS

Group 2 (a) – Computer Science

Elective Course

CS 1561.3 – ALGORITHM ANALYSIS AND DESIGN

(2013 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer Type)

In One word to Maximum of one sentence, Answer **all** questions.

1. An algorithm that uses random numbers to decide what to do next anywhere in its logic is called _____

2. _____ checking is an algorithm for determining whether a given positive integer is a prime number or not

3. The _____ problem in algorithm analysis finding the maximum and minimum value in an array

4. The time complexity of the binary search algorithm is _____

5. The shortest path between 2 vertices cam be found using _____ algorithm.

6. Kruskal's algorithm is used to find _____

P.T.O.

7. FFT stands for _____

8. _____ is the branch of arithmetic related with the “mod” functionality.

9. The smallest number of colors needed to color a graph G is called its _____ number.

10. In _____ branch and bound, the child nodes are explored in First in First out manner.

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

Not exceeding one paragraph, answer any **eight** questions. each question carries **2** marks.

11. Mention and 4 problems that can be solved using divide and conquer strategy.

12. What are the requirements for Strassen’s matrix multiplication algorithm?

13. What is a minimum spanning tree?

14. Mention the steps in dynamic programming.

15. What is multistage graph problem?

16. Explain sum of subset problem.

17. Explain the concept of backtracking.

18. What is branch and bound algorithm? What are the issues with it?

19. What is 0/1 knapsack problem? Give an example.

20. What is interpolation?

21. Gist the names of any 4 sorting algorithms.

22. What is NP complete problem?

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not exceeding **120** words, answer any **six** questions. each questions carries **4** marks.

23. Mention the characteristics of a good algorithm.

24. Explain the concept of Divide and Conquer strategy.

25. Write down the algorithm for Max-Min problem.

26. Mention the components of a greedy algorithm.

27. Explain the concept of Knapsack problem.

28. Explain graph colouring problem.

29. Explain the concept of single source shortest path.

30. Explain Hamiltonian cycle with an example.

31. Explain 15 puzzle problem.

(6 × 4 = 24 Marks)

SECTION – D (Long essay)

Answer any **two** questions. each question carries **15** marks.

32. Explain the concept of binar search algorithm with an example

33. Explain the travelling salesman's problem with its solution.

34. Explain Prim's algorithm to find the mmimum cost spanning tree with an example.

35. Explain 8-Queen's problem and its solution using backtracking.

(2 × 15 = 30 Marks)

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Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science

Open Course

CS 1551.8 : INTERNET TECHNOLOGIES

(2013 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

One word to maximum of one sentence, Answer **all** questions.

1. Define Multipoint connection.
2. Define network reliability.
3. Define Mesh topology.
4. Define bus backbone.
5. Give some examples for connecting devices.
6. Define transparent bridges.
7. Define User Datagram Protocol.
8. Name the timer used by TCP.

P.T.O.

9. Define proxy server.

10. Name the common components of the browser.

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

Not exceeding on paragraph, answer **any eight** questions. Each question carries **2** marks.

11. Define networks and its goals.

12. Define Metropolitan Area Network give an example.

13. Define Syntax and Semantics.

14. Short notes on MAC address.

15. Define space division switch.

16. How does next-hop routing decrease the number of table entries in a router?

17. Define Connection oriented services.

18. Define Sliding window protocol.

19. Draw the control filed format for TCP.

20. Draw the MIME header format.

21. Define host and path.

22. List down the text formatting tags in HTML.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

Not exceeding **120** words answer **any six** questions. Each question carries **4** marks.

23. Draw the diagram for Internet protocol datagram format.

24. A router receives a packet with destination address 190.240.7.91. Show how it finds the network address to route the packet.

25. Identify the few application of user datagram protocol.

26. Short notes on IPv6 Packet format.

27. Write down some examples of HTML text fields and structure of table format.

28. Short notes on TCP segmentation format.

29. Explain the detail about the services provided by the User Agent in electronics mail system.

30. Explain the common gateway interface with a simple example.

31. Summarize the different types of data types and sub types in MIME.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

Answer **any two** questions. **Each** question carries **15** marks.

32. Explain in detail about the Internet concepts.

33. Explain in detail about Dynamic host configuration protocol.

34. Briefly in detail about the components of the Hypertext transfer protocol.

35. Briefly explain the fundamental HTML elements with example.

(2 × 15 = 30 Marks)

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Fifth Semester B.Sc/BCA Degree Examination, December 2022

Career Related First Degree Programme Under CBCSS

Computer Science/Computer Applications

Core Course

CS1541/CP1541 – FREE AND OPEN SOURCE SOFTWARES

(2014-2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions.

1. What is open source software?
2. In which year Linux evolved?
3. Does the terminal contain Shell in Linux?
4. Are variables fundamental to programming?
5. In general, what is the scope of a variable?
6. What should be changed when we want to use GET method?
7. Which file should be changed that will enable us to use the Mail() function in PHP.
8. What is the format for DATE data type in MySQL?
9. Write the table creation syntax.
10. What is the use of mysqli_close() function?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer **any eight** questions.

11. How will you define open source Vs. proprietary software?
12. Write a simple note on the evolution of Linux.
13. Discuss about the security feature of Linux.
14. With examples show the declaration of variables in PHP.
15. Define the purpose of $_SERVER.
16. Show the difference between settype() and casting.
17. Name the basic use of header() function in PHP.
18. What is the use of Location header?
19. Provide the use of cookies.
20. Define BLOB data type in MySQL.
21. If the MySQL connection is successful from PHP, what will we see as output?
22. Discuss the use of mysqli_query function.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions.

23. Does open source mean free of charge.
24. Write a note on open source licenses.
25. Using a tabular column, show the standard data types in PHP.
26. Explain about the combined assignment operators in PHP.

27. Write a HTML program to create a simple HTML form.

28. Before you can use the mail() function to send mail, name the directives that should be set up.

29. How do you delete a cookie?

30. Discuss about the SELECT statement with its basic syntax and an example.

31. Write a script to insert a record.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions.

32. List out the benefits of using open source software.

33. Bring out a detailed study on the “if” statement in PHP.

34. Elaborate on the steps involved in destroying sessions and unsetting variables.

35. Elucidate the data types used in MySQL in detail.

(2 × 15 = 30 Marks)

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Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2 (b) : Computer Science

Core Course

CS 1542 : SYSTEM SOFTWARE

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

Answer **all** questions in **one** word to maximum of **one** sentence.

1. What is the use of debugger?
2. How many bits are used for storing an integer numbers in SIC?
3. What is the use of condition code bit?
4. What is the purpose of using BYTE assembler directive?
5. What is the uniqueness of the assembler directives?
6. Which file is used as input to Pass 2?
7. What is the basic function of a loader?
8. What is the use of relocation bits?

9. What is the role of presentation manager in user interface?

10. What is interactive debugging system?

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

Answer any **eight** questions not exceeding **one** paragraph. **Each** question carries **2** marks.

11. What is the objective of system software?

12. What does meant for SIC?

13. Differentiate SIC and SIC/XE.

14. What is the use of symbol table?

15. How to displacement value is calculated in program counter relative addressing?

16. Which types of program is called relocatable program?

17. What are the functions of a linker?

18. What is the goal of program linking?

19. Give some examples of loader options that modify the standard processing.

20. Which operation is called expanding the macro?

21. Differentiate macro invocation and subroutine call.

22. What are the 4 stages of debugging?

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

Answer any **six** questions not exceeding **120** words. **Each** question carries **4** marks.

23. What are the types of registers used in SIC architecture? Discuss it.

24. What are the three types of input and output instructions in SIC?

25. Describe the assembler functions for the translation of source program to object code.

26. Discuss about the symbol defined statement.

27. Discuss the two types of one-pass assembler.

28. Write the algorithm for the absolute loader.

29. Describe the major difference between linker and loader.

30. What is macro definition? Discuss in detail.

31. Discuss the various criteria's considered for user interface design.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

Answer any **two** questions. **Each** question carries **15** marks.

32. Discuss the components of SIC/XE.

33. Explain the use of program block and how they are handled by the assembler.

34. Explain the various features and functions of machine dependent loader.

35. Explain the different form of editors and explain the editor structure with illustration.

(2 × 15 = 30 Marks)

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Fifth Semester B.Sc./B.C.A. Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2 (b) : Computer Science / Computer Applications

Core Course

CS 1543/CP 1542 : COMPUTER GRAPHICS

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very short answer type]

In **one** word to maximum **one** sentence, Answer **all** questions.

1. The sharpness of the image on a display depends on the _____ and the size of the monitor.

2. Define frame buffer.

3. Expand DDA.

4. What is reflection?

5. Define scaling.

6. In 3D computer graphics, _____ is the process of developing a mathematical representation of any surface of an object in three dimensions via specialized software.

7. Define projection in 3D.

P.T.O.

8. Define scan line.

9. HSI stands for _____.

10. What is colour intensity?

(10 × 1 = 10 Marks)

SECTION – B [Short answer]

Not exceeding **one** paragraph, Answer any **eight** questions. **Each** question carries **2** marks.

11. What do you mean by aspect ratio?

12. What is video adapter?

13. Write in brief about anti-aliasing.

14. Explain about point plotting.

15. What is windowing?

16. Define and explain polygon clipping.

17. Explain about 3D transformation.

18. Write note on visible surface detection.

19. What do you mean by Depth Cueing?

20. Discuss RGB color model.

21. Write about animation.

22. Differentiate zooming and panning.

(8 × 2 = 16 Marks)

SECTION – C [Short essay]

Not exceeding **120** words, Answer any **six** questions. **Each** question carries **4** marks.

23. What do you mean by Random scan display? Explain.

24. Write in detail about CRT.

25. Explain about polygon filling.

26. Write note on fixed point scaling.

27. Explain about Line clipping.

28. Describe perspective projection.

29. Differentiate object in 2D and 3D.

30. Explain shadow.

31. Discuss the concept of tweening.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

Answer any **two** questions. **Each** question carries **15** marks.

32. Discuss Mid Point circle algorithm in detail.

33. Explain Sutherland-hodgeman polygon clipping algorithm.

34. Describe Hidden Surface Removal algorithm in detail.

35. Write a detailed note on various illumination models.

(2 × 15 = 30 Marks)

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Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2 (b) : Computer Science

Elective Course

CS 1561.1 : MULTIMEDIA SYSTEMS

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

In **one** word to maximum of **one** sentence, Answer **all** questions.

1. What is Hypermedia?
2. Expand MIDI.
3. Define an Image.
4. What is filtering?
5. What is SECAM?
6. What are frame rates?
7. Define animation.
8. What are video artifacts?

P.T.O.

9. What is the use of sound cards?

10. List out any two color image file formats.

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

Not exceeding **one** paragraph, Answer any **eight** questions. **Each** question carries **2** marks.

11. What is the use of CD-ROM?

12. Write the difference between microphone and speaker.

13. What is speech processing?

14. What is quantization?

15. Write a note on synthetic sounds.

16. What is contrast enhancement?

17. Write a note on sync.

18. Discuss different video equipment.

19. What is the use of low pass filter?

20. What is video compression?

21. Discuss spatial resolution of images.

22. Write a note on NTSC.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

Not exceeding **120** words, Answer any **six** questions. **Each** question carries **4** marks.

23. What is grey level image? Explain different grey level image file formats.

24. Write the relevance of negatives in image processing.

25. What is hypertext? Write its significance in multimedia.

26. Write the concepts of multimedia.

27. What is image processing? Discuss different image processing techniques.

28. What is DVD? Explain its usage.

29. Write a note on OGG.

30. What is a noise? How will you reduce noise from data?

31. What is high-pass filter? Explain its significance in image processing.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

Answer any **two** questions. **Each** question carries **15** marks.

32. What is edge detection of an image? Write its significance in image processing.

33. Discuss different color video formats in detail.

34. Write a note on audio compression.

35. What is multimedia? Discuss the applications of multimedia in different perspectives.

(2 × 15 = 30 Marks)

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Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2 (b) : Computer Science

Elective Course

CS 1561.3 : TRENDS IN COMPUTING

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

In **one** word to maximum of **one** sentence, answer **all** questions.

1. Define Web 2.0.
2. List any two cloud types.
3. What is resource sharing?
4. What are threats?
5. Expand SOA.
6. Define cloud.
7. What are neurons?

P.T.O.

8. What is mutation?

9. Define supervised learning.

10. What is soft computing?

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

Not exceeding **one** paragraph, answer any **eight** questions. **Each** question carries **2** marks.

11. Write a note on distributed computing.

12. Write the uses of cloud.

13. Discuss basic concepts of grid computing.

14. Write a note on disaster recovery.

15. Explain about web services.

16. How will you understand threats?

17. Give an introduction to neural networks.

18. What are membership functions?

19. Discuss various genetic algorithm operators.

20. Write the usage of Roulette wheel selection.

21. What is uniform crossover?

22. Write a note on mobile cloud computing.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

Not exceeding **120** words, answer any **six** questions. **Each** question carries **4** marks.

23. Write a note on grid layered architecture.

24. Explain about data storage in the cloud.

25. Write a note on data grids.

26. Discuss identify as a service in detail.

27. Write the drawbacks of cloud-based data storage.

28. Write a note on unsupervised learning with suitable examples.

29. What is crossover? Explain different types of crossover in detail.

30. What is tournament selection? Explain its significance.

31. Write different applications of soft computing in detail.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

Answer any **two** questions. **Each** question carries **15** marks.

32. Write a note on different application areas of grid computing.

33. What is service oriented architecture? Explain its significance in detail.

34. Compare and contrast ordinary set and fuzzy set with suitable examples.

35. Differentiate traditional algorithm and genetic algorithm in detail.

(2 × 15 = 30 Marks)

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Fifth Semester B.Sc./B.C.A. Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2 (b) / Group 2 (a) : Computer Science / Computer Applications / Physics and Computer Applications

Open Course

CS 1551.1/CP 1551.1/PC 1551.1 : INTERNET TECHNOLOGY

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

Answer **all** questions in **one** word to maximum of **one** sentence. **Each** question carries **1** mark.

1. Define wide area networks.

2. What is Internet browsing?

3. List any two goals of network.

4. Expand HTML.

5. List any two uses of networking device.

6. What are public networks?

7. What you mean by star topology?

P.T.O.

8. In which topology hub is used as connecting device?

9. Write the fundamental difference between a switch and a router.

10. What is the purpose of router?

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

Answer any **eight** questions not exceeding **one** paragraph. **Each** question carries **2** marks.

11. Shortly describe about three types of networks.

12. Draw the diagrams of any twp topologies.

13. What are the disadvantages of bus topology?

14. Compare TCP and UDP.

15. Which topology used commonly in college lab? Why?

16. What are protocols in computer network?

17. Explain about FTP.

18. List any six connecting devices.

19. What are Miscellaneous tags?

20. What are frame tags?

21. Write about table tags with example.

22. Explain advantages of Ring topology than star topology.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

Answer any **six** questions not exceeding **120** words. **Each** question carries **4** marks.

23. What is the importance of computer network?

24. Differentiate IP addresses.

25. Short note on internet.

26. Explain tags.

27. Describe about the disadvantages of HTML.

28. Write Graphics and Video Tags.

29. Explain about Interconnecting issues.

30. Explain about web searching.

31. Explain IPv4 header format.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

Answer any **two** questions. **Each** question carries **15** marks.

32. Explain about various components of Internet.

33. Create a web page using HTML.

34. Explain TCP/IP protocol suite.

35. Brief out the history and services of Internet.

(2 × 15 = 30 Marks)

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(Pages : 3) **P – 3092**

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Fifth Semester B.Sc./B.C.A. Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2 (b) / Group 2 (a) : Computer Science / Computer Applications / Physics and Computer Applications

Open Course

CS 1551.2/CP 1551.2/PC 1551.2 : LINUX ENVIRONMENT

(2014 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

Answer **all** questions in **one** word to maximum of **one** sentence.

1. What is a Shell?
2. Why is resource management important in operating system?
3. Who created Linux?
4. What is use of ‘who’ command in Linux?
5. What is ‘ps’ command for?
6. What is the ‘chgrp’ command?
7. Why do you use thesaurus?
8. How do you turn off spell check in OpenOffice?

P.T.O.

9. Write a short note on Cell range.

10. Which is the shortcut key to view the slide show?

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

Answer any **eight** questions not exceeding **one** paragraph. **Each** question carries **2** marks.

11. What do you understand by kernel of an operating system?

12. Describe the necessity of operating system.

13. Write a short note on real-time operating system.

14. Briefly explain various flavours of Linux.

15. Describe 'chmod' command in Linux with example.

16. How do you access CD ROM on Linux terminal?

17. What are the features of the Linux?

18. How do you insert page number in OpenOffice?

19. What is OpenOffice Writer used for?

20. What is basic difference between OpenOffice.org and MS Office?

21. Write a short note on OpenOffice Calc.

22. Write a short note on Workbook.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

Answer any **six** questions not exceeding **120** words. **Each** question carries **4** marks.

23. What is batch operating system? Explain.

24. Specify the advantages and disadvantages of time-sharing operating systems.

25. Describe various file access mechanisms in operating system.

26. What is GNOME? Explain.

27. Discuss the types of files in the Linux system.

28. Compare ‘cat’ command with ‘cmp’ command.

29. How can you set a header and footer in OpenOffice? Explain.

30. Briefly explain the formatting of the table layout.

31. Write a note on lookup functions in OpenOffice Calc.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

Answer any **two** questions. **Each** question carries **15** marks.

32. What is the basic structure of an operating system? Explain.

33. What are redirection and pipes in Linux? Explain.

34. How can you edit and write documents in OpenOffice? Explain.

35. How can you insert, copy and delete slides in OpenOffice Impress? Explain.

(2 × 15 = 30 Marks)

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Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme Under CBCSS

Group 2(b) – COMPUTER SCIENCE

Core Course

CS 1541 – COMPUTER GRAPHICS

(2018 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer type]

One word to maximum of one sentence, Answer **all** questions.

1. Expand PHIGS.
2. What is horizontal retrace?
3. What is aspect ratio?
4. Define pixmap.
5. What is VGA?
6. What is scan conversion?
7. Name any four input devices.
8. What is Transformation?

P.T.O.

9. What is window port?

10. Define a frame buffer.

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

Not exceeding one paragraph answer **any eight** questions. Each question carries **two** marks.

11. What do you mean by a Color Lookup Table?

12. What is translation?

13. What do you mean by 3D modelling in computer graphics?

14. What is a 24-Bit color image?

15. Distinguish between uniform scaling and differential scaling.

16. What is meant by point clipping?

17. What are the different ways of specifying spline curve?

18. What you mean by parallel projection?

19. What is tweening?

20. How surface rendering realism can be attained?

21. What do you mean by zooming an image?

22. What are output primitives?

23. What are the steps involved to perform scaling in 2D?

24. What do you mean by composite transformation?

25. Write down the matrix for homogeneous co-ordinate rotation (clockwise) and (anticlockwise)

26. Explain the working of LED displays.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

Not exceeding **120** words, answer **any six** questions. Each question carries **four** marks.

27. Explain the line attributes.

28. Explain pivot point rotation with an example.

29. Briefly explain warping in computer graphics.

30. Write short notes on plasma panels.

31. Briefly explain z-buffer algorithm.

32. Write short notes on animations.

33. Explain shearing with an example.

34. Explain principles of illumination.

35. Explain DDA line drawing algorithm.

36. Explain random scan displays with its advantages and disadvantages.

37. Explain the concept of scan Converting a straight line.

38. Explain the flood fill algorithm for polygon filling.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

Answer **any two** questions. **Each** question carries **15** marks.

39. Explain the working of CRT with a diagram.

40. Explain the 3D transformation in detail.

41. Explain in detail RGB, HSV and CYMK color models.

42. Briefly explain Cohen Sutherland line clipping algorithm with example.

43. Explain the various shading methods.

44. Explain in detail the Bresenham's circle drawing algorithm.

($2 \times 15 = 30$ Marks)

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(Pages : 4) **P – 3095**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science

Core Course

CS 1542 : SYSTEM SOFTWARE

(2018 Admission onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer Type)

(In one word to maximum of one sentence. Answer **all** questions

1. Define System software.
2. What is the significance of OPTAB?
3. Define an instruction set.
4. What is the function of bootstrap loader?
5. What is the role of a linker?
6. Define Macro.
7. What is SIC?
8. Which machines have a relatively large and complicated instruction set?

P.T.O.

9. What do you mean by relocation loader?

10. What is meant by assembler directives?

(10 × 1 = 10 Marks)

SECTION – B (Short answer)

Not exceeding one paragraph, answer any **eight** questions. Each questions carries **2** marks.

11. What is the purpose of absolute loader?

12. What is meant by expression?

13. What are the different addressing modes?

14. What is the difference between a macro and a subroutine?

15. What are the various data structures used by an assembler?

16. Differentiate loaders and linkers.

17. Define a macro processor.

18. What is meant by lexical analysis?

19. Define a Grammar.

20. What is intermediate form in the context of a compiler?

21. List the various machine independent assembler features.

22. What are the basic functions of a loader?

23. Define literals

24. Define interactive debugging system

25. What are the symbols defining statements used in assembler?

26. What is LOCCTR?

(8 × 2 = 16 Marks)

SECTION – C (Short essay)

Not exceeding in 120 words, answer any **six** questions. **Each** question carries **4** marks.

27. Explain automatic library search feature of a loader.

28. Discuss the design options of a multi pass assembler.

29. Explain parsing.

30. What are the different types of assembly language statements?

31. What is meant by dynamic linking? What are the advantages?

32. Write a note on machine independent code optimization.

33. Write a note on the SIC architecture.

34. What is meant by relocation? Explain.

35. Explain the machine independent macro processor Features.

36. Explain the recursive macro expansion with an example

37. What do you mean by passes of a compiler?

38. Differentiate between linking loaders and linkage editors.

($6 \times 4 = 24$ Marks)

SECTION – D (Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

39. Discuss the functions of a compiler.

40. Discuss in detail algorithm and data structures for linking loader.

41. Explain Pass I and Pass II assemblers.

42. Explain various addressing modes with example.

43. Explain the important loader design options.

44. What is SIC? Explain the following based on SIC

    (a) Data format

    (b) Instruction set

    (c) Input and Output

($2 \times 15 = 30$ Marks)

———————

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme Under CBCSS

Group2(b) – Computer Science

Core Course

CS 1543 – PYTHON PROGRAMMING

(2018 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer)

(One word to maximum **one** sentence. answer **all** questions)

1. Python is interpreted programming language. State whether True/False.

2. A ———————— is an unordered collection data type that is iterable, mutable and has no duplicate elements.

3. A ———————— object is an object whose state can be modified after it is defined.

4. The pass statement is used as ————————

5. What is the use of find() function?

6. ———————— functions returns True if all characters in the string are digits

7. The ———————— files are required to make Python treat directories containing the file as packages.

P.T.O.

8. A try statement may have _____ except clause.

9. ———————— is a widget that is used to implement display boxes where you can place text or images.

10. ———————— acts like a container which can be used to hold the other widgets.

(10 × 1 = 10 Marks)

SECTION – B (Short Answer Type)

(Not to exceed **one** paragraph. Answer any **eight** questions. Each question carries **2** marks)

11. Define identifiers.

12. What is the use of readline() function?

13. What do you mean by a tuple?

14. Write a note on Dictionary.

15. Elaborate on the syntax of if-else statement.

16. What is the use of range() function?

17. Explain about recursion.

18. Write a short note on global scope of variable.

19. Write and explain the syntax of 'import' statement.

20. Explain the role of namespace in locating module.

21. What is the use of reload function?

22. How can we raise an exception?

23. Explain the role of Thinter module in GUI programming.

24. What is the duty of tkMessage Box?

25. Write a note on top level widgets in Tkinter.

26. Write the code to add radio button to widget.

(8 × 2 = 16 Marks)

SECTION – C (Short Essay Type)

(Not to exceed **120** words. Answer any **six** questions. Each question carries **4** marks)

27. Explain the features of Python in detail.

28. Differentiate between mutable and immutable objects.

29. Discuss in detail about data type conversion.

30. Explain nested-if statement with an example.

31. Write in detail about functions.

32. Write a note on string module.

33. How can we create a module? Explain.

34. What are packages? Explain.

35. Write in detail about exception.

36. Explain in detail about Message Widget.

37. Write a program to illustrate the use of List Box.

38. Write in detail about Menu Widget.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay Type)

(Answer any **two** questions. Each question carries **15** marks)

39. Illustrate Bubble sort program using Python.

40. List and Discuss operators in detail.

41. Explain for loop with the support of a proper example.

42. Discuss string slicing in detail.

43. Write a program to access a file for read and write operation.

44. Elaborate on TextWidget using a suitable on example.

($2 \times 15 = 30$ Marks)

———————

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Elective Course

CS 1561.1 : MULTIMEDIA SYSTEMS

(2018 Admission Onwards)

Time : 3 Hours Max. Marks : 80

Section – A (Very Short Answer type)

(One word to maximum of two sentence, Answer **all** questions.
Each Question carries **1** marks)

1. Define Digitization
2. Expound MIDI
3. What is hypertext?
4. Define resolution
5. What is filtering?
6. What is frame?
7. What is an image?
8. What is SECAM?
9. What is PAL?
10. List any two multimedia hardware.

(10 × 1 = 10 Marks)

P.T.O.

Section – B (Short Answer)

(Not to exceed one paragraph, Answer any e**ight** questions.
Each Question carries **2** marks)

11. Define Animation.

12. What is image processing?

13. What is multimedia?

14. What is mixed mod disk?

15. What is synthetic sound?

16. What is edge detection?

17. What do you mean by frame rate?

18. What is meant by image compression?

19. Define quantization.

20. What is digitization of sound?

21. What is analog video?

22. Name two image file formats.

23. Mention the use of Sound card?

24. What is Compression Efficiency?

25. Define Virtual reality.

26. What is hypermedia?

(8 × 2 = 16 Marks)

Section – C (Short Essay)

(Not to exceed 120 words, Answer any **six** questions.
Each Question carries **4** marks)

27. List out various Video File Formats.
28. What are the three major audio formats? Explain.
29. What is MP3 and OGG?
30. What is spatial resolution of image?
31. Explain audio filtering.
32. Write short notes on video compression.
33. Briefly explain the different image file formats.
34. Explain NTSC, PAL and SECAM.
35. Explain digital image transmission.
36. What is Image Animation? Explain.
37. Explain Gray scale Normalization.
38. What is meant by temporal resolution?

($6 \times 4 = 24$ Marks)

Section – D (Long Essay)

(Answer any **two** questions. Each Question carries **15** marks)

39. Explain Applications of multimedia in entertainment, education, health.
40. Explain different image processing techniques.
41. Describe various hardware used in multimedia applications. Explain.
42. Explain in detail about colour video formats.
43. What is MIDI ? Explain with examples.
44. With suitable diagram explain video file format and editing concepts in brief.

($2 \times 15 = 30$ Marks)

———————

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Elective Course

CS 1561.2 : MOBILE COMPUTING

(2018 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

One word to maximum of two sentences, Answer **all** questions. Each question carries **1** mark.

1. What is mobile computing?

2. What are MAC protocols?

3. Expand the term GSM.

4. What is mobile IP?

5. What is GPRS?

6. Expand the term UMTS.

7. What is Palm OS?

8. Write any one limitation of mobile ad-hoc networks.

P.T.O.

9. What is HDML?

10. What is the use of routing protocols?

(10 × 1 = 10 Marks)

SECTION – B [Short answer type]

Not to exceeding **one** paragraph, answer any **8** questions. Each question carries **2** mark.

11. List the mobile computing applications.

12. What are the characteristics of mobile computing?

13. Discuss the wireless MAC issues.

14. Explain the structure of mobile computing applications.

15. Mention the GSM security issues.

16. What are the features of mobile IP?

17. Write a note on mobile IPv4 route optimization.

18. What are the GPRS services?

19. Describe the importance of operating systems in mobile computing.

20. What is Windows Phone OS?

21. Write a short note on iOS.

22. What are the characteristics mobile ad-hoc networks?

23. What do you mean by WAP?

24. What is TDMA?

25. What are the advantages of VANET?

26. Describe the advantages of GSM.

(8 × 2 = 16 Marks)

SECTION – C [Short essay]

Short essay. Not to exceeding **120** words, answer any **6** questions. Each question carries **4** marks.

27. Compare and contrast mobile computing and wireless networking.

28. Elaborate random assignment schemes in mobile computing.

29. Write note on reservation-based schemes in mobile computing.

30. Discuss GSM services in detail.

31. What are the key mechanisms in mobile IP?

32. What is dynamic host configuration protocol in mobile computing?

33. Write the constraints and requirements of mobile OS.

34. Differentiate between Android OS and Black Berry OS.

35. Write note on different classifications in MANET routing protocols.

36. Explain vehicular ad-hoc networks in detail.

37. Explain WiMAX technology.

38. Write a note on indirect-TCP protocol.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks.

39. What is 802.11 MAC standard in mobile computing? Explain in detail.

40. What is GSM? Explain GSM architecture in detail.

41. Explain TCP/IP protocol in mobile computing. Explain its architecture.

42. What is UMTS? Demonstrate UMTS Network Architecture in detail.

43. With the help of a block diagram explain the GPRS architecture.

44. What is mobile ad-hoc networks? Discuss its applications in detail.

($2 \times 15 = 30$ Marks)

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(Pages : 3) **P – 3099**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2(b)- Computer Science

Elective Course

CS 1561.3 – TRENDS IN COMPUTING

(2018 Admission onwards)

Time : 3 Hours **Max. Marks : 80**

SECTION – A (Very Short Anser Type)

In **one** word to maximum of **one** sentence. Answer **ALL** questions.

1. VPN stands for _____
2. Expand SOA.
3. What do you mean by cloud computing?
4. Define grid computing
5. SaaS stands for _____
6. Expand ANN.
7. What is soft computing
8. What are the elements of a perceptron?
9. What do you mean by host machine in cloud?
10. PaaS stands for _____

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B (Short Answer)

Not exceeding **one** paragraph, answer any **eight** questions. Each question carries **2** marks.

11. Mention the challenges in cloud computing
12. What are the operations on fuzzy sets?
13. Give any four cloud providers.
14. What is fuzzification?
15. What is absolute truth and absolute falseness in fuzzy logic?
16. Give any two advantages of IaaS.
17. What is a hypervisor?
18. What is a hybrid cloud?
19. What is block storage device in cloud computing?
20. What is classification in neural network?
21. What is activation function in ANN?
22. What is unsupervised learning in neural networks?
23. What is a community cloud?
24. What are the different layers in cloud computing?
25. What are the different models for deployment in cloud computing?
26. What is edge computing?

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not exceeding **120** words, answer any **six** questions. Each question carries **4** marks.

27. Explain distributed computing.
28. Mention the advantages of grid computing.
29. Explain the benefits of computing on demand.
30. Explain virtualization.
31. Explain 5G and its applications.
32. Differentiate Soft computing and hard computing.
33. Differentiate fuzzy set and classical set.
34. Discuss the refuse architecture of mobile edge computing.

35. What is α-cut of a fuzzy set?
36. What is mobile edge computing.
37. Explain the difference between cloud and traditional data centres.
38. Explain different types of artificial neural network.

($6 \times 4 = 24$ Marks)

SECTION – D (Long Essay)

Answer any **two** questions. Each question carries **15** marks.

39. Explain cloud computing architecture.
40. Explain the application of neural networks.
41. Explain the data storage in cloud computing.
42. Discuss the applications of fuzzy logic.
43. Explain private cloud and public cloud with its advantages and disadvantages.

($2 \times 15 = 30$ Marks)

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(Pages : 4) **P – 3100**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc./ B.C.A. Degree Examination, December 2022

Career Related First Degree Programme Under CBCSS

Group 2(b)/Group 2(a) – Computer Science / Computer Applications / Physics and Computer Applications

Open Course

CS 1551.1/CP 1551.1/PC 1551.1 – DIGITAL MARKETING

(2018 Admission onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions

1. What is the role of content marketer?
2. Who is professional blogger?
3. What is vibrancy?
4. What is E-banking?
5. Who is called cryptanalyst?
6. What is the use of digital signatures?
7. What is data highlighter?
8. What is cluttered Market?

P.T.O.

9. What is pay-per-click?

10. What is conversion rate optimisation?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions.

11. What is digital marketing?
12. What is inbound marketing?
13. What are the benefits of content marketing?
14. List the most influential macro environment factors in digital marketing.
15. What are the benefits of e-banking?
16. What does credit account mean?
17. Which is one of the major problems in online banking?
18. What is denial of service attack?
19. What is organic search listing?
20. What are the 5 Ps of DMI's 5P Customer Search Insights Model?
21. Write a note on SSL certificate.
22. Define social media marketing.
23. What is cost per click?
24. What are the options available for SEA expenses?
25. What is web analytics in digital marketing?
26. What do you mean by analytics?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions.

27. Discuss the evolution of digital marketing.

28. Explain the digital marketing strategy building process.

29. Discuss the different form of influencers.

30. Describe the various forms of e-banking.

31. Discuss the objectives of IMPS.

32. Discuss the differences between conventional and digital signatures.

33. Explain the stages of the SEO process.

34. Discuss the key points to bear in mind when creating your business page.

35. Describe the characteristics of an effective mobile site.

36. Summarize the key benefits of goal setting in PPC process.

37. Explain the Google AdWords account structure model.

38. Illustrate the structure of GA account.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions.

39. Why digital marketing gets popularity nowadays? Explain.

40. Explain the 10Ps of digital marketing.

41. What are the properties of public key encryption? Explain the RSA cryptography algorithm.

42. Explain the various types of firewall systems used for security.

43. Explain the four-stage E-mail marketing process.

44. Explain in detail about the implementation stage of SMM process

($2 \times 15 = 30$ Marks)

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Reg. No. : .....

Name : .....

Fifth Semester B.Sc./B.C.A. Degree Examination, December 2022

Career Related First Degree Programme Under CBCSS

Group 2(b)/Group 2 (a) — Computer Science/Computer Applications/Physics and Computer Applications

Open Course

CS 1551.2/CP 1551.2/PC 1551.2 — INTERNET AND WWW

(2018 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer Type) Answer **all** questions. **Each** question carries **1** mark.

1. Define Computer Network
2. What is Network Topology?
3. Write the use of WWW.
4. Denote the importance of HTTP.
5. What is URL?
6. Write the expansion of TCP/IP.
7. What is Webserver?
8. Expand IIS.

P.T.O.

9. What is the Purpose of Modem?

10. Expand SMTP.

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer) Answer any **eight** questions. **Each** question carries **2** marks.

11. Denote the Concept of Intranet.

12. What do you know about Communication Software?

13. What is Telnet?

14. Mention the importance of web pages.

15. Illustrate the use of Bookmarks.

16. Draw the block diagram of TCP/IP model.

17. Write any two uses of Chat rooms.

18. What is Network Protocol?

19. Mention any two Benefits of Webserver.

20. How security is getting much role in Networks?

21. What are the steps for deleting a mail?

22. Describe DNS.

23. Write a note on the types of Networks.

24. What is IPV6?

25. Give two examples of Web Browsers.

26. How do we identify Network Stations?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay) Answer any **six** questions. **Each** question carries **4** marks.

27. Explain the role of ISP.
28. Write the brief History of Internet.
29. Describe Search Generalization and Search Specialization.
30. Briefly explain the Search Fundamentals.
31. Explain the basics of Chat rooms.
32. Illustrate the working of SMTP.
33. What do you know about Apache Web server?
34. Explain Personal Webserver.
35. Write a note on modes of Connecting to Internet.
36. Briefly describe FTP.
37. Explain IIS.
38. What are the disadvantages of E mail?

($6 \times 4 = 24$ Marks)

SECTION – D

(Long Essay) Answer any **two** questions. **Each** question carries **15** marks.

39. Explain the types of Topologies in detail.
40. Write a note on the importance of Search Engines today.
41. Briefly explain Email as a Powerful tool.
42. Describe the Internet Security Threats.
43. Explain different Internet Addressing Schemes.
44. Illustrate about the concept of Network Protocols.

($2 \times 15 = 30$ Marks)

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(Pages : 4) **P – 3102**

Reg. No. : .....

Name : .....

Fifth Semester B.Sc./B.C.A. Degree Examination, December 2022

Career Related First Degree Programme under CBCSS

Group 2(b)/Group 2(a) – Computer Science/Computer Applications/Physics and Computer Applications

Open Course

CS 1551.3/CP 1551.3/PC 1551.3 – CYBER SECURITY

(2018 Admission Onwards)

Time : 3 Hours Max. Marks : 80

Section – A

(Very Short Answer type)

One word to maximum of **one** sentence. Answer **all** questions.

1. What is security risk analysis?

2. Define Computer-worms.

3. What is ICMP flooding?

4. What do you mean by intentional threats?

5. Name any one threat to e-mail.

6. Define information system.

P.T.O.

7. ISO stands for _____.

8. Define non repudiation.

9. Write the need of IT act.

10. Define firewall.

(10 × 1 = 10 Marks)

Section – B (Short Answer)

(Not to exceed one paragraph, Answer any e**ight** questions.
Each Question carries **2** marks)

11. What is ping of death?

12. Write a note on copyright.

13. What is a smart card?

14. Mention the need for an E-mail policy.

15. Explain public key cryptography.

16. Write a note on expert system.

17. Explain the responsibilities of a system designer.

18. Write note on executive information system.

19. What is E-mail spoofing?

20. Explain any four aspects of information assurance.

21. What is quality credit card?

22. List and explain any two intentional threats?

23. What do you mean by malicious code?

24. Explain how virus works.

25. Draw a neat diagram of information systems perspective.

26. What is TCP SYN flooding?

(8 × 2 = 16 Marks)

Section – C (Short Essay)

(Not to exceed 120 words, Answer any **six** questions.
Each Question carries **4** marks

27. Write a note on the importance of Security policy.

28. Write note on intellectual Property Rights.

29. Explain different types of system users.

30. Discuss IT Act 2000 in detail.

31. Explain categories and types of computer security policy.

32. Describe Chip Act.

33. Elaborate advantages of E- Commerce.

34. Write detailed note on network and security attack.

35. Explain access control models.

36. What is NIDS? Explain .

37. List and Explain different categories of an information system.

38. Explain types of packet filtering firewalls.

(6 × 4 = 24 Marks)

Section – D (Long Essay)

(Answer any **two** questions. Each Question carries **15** marks)

39. Explain different components of an information system.

40. Write in detail about different individuals involves in the development of information system.

41. Write note on:

    (a) Patent

    (b) software licensing

42. Discuss security threats to E-commerce.

43. Write note on:

    (a) Different styles of debit cards

    (b) digital signature

    (c) Trojan horse

44. Explain threats to security.

(2 × 15 = 30 Marks)

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(Pages : 3) **N – 1745**

Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, April 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Group 2(a) – Physics with Computer Applications

Core Course – Vocational Course xi

CS 1641 / PC 1671 : INTRODUCTION TO INFORMATION SECURITY

(2014 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer type]

(**1** word to maximum of **1** sentence. Answer **all** questions)

1. Define authentication.
2. What is meant by cryptography?
3. Define plaintext.
4. What is DSS?
5. Define IP security.
6. Define worm.
7. What is antivirus software?
8. Define cyber crime.
9. Define Trojans.
10. Define information security.

(10 $\times$ 1 = 10 Marks)

P.T.O.

SECTION – B [Short Answer]

[Not to exceed **1** paragraph, answer **any eight** questions. Each question carries **2** marks.]

11. Compare the Symmetric and Asymmetric key cryptography.
12. Why do we use DES?
13. Explain the classification of security services.
14. What are digital signatures?
15. What is S/MIME?
16. Explain ESP Protocols.
17. What are the characteristics of firewall?
18. Explain about trusted system.
19. What is Cyber attack?
20. What is Cyber terrorism?
21. Define Cyber law.
22. Explain the amendments in the Copyright act.

(8 × 2 = 16 Marks)

SECTION – C [Short essay]

[Not to exceed **120** words, answer **any six** questions. Each question carries **4** marks.]

23. Write a note on RSA algorithm.
24. Write a note on Public key cryptography.
25. What is the difference between an SSL connection and SSL session?
26. Explain strength and benefits of IPSec.
27. Write a note on application level gateway.
28. What are the various types of malware?
29. Explain Indian Contract act 1872.
30. Explain IT act of India 2000.
31. Explain IPv4.

(6 × 4 = 24 Marks)

SECTION – D [Long essay]

[Answer **any two** questions. Each question carries **15** marks]

32. (a) Explain the transposition techniques.

    (b) Explain the difference between steganography and cryptography.

33. Explain Pretty Good Privacy in detail.

34. Explain different types of firewall and its architecture.

35. Write a note on cybercrime and IT act.

(2 × 15 = 30 Marks)

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(Pages : 3) **N – 1746**

Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, April 2022

Career Related First Degree Programme under CBCSS

Group 2(b) — Computer Science

Core Course

CS 1641 — DATA MINING AND WAREHOUSING

(2018 & 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer Type)

(**One** word to maximum of **one** sentence. Answer **all** questions)

1. What do you mean by data mining?
2. What does OLTP stand for?
3. What is a spatial database?
4. Define confidence.
5. What is a multimedia database?
6. What is a frequent itemset? Give an example.
7. What is an outlier?
8. What is the purpose of data cleaning?
9. What is a dimension table?
10. What is a categorical variable? Give example.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

(Short Answer)

Not to exceed **one** paragraph, answer any **eight** questions. Each question carries **2** marks.

11. What is background knowledge? Give an example.
12. List the four categories of data preprocessing.
13. What is numerosity reduction?
14. What are the differences between a data warehouse and an operational database?
15. What is ROLAP?
16. What is technical metadata in a data warehouse?
17. Differentiate between characterization and discrimination.
18. What do you mean by generalization?
19. Which are the two methods for dimensionality reduction?
20. What are the business skills needed in building a data warehouse?
21. What is market basket analysis?
22. What are hybrid association rules? Give example.
23. Mention any four methods for classification.
24. What is lift?
25. What do you mean by accuracy of a rule?
26. What is an asymmetric binary variable? Give example.

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

Not to exceed **120** words, answer any **six** questions. Each question carries **4** marks.

27. Differentiate between OLTP versus OLAP.
28. Explain prediction methods in data mining.
29. Explain data warehouse with a diagram.

30. How will you handle missing data?

31. Explain decision tree and its uses.

32. Draw the architecture of a typical data mining system.

33. What is cluster analysis? Mention different methods for clustering.

34. Explain various data mining classification systems.

35. Explain concept hierarchy with examples.

36. Differentiate between supervised learning and unsupervised learning.

37. Mention the conditions for stopping partitioning in Decision Tree Induction.

38. Mention different types of association rules and give examples for each rule.

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

(Answer any **two** questions. **Each** question carries **15** marks)

39. Explain various data mining functionalities.

40. Explain the requirements of clustering in data mining.

41. Explain with diagram, various schema for multidimensional data model.

42. With neat diagrams, explain typical OLAP operations.

43. Explain apriori algorithm with example.

44. Explain partitioning methods for clustering.

(2 × 15 = 30 Marks)

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Reg. No. : .....

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Sixth Semester B.Sc. Degree Examination, April 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Core Course

CS 1642 : ARTIFICIAL INTELLIGENCE

(2014 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

[One word to maximum of one sentence. Answer **all** questions]

1. Expand NLP.

2. What is MYCIN?

3. What do you mean by game playing in AI?

4. Name two kinds of logic used in knowledge representation.

5. What do you mean by speech processing?

6. What is artificial intelligence?

7. List the components of intelligence.

P.T.O.

8. Mention two types of reasoning.

9. What do you mean by depth of a problem?

10. What is branching factor?

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

[Not to exceed one paragraph, answer **any eight** questions. Each question carries **2** marks]

11. What is the purpose of Herbrand's theorem?

12. Differentiate declarative knowledge and procedural knowledge.

13. What is non-monotonic reasoning?

14. What is certainty factor?

15. What is a spectrogram?

16. What do you mean by discourse integration?

17. What is the purpose of an inference engine?

18. What is predicate logic?

19. What is probability reasoning?

20. What is speech coding?

21. What is pragmatic analysis in NLP?

22. What is tautology?

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

[Not to exceed **120** words, answer **any six** questions. Each question carries **4** marks]

23. Write short notes on Fuzzy logic.

24. Explain the different types of ambiguity in NLP.

25. Write short notes on computer vision.

26. Explain semantic nets with an example.

27. Explain depth-first search.

28. Explain Hill climbing search algorithm.

29. Differentiate A* and AO* algorithm.

30. What are the capabilities of an expert system?

31. Write short notes on the applications of robotics.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

[Answer **any two** questions. Each question carries **15** marks]

32. Explain the cannibals on the boat problem.

33. Explain various steps in natural language processing.

34. Explain speech recognition systems.

35. Explain the characteristics and components of an expert system.

(2 × 15 = 30 Marks)

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Name : .....

Sixth Semester B.Sc./B.C.A. Degree Examination, April 2022

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science/Computer Applications

Core Course /Elective Course

CS 1642/CP 1661.3 – INTERNET OF THINGS (IoT)

(2018 & 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer type)

(One word to maximum of one sentence. Answer **all** questions)

1. What is digitization?

2. Expand IMA.

3. BLE stands for ————————.

4. Which is the de facto communication protocol responsible for building automation?

5. How many layers are there in IoTWF architecture?

6. NAN stands for ————————.

7. CoAP stands for ————————.

8. Expand MQTT.

9. Name the network which is made up of wirelessly connected smart objects, and are sometimes referred to as motes.

10. Expand OCTAVE.

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer)

(Not to exceed one paragraph, answer **any eight** questions. Each question carries **2** marks).

11. What do you mean by connected roadways?

12. What is connected cow?

13. What is PAN? What is the technology used in this?

14. What do you mean by point-to-point topology?

15. What is WiMax technology?

16. What is an actuator?

17. What is track forwarding?

18. What is FAIR?

19. What is push-to-talk communication?

20. What are the disadvantages of WSNs?

21. Mention the four types of MAC frames as specified in 802.15.4.

22. How RTLS works?

23. What do you mean by scale of an IT network?

24. What is the role of edge computing layer in IoT reference architecture?

25. Mention any 4 types of actuators.

26. What do you mean by event driven transmission in WSN?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

(Not to exceed 120 words, answer **any six** questions. Each question carries **4** marks).

27. What are the main challenges faced by manufacturing in factory environment?

28. Explain the functions of BACnet protocol.

29. What are the measures taken by IoT systems for optimum security?

30. What are the achievements of IoTWF standardized architecture?

31. Explain the different layers in core functional IoT stack.

32. What are the different data related problems that need to be addressed in IoT?

33. What are the characteristics of fog computing?

34. How are sensors classified?

35. Explain MEMS.

36. Explain the smart objects in public safety.

37. Explain the role of mobile command center in emergency response IoT architecture.

38. What is the duty of gateways and backhaul network sublayer in core IoT functional stack?

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

(Answer **any two** questions. Each question carries **15** marks)

39. Explain the concept of smart connected buildings.

40. Compare the features of OT and IT networks.

41. Explain the challenges in Internet of Things.

42. Explain the oneM2M IoT architecture.

43. Explain the key advantages of IP suite for Internet of Things.

44. Explain how traffic flows across IT and OT networks.

($2 \times 15 = 30$ Marks)

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Sixth Semester B.Sc. Degree Examination, April 2022.

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Core Course

CS 1643 – E–COMMERCE AND E–GOVERNANCE

(2014 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very short Answer type]

(One word to maximum of one sentence. Answer **all** questions)

1. What is E-Commerce?
2. Expand EFT.
3. What is B2C?
4. Define e-payment.
5. What is E-Purse?
6. Expand NEFT.
7. What do you mean by mobile cash?
8. What is the meaning of E-education?
9. What is e-business?
10. What is the purpose of Google Chrome browser?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B [Short Answer]

(Answer **any eight** questions. Each question carries **2** marks)

11. What is the difference between direct marketing and e-commerce?

12. What do you mean by B2E?

13. What is the role of e-commerce in education and learning?

14. What is debit card?

15. What is the use of e-cheque?

16. What is smart card?

17. What is internet banking?

18. What is G2G?

19. What are the principles of public private partnership?

20. What is outsourcing?

21. What is LBS?

22. What is open source software?

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

(Answer **any six** questions. Each question carries **4** marks)

23. How is E-commerce differ from the traditional commerce? Discuss.

24. What are the advantages of B2B?

25. What are the benefits of EPS?

26. Discuss the various modes of e-banking.

27. What are the merits of debit card?

28. Distinguish smart cards based on card technology.

29. Compare B2G with G2B.

30. Explain the benefits of E-Governance.

31. What are the E-Governance services under the G2C category?

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

(Answer **any two** questions. Each question carries **15** marks**)**

32. What are the advantages of E-Commerce? Explain.

33. Explain the types of E- Commerce transactions models.

34. What are the types of electronic payment systems? Explain.

35. Explain the main challenges in the implementation of E-Governance.

(2 × 15 = 30 Marks)

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Sixth Semester B.Sc. Degree Examination, April 2022

Career Related First Degree Programme Under CBCSS

Group 2 (b) – Computer Science

Core Course

CS 1643 – ARTIFICIAL INTELLIGENCE

(2018 & 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer Type)

(One word to maximum of one sentences. Answer **all** questions)

1. Define knowledge.
2. Name any two fields where artificial intelligence is used.
3. What is the difference between knowledge and data?
4. What are frames?
5. What do you mean by heuristic information?
6. What is meta knowledge?
7. What is the time complexity of BFS?

8. The knowledge concerned with meanings of names and phrases is called ————————.

9. What is morpheme?

10. LIFER stands for?

(10 × 1 = 10 Marks)

SECTION – B

(Short Answer)

(Not to exceed one paragraph. Answer **any eight** questions)

11. Define Artificial Intelligence.

12. What are the components of a knowledge-based system?

13. Write a short note on Al.

14. How is knowledge represented in knowledge-based systems?

15. What is FOPL?

16. What is an open variable?

17. What is a proposition?

18. What is fallacy?

19. Define blind search.

20. How is the search done in BFS?

21. What are the structures used in matching?

22. What do you mean by parsing?

23. What is pragmatic knowledge?

24. Define case grammars.

25. What is a syntactic tree?

26. What is morphology?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

(Not to exceed 120 words. Answer **any six** questions)

27. Write a note on importance of AI.

28. Compare BFS and DFS.

29. Write brief notes on knowledge acquisition and knowledge manipulation.

30. Explain the use of associative networks.

31. What is FOPL? Describe the symbols and rules of combination permitted in FOPL.

32. Write a note on RETE matching algorithm.

33. What is a Well Formed Formula? What are its properties?

34. Write a note on searching And-Or graphs.

35. What is travelling salesman problem?

36. Explain the levels of knowledge used in language understanding.

37. Write a note on systemic grammars.

38. How is bottom up parsing done?

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

(Answer **any two** questions)

39. Discuss the application of artificial intelligence in various fields.

40. What is a sentence? How will you transform a sentence into clausal form?

41. How the search is done in Depth First Search? Write the algorithm for DFS.

42. Discuss any two search problems.

43. Describe different phases of natural language processing.

44. What are expert systems? Illustrate and describe rule-based architecture for expert systems.

(2 × 15 = 30 Marks)

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Sixth Semester B.Sc. Degree Examination, April 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Elective Course

CS 1661.1 : MOBILE COMPUTING

(2014 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer type)

One word to maximum of one sentences, Answer **all** questions.

1. Define mobile computing
2. SMS stands for _____
3. What is USIM ?
4. Expand RFID.
5. What is a packet data network?
6. What do you mean by ubiquitous computing?
7. Expand GPRS.
8. GSM stands for?
9. What is the use of router?
10. What is a mobile station?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B (Short answer)

Not to exceeding one paragraph, answer any **eight** questions. **Each** question carries **2** marks.

11. Write a note on Bluetooth.

12. List any four applications of mobile computing.

13. Discuss SMS architecture.

14. What do you know about spread spectrum technology?

15. Explain CDMA.

16. What are gateways?

17. List the two limitations of GPRS.

18. What is a Personal Communication Network (PCN)?

19. Explain ad-hoc networks.

20. What is the use of WiMax?

21. What do you mean by handover?

22. Write about data services in GPRS.

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

Not to exceed **120** words, answer any **six** questions. **Each** question carries **4** marks.

23. Discuss the advantages of mobile computing.

24. Explain Wireless Application Protocol.

25. Write a note on dialogue control in mobile computing.

26. How call routing is done in GSM?

27. What are the data services in GPRS?

28. Discuss about GSM entities.

29. Explain mobile computing functions.

30. Write a brief note on mobile IP.

31. Explain some security issues in mobile computing.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

32. What are the design considerations for mobile computing?

33. Compare CDMA and GSM

34. Explain GPRS architecture

35. Explain in detail about wireless LAN architecture.

(2 × 15 = 30 Marks)

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Sixth Semester B.Sc/B.C.A. Degree Examination, April 2022

Career Related First Degree Programme under CBCSS

Group 2(b)-Computer Science / Computer Applications

Elective Course

CS 1661.1/CP 1661 : GEOGRAPHICAL INFORMATION SYSTEM

(2018 & 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

[One word to maximum of one sentence. Answer **ALL** questions]

1. Which is the model used for mapping discrete geographic entities such as road and river networks and administrative boundaries?

2. Expand GPS.

3. Expand TIN

4. Expand MAUP.

5. Expand DIME.

6. Mention two applications of GIS.

7. GIS deals with which kind of data?

8. Interpolation is made possible by a principle called ————————.

P.T.O.

9. What is data about data called?

10. What is the alternate name for ‘boundary model’?

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

[Not to exceed **one** paragraph, answer any **eight** questions. Each question carries **2** marks]

11. What is object-oriented approach?

12. What are the functions of GIS?

13. What is the difference between spatial data and attribute data?

14. Why is understanding maps and how they are produced is an essential starting point for exploring the characteristics of spatial data?

15. What is topographic map?

16. List three methods of spatial referencing.

17. What is georeferencing?

18. What is rubber sheeting?

19. What is reclassification?

20. How is vector overlay created?

21. What is geo-visualization?

22. What is computer cartography?

23. Which are the two basic methods of manual digitizing?

24. What is the difference between accuracy and precision?

25. What is multi criterial evaluation technique?

26. What is the application of Public Participation GIS?

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

[Not to exceed **120** words. Answer any **six** questions. Each question carries **4** marks]

27. Explain on simplification of spatial data before storing in computer.

28. Explain three dimensions of data.

29. What is passive sensor and active sensor in earth observation satellites?

30. Explain spatial data structures.

31. What are the functions of Data Base Management Systems?

32. List the needs of large corporate databases.

33. What are the applications of Web GIS?

34. List three features of object data models that is good for modelling geographic systems.

35. Explain three basic problems in drawing Choropleth map.

36. List any four characteristics of Decision Support System.

37. What is Tobler's first law of geography?

38. List the steps involved in applying Multi Criteria Evaluation model in a raster GIS.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

[Answer any **two** questions. Each question carries **15** marks]

39. Explain the components of GIS.

40. Explain the advantages of computer-based data bases.

41. Explain the various methods to check for errors in the encoding of attribute data.

42. Discuss the distinguishing characteristics of Decision Support System.

43. Explain on various errors during the manual digitizing of maps.

44. Explain on different process modelling performed in GIS.

(2 × 15 = 30 Marks)

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Sixth Semester B.Sc. Degree Examination, April 2022

Career Related First Degree Programme under CBCSS

Group 2(b) — Computer Science

Elective Course

CS 1661.2 : EMBEDDED SYSTEMS

(2014 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** questions. Each question carries **1** mark.

1. What are the main components of an embedded system?
2. Classify the processors in embedded system.
3. List out various uses of timers in embedded system.
4. What are the various types of memory in embedded systems?
5. What are the different functions handled by a general purpose kernel?
6. Name any two embedded microcontrollers.
7. Define message queue.

P.T.O.

8. What is I^2C?

9. What are the task service functions supported by VxWorks?

10. What are various synchronization techniques in OS?

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions. Each question carries **2** marks.

11. What are the important characteristics of any real time embedded system?

12. List out the major application areas of embedded system.

13. State the uses of assembler and compiler in embedded application development.

14. Write short note on MPLAB X IDE.

15. What is the difference between big-endian and little-endian processors?

16. What do you mean by EPROM eraser?

17. Discuss the functionalities of RS. 485 standard serial interface.

18. Distinguish between ADC and DAC.

19. Discuss the purpose of multithreading.

20. What are the steps involved in software development process?

21. What are the different types of RTOS?

22. Write short note on eCOS.

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions. Each question carries **4** marks.

23. Distinguish between medium scale embedded system and sophisticated embedded system.

24. Write a short note on different types of display devices in embedded system.

25. Draw the architecture of a typical microcontroller and identify each block.

26. What are the notable differences between a microprocessor and a microcontroller?

27. Explain briefly the main features of programmable DSPs.

28. What is EPROM and also explain how it is programmed?

29. Draw and explain the interfacing diagram of 4 × 4 matrix keyboard with microcontroller.

30. Discuss any four data types in embedded.

31. Write short note on RT Linux functionalities.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions. Each question carries **15** marks.

32. (a) With a sketch explain the basic architecture of the embedded system. **10**

    (b) Discuss the benefits and drawbacks of using embedded system. **5**

33. What are the factors to be considered in selecting a processor and memory for an embedded system, discuss in detail?

34. With a figure explain various elements of embedded system development process.

35. Explain the various inter-process/task communication tools like pipe, mailbox, message queue, and semaphore used by an RTOS environment.

(2 × 15 = 30 Marks)

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Sixth Semester B.Sc. Degree Examination, April 2022

Career Related First Degree Programme under CBCSS

Group 2(b)-Computer Science

Elective Course

CS 1661.2 : SOFTWARE TESTING

(2018 & 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **ALL** questions.

1. Per Hundred Programming statements, how much bugs one will find generally?
2. Define a software bug.
3. How will you define the bug assumption?
4. What is White Box Testing?
5. Write a note on branch coverage in white box testing.
6. Define black box testing.
7. Bring the definition of boundary value analysis.
8. Define test completion criteria.

P.T.O.

9. What does the test management tool allow?

10. How do you evaluate the exit criteria?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **EIGHT** questions.

11. How does the test-design phase of programming should be?

12. Define a program's environment.

13. Discuss the path testing criteria.

14. How did path testing get its name?

15. Write the advantages of White Box Testing.

16. List the two parts of static testing.

17. Explain any four types of defects found by the tools during static analysis.

18. Provide an explanation of branch coverage.

19. Provide the categories for which the black box testing technique finds errors.

20. How will you Track and Manage Defects?

21. Define positive testing.

22. Discuss about domain testing.

23. Write any two criteria for tool selection.

24. Provide the test completion report format.

25. Is testing a process?

26. Define the repeatable level of CMM.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **SIX** questions.

27. Discuss the major methods of testing techniques.

28. What's wrong with leaving some code, especially code that has a low probability of execution, untested?

29. Define achievable and unachievable paths.

30. What is structural testing and what are its techniques?

31. Explain the advantages of Structural Testing.

32. Write a note on code complexity testing.

33. Express the disadvantages of black box testing.

34. Define the requirements testing process.

35. Discuss the approaches to testing documentation.

36. Discuss the test management responsibilities.

37. Describe test planning activities.

38. Elaborate on the factors to be considered while defining a test strategy.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **TWO** questions.

39. Bring out a detailed study on the disbelief on bugs.

40. Explain in detail the advantages and disadvantages of white box testing.

41. List out in detail the benefits of Static Analysis Tools.

42. Elaborate on compatibility testing in detail.

43. With the help of a tabular column, explain types of tools.

44. With the help of a table, define in detail test plan identifiers

(2 × 15 = 30 Marks)

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Sixth Semester B.Sc/BCA Degree Examination, April 2022

Career Related First Degree Programme under CBCSS

Computer Science/Computer Applications

Elective Course/Core course

CS 1661.3/ CP 1643: DATA MINING AND DATA WAREHOUSING

(2014 & 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION A – [Very short answer type]

[One word to maximum of one sentence, Answer **all** questions]

1. What do you mean by data?
2. What is a database schema?
3. Write an example for multidimensional data model.
4. Write the name of any one classification method.
5. What do you mean by fact table?
6. What is metadata?
7. What you mean by datamart?
8. Define data extraction.

P.T.O.

9. What do you mean by data integration?

10. Define knowledge base.

(10 × 1 = 10 Marks)

SECTION B – [short answer]

[Not to exceed **one** paragraph, Answer any **eight** question. Each question carries **2** marks.

11. Write a short note on data warehousing.

12. Define data mining.

13. What do you mean by knowledge discovery in databases?

14. Describe prediction.

15. Differentiate data and information.

16. Write a note on different data warehouse schemas.

17. What are the issues involved in classification and prediction?

18. What you mean by data cube?

19. Why do we perform data reduction?

20. What is OLTP?

21. List any two outlier detection techniques.

22. What is k-nearest neighbor classification?

(8 × 2 = 16 Marks)

SECTION C – [short essay]

[Not to exceed **120** words, Answer any **six** questions. **Each** question carries **4** marks.

23. Discuss about OLAP.

24. List any four data clustering methods. -.

25. Explain about Bayesian classifier.

26. Write a short note on data reduction strategies.

27. What is the relevance of apriori algorithm in data mining?

28. Write a note on various data mining techniques.

29. Discuss about the applications of data mining.

30. Describe the characteristics of data warehouse.

31. What is the need of data integration?

(6 × 4 = 24 Marks)

SECTION D – [Long essay]

Answer any **two** of the questions in about 300 words. **Each** question carries **15** marks.

32. What do you mean by data transformation? Discuss the steps involved in data transformation.

33. Explain the significance of Online Analytical Processing.

34. Discuss the rule-based classification using IF-THEN rules.

35. Define KDD. Explain in detail about the steps involved in knowledge discovery in databases.

(2 × 15 = 30 Marks)

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Sixth Semester B.Sc. Degree Examination, April 2022

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science

Elective Course

CS 1661.3 – FREE AND OPEN SOURCE SOFTWARE

(2018 & 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer type)

[One word to maximum of **one** sentence, Answer **all** questions]

1. Expand GPL.
2. Give the name of two shells in Linux.
3. Name any two proprietary software.
4. Who launched the GNU project?
5. Which is the built-in variable used to check whether a session is set or not?
6. What is the use of DROP command in MySQL?
7. What is the purpose of WHERE clause in MySQL?
8. PHP multi-line comments can be enclosed between _____.

P.T.O.

9. Which are the string operators in PHP?

10. Which is the function used to sort associative arrays in descending order, according to the value?

(10 × 1 = 10 Marks)

SECTION – B (Short Answer)

[Not to exceed **one** paragraph, answer any **eight** questions. **Each** question carries **2** marks]

11. What is GNOME?

12. What is free software movement?

13. Name any four superglobals in PHP.

14. What is a shareware?

15. What is $_REQUEST?

16. Explain the syntax of SELECT statement in MySQL.

17. What is the use of LIKE clause in MySQL?

18. What is KDE?

19. What is type casting in PHP?

20. What is the use of mysql_select_db()?

21. Write the syntax for INSERT statement in MySQL.

22. What are the four freedoms of free software?

23. What is the purpose of define() function?

24. What do you mean by custom error handler in PHP?

25. Which are the different types of JOIN in MySQL?

26. Which are the built-in error types that can be triggered in custom error handler?

(8 × 2 = 16 Marks)

SECTION – C (Short Essay)

[Not to exceed **120** words, answer any **six** questions. **Each** question carries **4** marks]

27. Explain the difference between Open-Source and Proprietary Software.

28. Explain any four features of Linux.

29. Explain Linux kernel and its sub systems.

30. Explain the PHP functions include () and require ().

31. Explain any four string functions in PHP?

32. How will you set cookies in PHP?

33. Explain the concept of functions in PHP.

34. Explain with an example program how you will insert a record into an employee table in MySQL from PHP.

35. Explain the mysql fetch row() with an example program.

36. Differentiate between sort() function and rsort() function in PHP with example.

37. Explain the concept of Form validation.

38. Explain passing arguments by reference in PHP functions.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

[Answer any **two** questions. **Each** question carries **15** marks]

39. Explain Linux file system and directories.

40. Explain various data types used in PHP.

41. Discuss different decision making statements in PHP.

42. Explain different types of arrays in PHP.

43. Explain Session management in PHP

44. Explain the different data types used in MySQL.

(2 × 15 = 30 Marks)

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