

(6 pages)

Reg. No. : .....

**Code No. : 6103**

**Sub. Code : PCSE 23**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Second Semester

Computer Science

Elective — CLOUD COMPUTING

(For those who joined in July 2017-2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following are the features of cloud computing?
  - (a) Security
  - (b) Availability
  - (c) Large network access
  - (d) All of the mentioned

2. Which of the following model attempts to categorize a cloud network based on four dimensional factors?
  - (a) Cloud cube
  - (b) Cloud square
  - (c) Cloud service
  - (d) All of the mentioned
  
3. Which architectural layer is used as a backend in cloud computing?
  - (a) cloud                      (b) soft
  - (c) client                      (d) All of the mentioned
  
4. All cloud computing applications suffer from the inherent \_\_\_\_\_ that is intrinsic in their WAN connectivity.
  - (a) Noise
  - (b) Propagation
  - (c) Latency
  - (d) All of the mentioned
  
5. Which of the following architectural standards is working with cloud computing industry?
  - (a) Web-application frameworks
  - (b) Service-oriented architecture
  - (c) Standardized web services
  - (d) All of the mentioned

6. Which of the following monitors the performance of the major cloud-based services in real time in cloud commons?
- (a) Cloud watch            (b) Cloud sensor  
(c) Cloud metrics        (d) All of the mentioned
7. Which of the following model consists of the service that you can access on a cloud computing platform?
- (a) Deployment  
(b) Service  
(c) Application  
(d) None of the mentioned
8. Which of the following is the most important area of concern in cloud computing?
- (a) Scalability  
(b) Storage  
(c) Security  
(d) All of the mentioned
9. Which of the following is the most refined and restrictive cloud service model?
- (a) PaaS                      (b) IaaS  
(c) SaaS                      (d) CaaS

10. In which of the following service models the hardware is virtualized in the cloud?
- (a) NaaS                      (b) PaaS  
(c) CaaS                      (d) IaaS

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are the characteristics of cloud computing? Explain.

Or

- (b) Describe the next generation of cloud computing.

12. (a) How virtualization is implemented in cloud computing?

Or

- (b) Summarize the logical cloud computing model.

13. (a) Write down the attacks in cloud computing environment? Explain.

Or

- (b) Point out the purpose of Google App Engine.

14. (a) Explain the design principles of SOA.

Or

(b) Analyse the motivations for migration.

15. (a) Bring out the challenges in standardization.

Or

(b) Mention the drawbacks of microservices.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Examine the cloud computing model with diagram.

Or

(b) Determine the deployment models of cloud computing.

17. (a) Outline the different types of virtualization.

Or

(b) Illustrate the classification of security issues in cloud.

18. (a) Draw and explain the desktop virtualization security.

Or

(b) Elaborate the need of Microsoft Azure Web services.

19. (a) Discuss the significance of SOA in cloud computing.

Or

(b) Analysis the planning for migrating the application to the cloud.

20. (a) Demonstrate the mobile cloud computing architecture with diagram.

Or

(b) Formulate the lists for migration from monolithic to microservices.

---

(6 pages)

Reg. No. : .....

Code No. : 6435

Sub. Code : ZCSM 11

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

First Semester

Computer Science — Core

DESIGN AND ANALYSIS OF ALGORITHMS

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Heap is a
  - (a) Tree structure
  - (b) Complete binary tree
  - (c) Binary tree
  - (d) Search tree

2. \_\_\_\_\_ of an algorithm is the amount of time required for it to execute.
- (a) Time complexity
  - (b) Space complexity
  - (c) Compiling time
  - (d) Best case
3. What is the worst case time complexity of the Quick sort?
- (a)  $O(n \log n)$
  - (b)  $O(n)$
  - (c)  $O(n^3)$
  - (d)  $O(n^2)$
4. Strassen's matrix multiplication algorithm follows \_\_\_\_\_ technique.
- (a) Greedy technique
  - (b) Dynamic Programming
  - (c) Divide and Conquer
  - (d) Backtracking
5. Kruskal's algorithm is a
- (a) Divide and conquer algorithm
  - (b) Dynamic programming algorithm
  - (c) Greedy algorithm
  - (d) Approximation algorithm



6. The travelling salesman problem can be solved using
- (a) A spanning tree
  - (b) A minimum spanning tree
  - (c) Bellman – Ford algorithm
  - (d) DFS traversal
7. The Data structure used in standard implementation of Breadth First Search is
- (a) Stack                      (b) Queue
  - (c) Linked List              (d) Tree
8. What is the traversal strategy used in the binary tree?
- (a) depth-first traversal
  - (b) breadth-first traversal
  - (c) random traversal
  - (d) priority traversal
9. How many steps are required to prove that a decision problem is NP complete?
- (a) 1                              (b) 2
  - (c) 3                              (d) 4

10. Which data structure is most suitable for implementing best first branch and bound strategy?
- (a) stack                      (b) queue  
(c) priority queue          (d) linked list

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Identify the criteria that must satisfy all algorithms.

Or

- (b) Discuss about Space Complexity.

12. (a) Develop the algorithm Control abstraction for divide-and-conquer.

Or

- (b) Explain about finding the maximum and minimum.

13. (a) Analyze Prim's Algorithm.

Or

- (b) Illustrate knapsack problem.

14. (a) Evaluate the algorithm Preorder and postorder traversals.

Or

- (b) Justify graph coloring.

15. (a) Construct the Job Shop Scheduling.

Or

- (b) Construct the Directed Hamiltonian Cycle.

PART C — ( $5 \times 8 = 40$  marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Summarize about Priority Queues.

Or

- (b) Illustrate about Graphs.

17. (a) Explain about Binary Search.

Or

- (b) Briefly explain about Quick Sort.

18. (a) Organize the High-level description of job sequencing algorithm.

Or

- (b) Analyze optimal binary search trees.

19. (a) Evaluate the techniques for graphs.

Or

- (b) Justify the recursive backtracking algorithm.

20. (a) Express 0/1 knapsack problem.

Or

- (b) Generalize FIFO Branch-and-Bound solution.

---

(6 pages)

Reg. No. : .....

**Code No. : 6436**

**Sub. Code : ZCSM 12**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022

First Semester

Computer Science – Core

ADVANCED JAVA PROGRAMMING

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions

Choose the correct answer:

1. The \_\_\_\_\_ interface contains methods which can be used to get information about the applet's environment.  
(a) AudioClip                      (b) AppletContext  
(c) AppleCodeBase()              (d) AppletStub

2. Which of these methods are used to register a mouse motion listener?
  - (a) addMouse()
  - (b) addMouseListener
  - (c) addMouseMotionListener()
  - (d) eventMouseMotionListener()
  
3. The text in a \_\_\_\_\_ cannot be edited.
  - (a) JCheckBox                      (b) JList
  - (c) JTextArea                      (d) JDialog
  
4. The FlowLayout manager, components are arranged in a left-to-right manner, like the flow of words in a line.
  - (a) GridLayout                      (b) CardLayout
  - (c) BorderLayout                      (d) FlowLayout
  
5. Which one of the following classes is used for connection-less socket programming?
  - (a) DatagramSocket      (b) DatagramPacket
  - (c) DatagramAddress      (d) DatagramIP
  
6. Which of this class is used to encapsulate IP address and DNS?
  - (a) DatagramPacket      (b) URL
  - (c) InetAddress                      (d) contentHandler

7. Which of the following is used to call stored procedure?
- (a) Statement                      (b) PreparedStatement  
(c) CallableStatement   (d) CalledStatement
8. Which of the following interface provides the commit() and rollback() methods?
- (a) Statement Interface   (b) ResultSet Interface  
(c) Connection Interface   (d) RowSet Interface
9. Which of the following code is used to get an attribute in a HTTP Session object in servlets?
- (a) session.getAttribute(String name)  
(b) session.alterAttribute(String name)  
(c) session.updateAttribute(String name)  
(d) session.setAttributer(String name)
10. Which of the following is not a valid attribute of page directives?
- (a) language                      (b) extend  
(c) export                          (d) import

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Discuss about reading parameters into Applets.

Or

- (b) Show the program to use of KeyEvent methods.

12. (a) Write in detail about JRadioButton.

Or

- (b) Illustrate about JPasswordField.

13. (a) Illustrates the use of various methods in class InetAddress.

Or

- (b) Explain about the URL Class.

14. (a) Discuss about the DriverManager class.

Or

- (b) Explain in detail about the PreparedStatement Interface.



15. (a) Order the methods defined in Cookie class.

Or

(b) Summarize the methods that can be called on an HttpServletRequest object.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words

16. (a) Write down the General Methods Defined in Applet Class.

Or

(b) Determine the WindowEvent Class.

17. (a) Illustrate Layout Managers.

Or

(b) Analyze about JLabel.

18. (a) Explain in detail about the Socket class.

Or

(b) Examine the DatagramPacket class.

19. (a) Order the steps to use the JDBC in Java language.

Or

(b) Summarize the Statement Interface.

20. (a) Generalize the deploying and Executing a Servlet.

Or

(b) Assemble the Attributes of a JSP page.

---

(8 pages)

Reg. No. : .....

**Code No. : 6437**

**Sub. Code : ZCSM 13**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

First Semester

Computer Science – Core

MATHEMATICAL FOUNDATION FOR COMPUTER  
SCIENCE

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The \_\_\_\_\_ of two statements  $P$  and  $Q$  is the statement  $P \wedge Q$ .
  - (a) disjunction
  - (b) normal
  - (c) conjunction
  - (d) negation

2. A formula which is equivalent to a given formula and which consists of a sum of elementary products is called a \_\_\_\_\_ of the given formula.
- (a) disjunctive normal form
  - (b) conjunctive normal form
  - (c) predicate logic
  - (d) inference
3. Let  $R$  be a relation in a set  $X$ . If for every  $x$  in  $X(x, x) \in R$  then  $R$  is called
- (a) reflexive
  - (b) symmetric
  - (c) transitive
  - (d) antisymmetric
4. The power set of  $\{a\}$  is
- (a)  $\phi$
  - (b)  $\{\phi, \{a\}\}$
  - (c)  $\{\phi\}$
  - (d)  $\{a\}$
5. The rank of every  $n$ -square non-singular matrix is
- (a)  $n$
  - (b)  $n-1$
  - (c) 1
  - (d) 0

6. Which of the following is called the characteristic equation of a matrix  $A$  ?
- (a)  $|A - \lambda I|$                       (b)  $|A| = 0$   
(c)  $A = 0$                               (d)  $|A - \lambda I| = 0$
7. A graph  $G$  is said to be \_\_\_\_\_ if there is atleast one path between every pair of vertices in  $G$ .
- (a) disconnected                      (b) component  
(c) connected                      (d) hamiltonian
8. A \_\_\_\_\_ is defined as a finite alternating sequence of vertices and edges, beginning and ending with vertices such that each edge is incident with the vertices preceding and following it.
- (a) path                                  (b) circuit  
(c) walk                                  (d) subgraph
9. If  $n, e$  and  $k$  are the number of vertices, number of edges and number of components of a graph  $G$ , then its nullity =
- (a)  $n - k$                                   (b)  $e - n$   
(c)  $e + k$                                   (d)  $e - n + k$



13. (a) Find the rank of the matrix  $\begin{bmatrix} 6 & 1 & 3 & 8 \\ 4 & 2 & 6 & -1 \\ 10 & 3 & 9 & 7 \\ 16 & 4 & 12 & 15 \end{bmatrix}$ .

Or

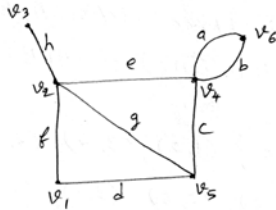
- (b) Find the characteristics equation of the matrix  $\begin{bmatrix} 1 & 2 & 3 \\ 2 & -1 & 4 \\ 3 & 1 & 1 \end{bmatrix}$ .

14. (a) Prove that in a connected graph  $G$  with exactly  $2k$  odd vertices, there exist  $k$  edge-disjoint subgraphs such that they together contain all edges of  $G$  and that each is a unicursal graph.

Or

- (b) Prove that a connected graph  $G$  is an Euler graph if and only if it can be composed into circuits.

15. (a) Find incidence matrix for the following graph.



Or

- (b) Prove that in any tree with two or more vertices, there are at least two pendant vertices.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

16. (a) Obtain conjunctive normal forms :

(i)  $P \wedge (P \rightarrow Q)$

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

Or

(b) Show that from

(i)  $(\exists x)(F(x) \wedge S(x)) \rightarrow (y)(M(y)) \rightarrow W(y)$

(ii)  $(\exists y)(M(y) \wedge \neg W(y))$ .

the conclusion  $(x)(F(x) \rightarrow \neg s(x))$  follows.

17. (a) (i) If  $A = \{\alpha, \beta\}$  and  $B = \{1, 2, 3\}$ , what are

$A \times B$ ,  $B \times A$ ,  $A \times A$ ,  $B \times B$  and  
 $(A \times B) \cap (B \times A)$ ?

(ii) For any two sets  $A$  and  $B$ , prove that

$$A \cup B = (A \cap \sim B) \cup (B \cap \sim A) \cup (A \cap B).$$

Or



- (b) (i) Let  $X = \{1, 2, 3\}$  and  $f, g, h$  and  $s$  be functions from  $X$  to  $X$  given by

$$f = \{(1, 2), (2, 3), (3, 1)\}$$

$$g = \{(1, 2), (2, 1), (3, 3)\}$$

$$h = \{(1, 1), (2, 2), (3, 1)\}$$

$$s = \{(1, 1), (2, 2), (3, 3)\}$$

find  $f \circ g$ ,  $g \circ f$ ,  $f \circ h \circ g$  and  $s \circ g$ .

- (ii) Let  $X = \{1, 2, \dots, 7\}$  and  $R = \{(x, y) / x - y \text{ is divisible by } 3\}$ . Show that  $R$  is an equivalence relation.

18. (a) Solve the system of equations

$$x + 2y + 3z = 10$$

$$2x - 3y + z = 1$$

$$3x + y - 2z = 9$$

Or

- (b) Find the eigen values and eigen vectors of

$$\begin{bmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{bmatrix}.$$

19. (a) Prove that a simple graph with  $n$  vertices and  $k$  components can have at most  $(n-k)(n-k+1)/2$  edges.

Or

- (b) (i) Define a complete graph.  
(ii) Prove that in a complete graph with  $n$  vertices there are  $\frac{n-1}{2}$  edge-disjoint Hamiltonian circuits if  $n$  is an odd number  $\geq 3$ .
20. (a) (i) Define rank of a graph.  
(ii) Prove that every tree has either one or two centres.

Or

- (b) (i) Define a circuit matrix.  
(ii) Let  $B$  and  $A$  be, respectively, the circuit matrix and the incidence matrix of a self-loop-free graph whose columns are arranged using the same order of edges. Then prove that every row of  $B$  is orthogonal to every  $A$ .

(6 pages)

Reg. No. : .....

**Code No. : 6438**

**Sub. Code : ZCSM 14**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022

First Semester

Computer Science – Core

COMPILER DESIGN

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The intermediate code can be directly executed using a program called a
  - (a) Compiler
  - (b) Interpreter
  - (c) Macro
  - (d) Scanner
  
2. In a transition diagram, the states are connected by arrows called
  - (a) Labels
  - (b) Letters
  - (c) Design
  - (d) Edges

3. The syntactic specification of a programming language, use a notation called
- (a) Context-free grammar
  - (b) Regular Expression
  - (c) Syntax grammar
  - (d) Regular grammar
4. The bottom-up parsing method is called
- (a) shift-reduce parsing
  - (b) canonical derivations
  - (c) rightmost derivations
  - (d) recursive descent parsing
5. A tree in which each leaf represents an operand and each interior node an operator is called
- (a) Parse tree
  - (b) Heap tree
  - (c) Code tree
  - (d) Syntax tree
6. Which statement is an abstract form of intermediate code?
- (a) 3-address
  - (b) 2-address
  - (c) 1-address
  - (d) address

7. The instruction MOV R0, R1 implies.
- (a) copies R1 into R0
  - (b) moves R1 into R0
  - (c) copies R0 into R1
  - (d) moves R0 into R1
8. When the value of a variable is changing at each step in a loop called
- (a) undefined variable
  - (b) undeclared variable
  - (c) uninitialized variable
  - (d) Induction variable
9. Redundant loads and stores results in
- (a) efficient run
  - (b) wasted time and space
  - (c) good algorithm
  - (d) efficient programming
10. Conditional statements are used in
- (a) Program
  - (b) global registers
  - (c) loops
  - (d) global variables

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Discuss about Language Processors.

Or

- (b) Explain about Nondeterministic Finite Automata.

12. (a) Write down the Formal Definition of a Context-Free Grammar.

Or

- (b) Write down the algorithm to eliminate left recursion from a grammar.

13. (a) Categorize the Three-Address Code.

Or

- (b) Classify Translation of Expressions.

14. (a) Summarize the DAG Representation of Basic Blocks.

Or

- (b) Evaluate Addresses in the Target Code.

15. (a) Express the Principal Sources of Optimization.

Or

- (b) Generalize Loops in Flow Graphs.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)  
Each answer should not exceed 600 words

16. (a) Illustrate the Specification of Tokens.

Or

- (b) Summarize the design of a Lexical-Analyzer Generator.

17. (a) Examine the Bottom-Up Parsing.

Or

- (b) Determine the Stack Allocation of Space.

18. (a) Classify Backpatching.

Or

- (b) Analyze the Unification algorithm.

19. (a) Generalize the Code-Generation Algorithm.

Or

- (b) Justify Peephole Optimization.

20. (a) Evaluate the Lazy-Code-Motion Algorithm.

Or

(b) Test the Data-Flow Analysis.

---



(6 pages)

Reg. No. : .....

**Code No. : 6439**

**Sub. Code : ZCSM 15**

M.Sc.(CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

First Semester

Computer Science

DISTRIBUTED OPERATING SYSTEM

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. In distributed system, each processor has it own \_\_\_\_\_
  - (a) local memory
  - (b) clock
  - (c) both local memory and clock
  - (d) none of the mentioned

2. Which technique is based on compile-time program transformation for accessing remote data in a distributed-memory parallel system
  - (a) cache coherence scheme
  - (b) computation migration
  - (c) remote procedure call
  - (d) message passing
3. Logical extension of computation migration is \_\_\_\_\_
  - (a) process migration (b) system migration
  - (c) thread migration (d) data migration
4. Which routing technique is used in a distributed system?
  - (a) fixed routing (b) virtual routing
  - (c) dynamic routing (d) all of the mentioned
5. In distributed systems, link and site failure is detected by \_\_\_\_\_
  - (a) polling
  - (b) handshaking
  - (c) token passing
  - (d) none of the mentioned

6. The capability of a system to adapt the increased service load is called\_\_\_\_\_
- (a) scalability
  - (b) tolerance
  - (c) capacity
  - (d) none of the mentioned
7. What is not a major reason for building distribute system?
- (a) resource sharing    (b) computation
  - (c) reliability            (d) simplicity
8. The file once created cannot be changed is called \_\_\_\_\_
- (a) immutable file
  - (b) mutex file
  - (c) mutable file
  - (d) none of the mentioned
9. \_\_\_\_\_ is not possible in distributed file system.
- (a) File replication    (b) Migration
  - (c) Client interface    (d) Remote access

10. There is no need to establish and terminate a connection through open and close operation in \_\_\_\_\_.
- (a) stateless file service
  - (b) stateful file service
  - (c) both stateless and stateful file service
  - (d) none of the mentioned

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain the distributed operating system and its architecture types in brief.

Or

- (b) Explain the switching technique in brief.

12. (a) Explain the issues in IPC by message passing in brief.

Or

- (b) Explain the group communication in brief.

13. (a) Explain the Remote Procedure Call (RPC) model in brief.

Or

- (b) Explain the granularity in brief.

14. (a) Explain the deadlock in brief.

Or

(b) Explain the desirable features of a good process migration mechanism in brief.

15. (a) Explain the desirable features of a good distributed file system in brief.

Or

(b) Explain the advantages of file replication in brief.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the distributed computing system models in detail.

Or

(b) Explain the LAN technology in detail.

17. (a) Explain the desirable features of a good message-passing system in detail.

Or

(b) Explain the failure handling in detail.

18. (a) Explain the implementation of RPC mechanism in detail.

Or

(b) Explain any four consistency models in detail.

19. (a) Explain the handling deadlocks in distributed systems in detail.

Or

(b) Explain the advantages of process migration in detail.

20. (a) Explain the file-caching schemes in detail.

Or

(b) Explain the fault tolerance in detail.

---

Reg. No. : .....

**Code No. : 6440**

**Sub. Code : ZCSM 21**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Second Semester

Computer Science – Core

**ADVANCED WEB TECHNOLOGY**

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which is a group of related constants?  
(a) Variable                      (b) Enumeration  
(c) Enumerator                  (d) String
2. Which is defined on a class-by-class basis?  
(a) Encapsulation              (b) Inheritance  
(c) Abstraction                  (d) Accessibility
3. Which collection includes all the controls on the current web forms?  
(a) Page.Controls              (b) Page.collection  
(c) Web.controls                (d) Web.collection

4. Which is used to log unexpected conditions or errors?
  - (a) Cache
  - (b) Exception handler
  - (c) Event Logging
  - (d) Error handler
5. Which is used to get information out of a database and into a page quickly?
  - (a) Repeater
  - (b) DataReader
  - (c) Datalist
  - (d) DataBinding
6. From which class does the Datagrid inherit basic functionality? Class?
  - (a) BaseDataList
  - (b) Datalist
  - (c) BaseList
  - (d) Repeater
7. Which is the way to encode information before sending it to a Web service?
  - (a) WSDL
  - (b) SOAP
  - (c) DISCO
  - (d) UDDI
8. What does m indicate in .asmx file?
  - (a) main
  - (b) mail
  - (c) member
  - (d) method
9. Hosting multiple servers is called \_\_\_\_\_
  - (a) Farm
  - (b) Garden
  - (c) Servlet
  - (d) Web garden



10. Which allows to package functionality into succinct and reusable chunks with well-defined interfaces?
- (a) Com components
  - (b) Terra service
  - (c) Data caching
  - (d) Profiling

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write a note on The Common Language Runtime
- Or
- (b) Write a note on .net namespaces.
12. (a) Give a brief description of ASP.NET file types.
- Or
- (b) What are the three ways to code web forms?
13. (a) How is a connection to the data source created?
- Or
- (b) Write a note on Single-value Data Binding.
14. (a) Write a note on Dynamic Discovery.
- Or
- (b) What are the Web Service Data Types?
15. (a) Write a note on User controls.
- Or
- (b) Write a note on SSL.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Briefly explain .NET Programming Framework.

Or

- (b) How is IIS installed?

17. (a) Explain web form inheritance.

Or

- (b) Give the Page Life Cycle.

18. (a) Briefly explain simple data access and simple data update.

Or

- (b) Write XML rules that are not found in ordinary HTML.

19. (a) Briefly explain the Web Service Communication with a neat diagram.

Or

- (b) Briefly explain how to document Webservice.

20. (a) Briefly explain with a flowchart how Authenticating a request is done.

Or

- (b) What are Form Authentication Settings? Give a brief description.

(6 pages)

Reg. No. : .....

**Code No. : 6441**

**Sub. Code : ZCSM 22**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Second Semester

Computer Science — Core

MACHINE LEARNING

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which one of the following is the most common type of learning?
  - (a) Supervised learning
  - (b) Unsupervised learning
  - (c) Reinforcement learning
  - (d) Evolutionary learning

2. \_\_\_\_\_ says that the changes in the strength of synaptic connections are proportional to the correlation in the firing of the two connecting neurons.
- (a) McCulloch                      (b) Hebb's rule  
(c) Pitts Neurons                  (d) All of these
3. Training the Multi-layer perception consists of \_\_\_\_\_ parts.
- (a) 2                                      (b) 5  
(c) 3                                      (d) 4
4. What is back propagation?
- (a) It is another name given to the curvy function in the perception.  
(b) It is the transmission of error back through the network to adjust the inputs.  
(c) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn  
(d) None of the above
5. Every decision tree starts with \_\_\_\_\_
- (a) Root                                  (b) Leaf  
(c) Sub node                              (d) All of these

6. \_\_\_\_\_ uses is to give weighs to each data point according to how difficult previous classifiers have found to get it correct.
- (a) Boosting                      (b) AdaBoost  
(c) Bagging                      (d) Training
7. The idea of \_\_\_\_\_ is a direction in the data with the largest variation
- (a) LDA  
(b) A principal component  
(c) Factor analysis  
(d) None of these
8. The \_\_\_\_\_ function can be seen as an oracle that takes a string as an argument and returns a value for that string.
- (a) Encoding  
(b) Decoding  
(c) String  
(d) Fitness
9. How many nodes in Markov Random field?
- (a) 1                                  (b) 2  
(c) 4                                  (d) 6

10. The \_\_\_\_\_ model is one of the most popular graphical models
- (a) Markov Random field
  - (b) Bayesian networks
  - (c) Sampling
  - (d) Hidden Markov

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write the limitations of the McCulloch and Pitts Neuronal model.

Or

- (b) How to use the Exclusive or (XOR) function in perception?

12. (a) Discuss about the multi-layer perception Algorithm.

Or

- (b) How to training the RBF network?

13. (a) Write the steps for dealing with continuous variable in decision tree.

Or

- (b) Define boosting. Write the various algorithm used for boosting.

14. (a) Write short notes on The Kernel PCA algorithm.

Or

- (b) Mention the properties of Markov decision process.

15. (a) Discuss about The Baum-Welch or Forward-Backward algorithm.

Or

- (b) Illustrate about the Kalman Filter tracking method.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

Each answer should not exceed 600 words.

16. (a) Explain in detailed about supervised learning and its types.

Or

- (b) Define Linear Regression. How to represent the linear regression in two and three dimensions give an example.

17. (a) Analyze about going backward: Back propagation error.

Or

- (b) Summarize about interpolation and basis function with neat diagram.

18. (a) Determine how to construct the decision tree.

Or

(b) Estimate the values of decision by committee:  
Ensemble learning.

19. (a) Define ISOMAP. Explain about  
multi-dimensional scaling and ISOMAP  
algorithm.

Or

(b) Explain in detail about generating off spring:  
Genetic operators.

20. (a) Determine about sampling and its various  
methods for probability distributions.

Or

(b) Explain brief notes on Markov Chain Monte  
Carlo principle for sample distributions.

---



(6 pages)

Reg. No. : .....

**Code No. : 6442**

**Sub. Code : ZCSM 23**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Second Semester

Computer Science — Core

ADVANCED DBMS

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. An \_\_\_\_\_ is a “thing” or “object” in the real world that is distinguishable from all other objects
  - (a) entity
  - (b) entity set
  - (c) attributes
  - (d) value

2. Which of the following shape is represent relationship sets?
  - (a) Diamonds
  - (b) Lines
  - (c) Rectangle
  - (d) Dashed Lines
  
3. The bucket to which a value is assigned is determined by a function called a
  - (a) ordered indices
  - (b) primary indices
  - (c) hash function
  - (d) secondary indices
  
4. \_\_\_\_\_ indices are a specialized type of index designed for easy querying on multiple keys
  - (a) Dynamic
  - (b) Bitmap
  - (c) Linear
  - (d) Static
  
5. Cascading roll backs can be avoided by a modification of two-phase locking called the \_\_\_\_\_ two phase locking protocol
  - (a) rigorous
  - (b) strict
  - (c) lock point
  - (d) growing
  
6. How many types of errors that may cause a transaction to fail?
  - (a) 2
  - (b) 3
  - (c) 4
  - (d) 5

7. \_\_\_\_\_ are processes that receive user queries (transactions) execute them, and send the results back
- (a) server processes
  - (b) data base writer
  - (c) log writer
  - (d) lock manager
8. Handling larger tasks by increasing the degree of parallelism is called
- (a) speed up                      (b) linear speed up
  - (c) scale up                      (d) sub linear speed up
9. \_\_\_\_\_ allow composite attributes of E-R designs to be represented directly
- (a) user defined                  (b) structured types
  - (c) row types                      (d) column types
10. XML documents must have a single \_\_\_\_\_ element that encompasses all other elements in the document
- (a) child                              (b) sub child
  - (c) root                              (d) both (a) and (b)

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write short notes on design phase and design alternatives of data base.

Or

- (b) How to represent of strong entity sets with complex attributes?

12. (a) Discuss about the basic concepts of indexing.

Or

- (b) Compare the difference between static hashing and dynamic hashing.

13. (a) Interpret about on two-phase locking protocol.

Or

- (b) Describe the operating system role in buffer management.

14. (a) Interpret about on client-server system.

Or

- (b) Comparison of different types of partitioning techniques.

15. (a) How to use the table inheritance in SQL give an example.

Or

- (b) Write the structure of XML data give an example.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Draw and explain the entity-relationship model for college data base.

Or

- (b) Summarize about first normal form with an example.

17. (a) Analyze the structure of B+ tree and how to use the queries on B+ trees?

Or

- (b) Illustrate about transaction atomicity and durability in data base system.

18. (a) Explain in detail about the various types of failures and storage.

Or

- (b) Write the several types of log record. List the step a transaction takes in modifying a data item.

19. (a) Draw and explain the server system architecture in detail.

Or

(b) Evaluate the parallel versions of some common relational operations.

20. (a) Determine about object-identity and reference types in SQL give an example.

Or

(b) Write brief notes on XML document schema with an example.

---

(6 pages)

Reg. No. : .....

Code No. : 6443

Sub. Code : ZCSM 24

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022

Second Semester

Computer Science – Core

CRYPTOGRAPHY AND NETWORK SECURITY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The keys used in cryptography are
  - (a) secret key
  - (b) private key
  - (c) public key
  - (d) All of these
  
2. A transposition cipher reorders (permutes) symbols in a
  - (a) block of packets
  - (b) block of slots
  - (c) block of signals
  - (d) block of symbols

3. AES has \_\_\_\_\_ different configuration
- (a) two                      (b) three
- (c) four                      (d) five
4. \_\_\_\_\_ processes the input one block of elements at a time, producing an output block for each input block
- (a) block cipher
- (b) stream cipher
- (c) cryptanalysis
- (d) encryption
5. The abbreviation of S/MIME is \_\_\_\_\_
- (a) Secure/Multipurpose      Internet      Mail  
Extension
- (b) Secure/Multipurpose      Intent      Merged  
Extension
- (c) Secured/Multipurpose      Internet      Mail  
Extension
- (d) Secure/Multimedia      Mail      Internet      Mail  
Extension



6. \_\_\_\_\_ protocols enable communicating parties to satisfy themselves mutually about each other's identity and to exchange session keys.
- (a) Mutual authentication
  - (b) Identity federation
  - (c) Identity management
  - (d) None
7. \_\_\_\_\_ defines a number of techniques for key management.
- (a) IDE                      (b) IP
  - (c) IKE                      (d) None
8. \_\_\_\_\_ is designed to make use of TCP to provide a reliable end-to-end secure service.
- (a) SSL
  - (b) SLS
  - (c) LSS
  - (d) All of these
9. A \_\_\_\_\_ model is used to establish transition probabilities among various states.
- (a) operational
  - (b) Markov process
  - (c) multivariate
  - (d) time series

10. Which of the following is the malicious software?
- (a) Backdoor
  - (b) Logic Bomb
  - (c) Trojan Horses
  - (d) All of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Compare the difference between security services and security mechanism.

Or

- (b) Write short notes on the principles of block ciphers.

12. (a) Comment on RSA algorithm and its security.

Or

- (b) Mention the requirements of Hash function.

13. (a) Differentiate between Kerberos V4 Authentication Dialogue Message Exchange

Or

- (b) Describe the various types of message components.

14. (a) List down the applications of IPsec.

Or

(b) Write short notes on Secure Electronic Transaction.

15. (a) Recall the various types of malicious software.

Or

(b) How to construct the attack network in DDoS?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain in detailed about models of Network Security.

Or

(b) Summarize the terms of differential and linear crypt analysis attacks.

17. (a) Define RC4. Discuss about RC4 Key schedule, Encryption and Security.

Or

(b) Elaborate the concept of Diffie-Hellman Key Exchange.

18. (a) Determine the various types of Authentication Services.

Or

(b) Illustrate the S/MIME functionality and messages.

19. (a) Draw and explain the Secure Socket Layer architecture.

Or

(b) Explain how to improve the transport layer security.

20. (a) Construct the various approach for intrusion detection.

Or

(b) Describe the ethical issues related to computer and information system.

---

(6 pages)

Reg. No. : .....

**Code No. : 6444**

**Sub. Code : ZCSE 21**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Second Semester

Computer Science – *Elective*

FREE OPEN SOURCE SOFTWARE

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. \_\_\_\_\_ is one of the core section of an operating system.
  - (a) hardware
  - (b) software
  - (c) kernel
  - (d) application

2. Which command displays the first ten lines of a file?  
(a) tail                      (b) head  
(c) nl                         (d) ls
3. \_\_\_\_\_ is used to search a particular information from a text file.  
(a) uniq                      (b) grep  
(c) tac                        (d) wc
4. Which of the following command is used to terminate the job?  
(a) Ctrl + c                  (b) Ctrl + v  
(c) Ctrl + x                  (d) Ctrl + s
5. \_\_\_\_\_ is defined as a sequence of instructions that describe a method for solving a problem.  
(a) Algorithm                (b) Program  
(c) Instructions              (d) None of these
6. \_\_\_\_\_ is defined as graphical representation of the logic for problem solving  
(a) Flow line                (b) Flow chart  
(c) Terminal                 (d) Processing



PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Clarify about basic Linux commands give an example.

Or

- (b) Write short notes on networking commands in Linux.

12. (a) Discuss about pipes command give an example.

Or

- (b) How to construct the command substitution in Linux?

13. (a) Define algorithm. Write the properties and qualities and good algorithm.

Or

- (b) Describe about algorithmic problem solving.

14. (a) Explain the various data types used in python give an example.

Or

- (b) Comments on Boolean values and operators in python.



15. (a) How to initialize local and global variables declared inside the functions?

Or

- (b) Classify the various types of files used in python.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Draw and explain the architecture of Linux system.

Or

- (b) Summarize about security file permission in Linux with an example.

17. (a) Explain how to editing the file through command line in Linux?

Or

- (b) Write brief notes on the following commands.  
(i) head (ii) tail (iii) sort (iv) wc.

18. (a) Elucidate the building block of an algorithm.

Or

- (b) Define flowchart. Write the rules for drawing flow chart.

19. (a) Write a python program to find largest of three numbers.

Or

- (b) Explain in detailed about Modules and functions in python give an example.

20. (a) Illustrate about on string functions and methods in python.

Or

- (b) Demonstrate about reading and writing CSV file in python.
-

(6 pages)

Reg. No. : .....

**Code No. : 6445**

**Sub. Code : ZCSE 22**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Second Semester

Computer Science - Core

Elective — DATA MINING

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. \_\_\_\_\_ are designed to overcome any limitations placed on the warehouse by the nature of the relational data model.
  - (a) Operational data base
  - (b) Relational database
  - (c) Multidimensional data base
  - (d) Data repository

2. Which of the following is the collection of data objects that are similar to one another within the same group?
  - (a) Partitioning
  - (b) Grid
  - (c) Cluster
  - (d) Table
  
3. Which of the following process includes data cleaning, data integration, data selection, data transformation, data mining, pattern evolution and knowledge presentation?
  - (a) KDD process
  - (b) ETL process
  - (c) KTL process
  - (d) MDX process
  
4. Data modeling technique used for data marts is
  - (a) Dimensional modeling
  - (b) ER-model
  - (c) Extended ER-model
  - (d) Physical model
  
5. An OLAP tool provides for
  - (a) Multi dimensional analysis
  - (b) Roll-up and drill-down
  - (c) Slicing and dicing
  - (d) Rotation

6. The synonym for data mining is
  - (a) data warehouse
  - (b) knowledge discovery in data base
  - (c) ETL
  - (d) Business intelligence
  
7. Most common kind of queries in a data warehouse
  - (a) Inside-out queries
  - (b) Outside-in queries
  - (c) Browse queries
  - (d) Range queries
  
8. Which of the following form the set of data created to support a specific short lived business situation?
  - (a) Personal data marts
  - (b) Application models
  - (c) Downstream systems
  - (d) Disposable data marts
  
9. Which of the following tools a business intelligence system will have?
  - (a) OLAP tool
  - (b) Data mining tool
  - (c) Reporting tool
  - (d) Control tool

10. Metadata describes
- (a) contents of data base
  - (b) Structure of contents of data base
  - (c) structure of data base
  - (d) data base itself

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).  
Each answer should not exceed 250 words.

11. (a) Write a note on data cube aggregation.

Or

- (b) Explain the data integration and data transformation.

12. (a) Summarize the steps to generate association rules from frequent itemsets.

Or

- (b) What are the various kinds of association rules? Describe.

13. (a) How decision tree induction is used in classification?

Or

- (b) How does a Bayesian belief network learn? Describe.

14. (a) What are describe features of cluster analysis? Explain.

Or

- (b) Describe the methods of model-based clustering.

15. (a) Elaborate the trends in data mining.

Or

- (b) What kinds of association can be mined in multimedia data? Explain.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)  
Each answer should not exceed 600 words.

16. (a) Discuss the architecture of a typical data mining systems.

Or

- (b) Explain the classification of data mining systems.

17. (a) Examine the steps involved for the design and construction of data warehouse.

Or

- (b) How is Apiori Algorithm used to find frequent Itemsets? Explain.

18. (a) Outline the use of IF-THEN rules for classification.

Or

(b) Evaluate the k-Nearest-Neighbor classifiers with neat diagram.

19. (a) Illustrate the implementation of partitioned methods in cluster analysis.

Or

(b) Draw and explain the statistical distribution-based outlier detection.

20. (a) Elaborate the text data analysis and information retrieval.

Or

(b) Determine the need of mining the World Wide Web.

---



**Reg. No. :** .....

**Code No. : 6446**

**Sub. Code : ZCSE23**

M.Sc.(CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Second Semester

Computer Science

Elective – DATA SCIENCE AND BIG DATA  
ANALYTICS

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. What are the different features of big data analytics?
  - (a) Open source
  - (b) Scalability
  - (c) Data recovery
  - (d) All the above

2. Big data analysis does the following except
  - (a) Collects data
  - (b) Spreads data
  - (c) Organizes data
  - (d) Analyzes data
3. R functionality is divided into a number of
  - (a) Packages                      (b) Functions
  - (c) Domains                      (d) Sub domains
4. The new source of big data that will trigger a big data revolution in the years to come is
  - (a) Business transactions
  - (b) Social media
  - (c) Transactional data and sensor data
  - (d) RDBMS
5. \_\_\_\_\_ part of the MapReduce is responsible for processing one or more chunks of data and producing the output results
  - (a) Maptask
  - (b) Mapper
  - (c) Task execution
  - (d) All of the mentioned

6. \_\_\_\_\_ has the world's largest Hadoop cluster
- (a) Apple (b) Datamatics  
(c) Facebook (d) Telegram
7. Which of the following platforms does Hadoop run on?
- (a) Bare metal (b) Debian  
(c) Cross Platform (d) Unix-like
8. What license is Hadoop distributed under?
- (a) Apache License 2.0 (b) Mozilla  
(c) Shareware (d) Middleware
9. The \_\_\_\_\_ R system contains, among other things, the base package which is required to run R
- (a) Root (b) Child  
(c) Base (d) None of the above
10. Advanced users can write \_\_\_\_\_ code to manipulate R objects directly
- (a) C  
(b) C++  
(c) Java  
(d) None of the mentioned

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are the advantages of big data? Explain.

Or

- (b) Describe the communicate results of data analytics.

12. (a) Why do we need data visualization before data analysis?

Or

- (b) How will you use dirty data in data analysis? Give example.

13. (a) What are the methods used in K-Means? Explain.

Or

- (b) Write down the determining number of clusters.

14. (a) How will you evaluating decision trees? Explain.

Or

- (b) Distinguish between the ARMA and ARIMA models.

15. (a) List out the main functions of Apache Hadoop.

Or

(b) Show the uses of data base text analysis.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

Each answer should not exceed 600 words.

16. (a) Draw and explain the current analytical architecture.

Or

(b) Discuss the implementation of big data ecosystem.

17. (a) Elaborate on multiple variables data Exploration and presentation.

Or

(b) Illustrate the main concept of ANOVA with example.

18. (a) Develop an algorithm for Apriori algorithm with example.

Or

(b) Compare the linear regression and logistic regression.

19. (a) State and prove the Naïve Bayes theorem with example.

Or

(b) How will you build and evaluate ARIMA model? Explain.

20. (a) Outline the various types of tools in data base analytics.

Or

(b) How will you develop core material for multiple audiences? Describe.

---

(6 pages)

Reg. No. : .....

**Code No. : 6447**

**Sub. Code : ZCSM 31**

M.Sc.(CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Third Semester

Computer Science

DIGITAL IMAGE PROCESSING

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Image restoration is used to improve the \_\_\_\_\_ image.  
(a) Quantity                      (b) Quality  
(c) Blur                              (d) None of the above

2. Un-sampling is a process of \_\_\_\_\_ the spatial resolution of the image.
- (a) Decreasing                      (b) Increasing  
(c) Averaging                        (d) Doubling
3. Which of the following is the primary objective of sharpening of an image?
- (a) Blurring the image  
(b) Highlight fine details in the image  
(c) Increase the brightness of the image  
(d) Decrease the brightness of the image
4. An alternate approach to median filtering is \_\_\_\_\_
- (a) Use a mask                      (b) Gaussian filter  
(c) Sharpening                      (d) Laplacian filter
5. Image transforms are needed for
- (a) Conversion information form spatial to frequency  
(b) Spatial domain  
(c) Time domain  
(d) Both (b) and (c)



6. In power transformation values are dependent on value of
- (a) X-rays                      (b) Alpha  
(c) Beta                         (d) Gamma
7. Compression is done for saving
- (a) Storage                      (b) Bandwidth  
(c) Money                        (d) Both (a) and (b)
8. Which of the following would not be suitable for Lossy Compression?
- (a) Speech                        (b) Video  
(c) Text                          (d) Image
9. Sobel is better than Prewitt in Image
- (a) Sharpening                  (b) Blurring  
(c) Smoothing                  (d) Contrast
10. Accuracy of image segmentation can be improved by the type of \_\_\_\_\_
- (a) Processes                      (b) Images  
(c) Division                        (d) Sensors

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) List and explain the basic mathematical tools used in Digital Image Processing.

Or

- (b) Define Digital Image Processing. Explain and its uses.

12. (a) Explain the steps involved in frequency domain filtering.

Or

- (b) Classify the various types of sharpening filters.

13. (a) Interpret the concept of image restoration.

Or

- (b) Examine the concept of slant transform.

14. (a) Discuss about pseudo color in image processing.

Or

- (b) Is Digital watermarking act as an important role in Image Processing? Discuss

15. (a) Compare image detection and discontinuities.

Or

- (b) How edge detection done using sobel operator? Analyze.

PART C — ( $5 \times 8 = 40$  marks)

Answer ALL questions, choosing either (a) or (b)

Each answer should not exceed 600 words.

16. (a) Discuss about sensing and acquisition.

Or

- (b) Categorize the various components of digital image processing.

17. (a) Illustrate the properties of 2D discrete Fourier transform.

Or

- (b) Illustrate the concept of spatial enhancement methods.

18. (a) Summarize the concept of geometric mean filter.

Or

- (b) Classify the various types of noise model.

19. (a) Describe the full color image processing.

Or

- (b) Which type of compression should be set for color image? Analyze.

20. (a) Explain the use of motion in segmentation.

Or

- (b) Describe the multilevel threshold techniques.
-

(6 pages)

**Reg. No. :** .....

**Code No. : 6448**

**Sub. Code : ZCSM 32**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Third Semester

Computer Science

SOFT COMPUTING

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Neurons also known as \_\_\_\_\_
  - (a) Neurodes
  - (b) Processing elements
  - (c) Nodes
  - (d) All the above

2. Which of the following models are utilized for learning?
- (a) Neural networks
  - (b) Decision trees
  - (c) Propositional and FOL rules
  - (d) All of the above
3. \_\_\_\_\_ is never assured of finding global minimum as in the simple layer delta rule case.
- (a) Back propagation      (b) Front Propagation
  - (c) Propagation              (d) None of the above
4. BAM stands for \_\_\_\_\_
- (a) Bidirectional Associative Memory
  - (b) Associative Memory
  - (c) Biconventional Associative Memory
  - (d) None of these
5. Fuzzy relation is a fuzzy set defined on the Cartesian product of
- (a) single set                  (b) crisp set
  - (c) union set                  (d) intersection set

6. \_\_\_\_\_ truth values are multivalued.
- (a) Crisp logic                      (b) Boolean logic  
(c) Fuzzy logic                      (d) None of these
7. In propositional logic, \_\_\_\_\_ widely used for inferring facts.
- (a) Pones                              (b) Modus  
(c) Modus ponens                  (d) Pons
8. Fuzzy logic propositions are also quantified by
- (a) Fuzzy                              (b) Fuzzy qualifiers  
(c) Fuzzy quantifiers              (d) None of these
9. \_\_\_\_\_ is the first operator applied on population.
- (a) Reproduction                  (b) Recombination  
(c) Mutation                        (d) None of these
10. The \_\_\_\_\_ is referred the proportion of individuals in the population which are replaced in each generation.
- (a) gap  
(b) generation gap  
(c) generation interval  
(d) interval

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

Choosing either (a) or (b), each answer should not exceed 250 words.

11. (a) Classify the applications of soft computing.

Or

- (b) Explain the linear separable in Neural Network.

12. (a) Differentiate between supervised and unsupervised learning.

Or

- (b) Draw and explain the basic mode of madaline network.

13. (a) Distinguish between fuzzy set and crisp set.

Or

- (b) Categorize the different types of defuzzification with suitable example.

14. (a) Explain the role of fuzzy arithmetic in soft computing.

Or

- (b) Classify the types of fuzzy measures.



15. (a) State the operators of Genetic Algorithm.

Or

(b) Write down the steps for genetic Algorithm.

PART C — (5 × 8 = 40 marks)

Answer ALL questions.

Choosing either (a) or (b) Each answer should not exceed 600 words.

16. (a) Construct the McCulloch pitts neuron in soft computing.

Or

(b) Draw a biological Neural Network and explain the parts.

17. (a) Explain the working of back propagation network with neat diagram.

Or

(b) Demonstrate the counter propagation network learning algorithm.

18. (a) Categorize the different fuzzy relation operations.

Or

(b) Explain the fuzzy membership function with neat diagram.

19. (a) Present the framework of fuzzy inference system and explain.

Or

- (b) Discuss the methods of aggregation of fuzzy rules.

20. (a) Discuss the various types of crossover and mutation techniques involved in Genetic Algorithm.

Or

- (b) Classify the various applications of Genetic Algorithm.
-

(6 pages)

Reg. No. : .....

**Code No. : 6449**

**Sub. Code : ZCSM 33**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Third Semester

Computer Science — Core

ADVANCED COMPUTER NETWORKS

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. \_\_\_\_\_ is determining how packets are routed from source to destination.  
(a) Transport layer      (b) Network layer  
(c) Application layer      (d) Data link layer

2. Which transmission media provides the highest transmission speed in a network?
  - (a) Coaxial cable
  - (b) Optical fiber
  - (c) Twisted pair cable
  - (d) Electrical cable
  
3. Protocols in which the sender sends one frame and then waits for an acknowledgement before proceeding for next frame are called as
  - (a) Simplex protocol
  - (b) Simplex stop and wait protocols
  - (c) Unrestricted simplex protocol
  - (d) Restricted simplex protocols
  
4. Data link layer is responsible for \_\_\_\_\_
  - (a) Error control
  - (b) Framing
  - (c) Flow control
  - (d) All the above
  
5. If any frame is manipulated or lost, all subsequent frames have to be sent again is called
  - (a) Go-Back-N ARQ
  - (b) ALOHA
  - (c) Selective repeat
  - (d) Sonet
  
6. \_\_\_\_\_ is the network layer protocol.
  - (a) SMTP
  - (b) HTTP
  - (c) IP
  - (d) TCP

7. \_\_\_\_\_ are the transport layer protocols used in networking.
- (a) TCP and FTP      (b) TCP and UDP  
(c) UDP and HTTP    (d) HTTP and FTP
8. Two identifiers are needed to define the processes at the transport layer
- (a) Logical address    (b) Physical address  
(c) Port address      (d) IP address
9. When displaying a web page, the application layer uses the
- (a) FTP protocol      (b) HTTP protocol  
(c) SMTP protocol    (d) TCP protocol
10. Caesar cipher uses \_\_\_\_\_ to encrypt.
- (a)  $C = (P+3) \bmod 26$     (b)  $C = (p+3) \bmod 25$   
(c)  $C = (p+4) \bmod 26$     (d)  $C = (p+4) \bmod 25$

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Describe the protocol hierarchies with neat diagram.

Or

- (b) Write the difference between connection oriented and connectionless service.

12. (a) Examine Hamming error correcting code with example.

Or

- (b) Illustrate a simplex stop-and-wait protocol for an noisy channel.

13. (a) Describe Broadcast-Routing algorithm.

Or

- (b) Illustrate IP address formats.

14. (a) Describe crash recovery.

Or

- (b) Write about the transport service primitives.

15. (a) Illustrate the architecture of the Email system.

Or

- (b) Write about substitution ciphers.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

Each answer should not exceed 600 words.

16. (a) Explain OSI reference model.

Or

- (b) Explain Guided transmission media.

17. (a) Illustrate error detecting code with example.

Or

- (b) Explain sliding window protocol using selective repeat.

18. (a) Examine the principles of the network layer in the internet.

Or

- (b) Write in detail about IPV6.

19. (a) Generalize the services provided by the transport layer.

Or

(b) Illustrate UDP?

20. (a) DNS (Domain Name System) explain.

Or

(b) What are the basics of computer network simulation? Explain.

---



(6 pages)

Reg. No. : .....

**Code No. : 6450**

**Sub. Code : ZCSM 34**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Third Semester

Computer Science – Core

RESEARCH METHODOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. A research which follows case study method is called
  - (a) Clinical or diagnostic
  - (b) Causal
  - (c) Analytical
  - (d) Qualitative

2. Research conducted in class room atmosphere is called
- (a) Field study
  - (b) Survey
  - (c) Laboratory research
  - (d) Empirical research
3. "Reasoning from general to particular" is called
- (a) Induction                      (b) Deduction
  - (c) Observation                    (d) Experience
4. "Deduction and induction are a part of system of reasoning" - stated by
- (a) Caroline                      (b) P.V Young
  - (c) Dewey John                    (d) Emory
5. Variance of a random variable X is given by \_\_\_\_\_
- (a)  $E(X)$                       (b)  $E(X^2)$
  - (c)  $E(X^2) - (E(X))^2$                     (d)  $(E(X))^2$
6. If the null hypothesis is false then which of the following is accepted?
- (a) Null hypothesis
  - (b) Positive hypothesis
  - (c) Negative hypothesis
  - (d) Alternative hypothesis

7. What is plagiarism?
- (a) Using words or ideas of another author/researcher without citing the source
  - (b) Paraphrasing original content and not citing it
  - (c) Using your own previous works without proper acknowledgment
  - (d) All of the above
8. Copyright is \_\_\_\_\_
- (a) Positive right            (b) Negative right
  - (c) Exclusive right        (d) Both (a) and (b)
9. In which of these people with similar interests contribute with their knowledge?
- (a) Seminar                    (b) Conference
  - (c) Symposium                (d) Convention
10. Which of the following is not an effective way for presentation?
- (a) not relying on technology
  - (b) use visuals wisely
  - (c) consider audience
  - (d) presentation without plan

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) List and explain the objectives of research methodology.

Or

- (b) How to do you go about formulating research problem? Discuss.

12. (a) Analyze the relationship between the explanation and prediction.

Or

- (b) Write the limitations of primary data collection.

13. (a) Differentiate between probability and non probability sampling.

Or

- (b) Construct the structure of scientific reports.

14. (a) Explain the different criteria's of patentability.

Or

- (b) How to select a good trademark? Discuss.

15. (a) Tell about objectives of teaching.

Or

(b) Enumerate the advantages and disadvantages of discussion method of teaching.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)  
Each answer should not exceed 600 words.

16. (a) Categorize the various types of research.

Or

(b) Discuss the importance of critical literature review and its uses in planning innovation research.

17. (a) Develop the research plant for computer science research.

Or

(b) Explain the various sources of obtaining data for the selected research problem.

18. (a) What are the steps involved in writing good research report? Analyze.

Or

(b) Describe the guidelines for preparing a good research report oral presentation.

19. (a) Why copy rights are preferred rather than patents in case of software? Justify your answer.

Or

- (b) As a student what are the precaution to be taken to publish a plagiarism free report. Discuss.

20. (a) Elucidate the effectiveness of ICT corner.

Or

- (b) Demonstrate the principles of adolescent development.
-

(6 pages)

Reg. No. : .....

**Code No. : 6451**

**Sub. Code : ZCSE 31**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Third Semester

Computer Science

Elective — CLOUD COMPUTING

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following is an example of the cloud?  
(a) AWS                      (b) Drop box  
(c) Cisco WebEx            (d) All of the above
  
2. On what is cloud computing based?  
(a) Modulation              (b) Hybridization  
(c) Virtualization          (d) Multiplexing

3. What is allow the users OS to be remotely stored on a server?
- (a) Storage                      (b) Desktop  
(c) Server                        (d) Network
4. What is used to remote access from server in virtualization?
- (a) Application                (b) Network  
(c) Desktop                      (d) Storage
5. Which of the following option is the IaaS service provider?
- (a) EC1                            (b) EC2  
(c) EC10                         (d) Hybrid
6. What is the highest degree of integration in cloud computing?
- (a) AaaS                         (b) SaaS  
(c) PaaS                         (d) CaaS



7. Which is trust computing base?  
(a) VM (b) Software  
(c) Hardware (d) Storage
8. Which of the following system does not provision storage to most user?  
(a) PaaS (b) IaaS  
(c) CaaS (d) SaaS
9. Which is convert one set of data to another data?  
(a) Map (b) Reduce  
(c) Virtual box (d) GAE
10. Which is interacts with the cloud coordination?  
(a) Cloud broker (b) Cloud coordinator  
(c) Cloud exchange (d) None of the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).  
Each answer should not exceed 250 words.

11. (a) Examine the cloud computing.

Or

- (b) Explain the elasticity in cloud.

12. (a) Summarize the virtualization in cloud computing.

Or

(b) Predict the full virtualization.

13. (a) Explain the public clouds.

Or

(b) Explain the hybrid clouds.

14. (a) Write about the demand driven resource provisioning.

Or

(b) Determine the software as a security.

15. (a) Appraise the architecture of map reduce in Hadoop.

Or

(b) Summarize the open stack.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)  
Each answer should not exceed 600 words.

16. (a) Explain the parallel computing in cloud computing.

Or

- (b) State the on demand provisioning.

17. (a) Summarize the implementation level of virtualization.

Or

- (b) Justify the memory virtualization.

18. (a) Illustrate the SaaS.

Or

- (b) Explain the NIST cloud computing reference architecture.

19. (a) Illustrate the global exchange of cloud resources.

Or

- (b) Determine the virtual machine security.

20. (a) Summarize the open stack compute.

Or

(b) Justify the running job in Hadoop.

---

(6 pages)

**Reg. No. :** .....

**Code No. : 6452**

**Sub. Code : ZCSE 32**

M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2022.

Third Semester

Computer Science

Elective — MOBILE COMPUTING

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which is able to move from one physical location to another and use the same service?
  - (a) Network mobility
  - (b) User mobility
  - (c) Bearer mobility
  - (d) Agent mobility

2. What is used to store data needed by the application?  
(a) Data tier                      (b) Application tier  
(c) Presentation tier      (d) All the above
3. Which protocol is used to communication across the internet?  
(a) OBEX protocol      (b) TCP/IP  
(c) FTP                      (d) HTTP
4. Which type of information changes in day in value added services?  
(a) Static                      (b) Dynamic  
(c) Real time                      (d) Data
5. In which layer provides a reliable logical link between an MS and its assigned SGSN  
(a) LLC                      (b) RLC  
(c) MAC                      (d) RFL
6. Which is a specific extension for call and telephony feature control?  
(a) WAE user agents  
(b) Content generator  
(c) Standard content encoding  
(d) WTA

7. Which type of attack is based on statistical analysis?
- (a) Passive attacks
  - (b) Active attacks
  - (c) Dictionary building attacks
  - (d) Hijacking
8. In which time calls will be forwarded to the specific number, when the subscriber is busy
- (a) On busy
  - (b) On not reachable
  - (c) Unconditional
  - (d) On no reply
9. Which is responsible for feature memory mentioned in the section memory?
- (a) Feature manager
  - (b) VFS manager
  - (c) Sound manager
  - (d) Memory manager
10. What is for data and voice devices where telephony and data are tightly integrated?
- (a) Pearl
  - (b) Quartz
  - (c) Crystal
  - (d) All the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) List out any five mobile applications.

Or

- (b) Examine the making legacy application mobile.

12. (a) Define bluetooth.

Or

- (b) Describe the Short Message Mobile Oriented (SM MO).

13. (a) Define the quality of service.

Or

- (b) State the MMS architecture.

14. (a) Explain Wireless Data Protocol (WDP).

Or

- (b) Discuss the MAC address access control.

15. (a) Order the kernel features.

Or

- (b) Predict the secured socket layer.



PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)  
Each answer should not exceed 600 words.

16. (a) Describe the mobile computing in briefly.

Or

- (b) State the data tier-3 in mobile computing architecture.

17. (a) Define the handover of mobile emerging with neat diagram.

Or

- (b) Examine the strength of SMS.

18. (a) Describe the routing in GPRS.

Or

- (b) Discuss the WAP gateway with neat diagram.

19. (a) Discuss the internet content adaptation protocol with diagram.

Or

- (b) Determine the mobile phones with suitable diagram.

20. (a) Evaluate the PALM OS architecture.

Or

(b) Summarize the RSA with clear explanation.

---