M.Voc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Software Development

PROGRAMMING WITH JAVA

(CBCS – 2022 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. —————— is done automatically by the compiler. (CO1, K1)
   (a) Explicit Casting
   (b) Implicit Casting
   (c) Narrowing Casting
   (d) None of these

2. Which of the following is the correct way to declare a two-dimensional array in Java? (CO1, K1)
   (a) int[ ] [ ] arr = new int[3][3] ;
   (b) intarr = new int[3, 3] ;
   (c) intarr[3][3] = new int[ ] [ ] ;
   (d) int[ ] arr = new int[3][3] ;

3. Which of the following is true about inheritance in Java? (CO2, K2)
   (a) Java supports multiple inheritance through classes
   (b) The extends keyword is used to inherit a class
   (c) Only public members of the superclass are inherited
   (d) A subclass can only have one superclass

4. What is the correct syntax to declare a package in Java?
(CO2, K2)
   (a) package mypackage;
   (b) Package mypackage;
   (c) package: mypackage;
   (d) Package: mypackage;

5. In Java, what is the range of thread priorities?
(CO3, K3)
   (a) 1 to 10   (b) 0 to 100
   (c) −10 to 10   (d) 0 to 10

6. ——————— method is used to start a thread in Java.
(CO3, K3)
   (a) Start( )   (b) run( )
   (c) execute( )   (d) begin( )

7. ——————— method is invoked when an applet is initially loaded.   (CO4, K4)
   (a) init( )   (b) start( )
   (c) paint( )   (d) destroy( )

8. Which AWT class is used to create a top-level window for an application?   (CO4, K4)
   (a) Panel   (b) Frame
   (c) Dialog   (d) Window

9. What is the primary role of a proxy server in network communication?   (CO5, K4)
   (a) Enhancing network security
   (b) Accelerating Data Transmission
   (c) Resolving domain names
   (d) Filtering incoming emails

10. ——————— class in java.util provides functionality for generating pseudo-random numbers.   (CO5, K4)
   (a) Date   (b) Calendar
   (c) Random   (d) Math

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Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Describe the features of Java. (CO1, K2)

Or

(b) Illustrate the Control Statements in Java. (CO1, K2)

12. (a) Write a note on Exception and its types in Java. (CO2, K2)

Or

(b) How do interface differ from abstract class? Explain. (CO2, K2)

13. (a) Write a note on inter-thread communication. (CO3, K3)

Or

(b) Explain the concept of Synchronization. (CO3, K3)

14. (a) Explain the role of the Java IO package in handling I/O operations. (CO4, K4)

Or

(b) Describe the importance of String handling in Java. (CO4, K4)

15. (a) Explain the concept of socket programming. (CO5, K4)

Or

(b) Compare and contrast TCP/IP and UDP protocols. (CO5, K4)

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Part C $(5 \times 8 = 40)$

Answer **all** the questions not more than 1000 words each.

16. (a) Discuss in detail about the various data types in Java with example.   (CO1, K2)

Or

(b) Explain types of operators with example in detail.   (CO1, K2)

17. (a) Illustrate the structure and purpose of try-catch-finally block in Java.   (CO2, K2)

Or

(b) Write a detailed note on Packages with example.   (CO2, K2)

18. (a) Describe the concept of thread priorities in Java.   (CO3, K3)

Or

(b) Illustrate life cycle of thread.   (CO3, K3)

19. (a) Explain in detail about String immutability in Java.   (CO4, K4)

Or

(b) Discuss different ways to create and customize frames using AWT.   (CO4, K4)

20. (a) Discuss the significance of utility classes in Java programming with example.   (CO5, K4)

Or

(b) Write a detailed note on Bound and Constrained properties in Java Beans.   (CO5, K4)

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M.Voc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Software Development

SOFTWARE ENGINEERING

(CBCS – 2022 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. ———————— model emphasizes sequential phases and strict linear progression.   (CO1 ,K1)

    (a) Agile   (b) Waterfall
    (c) Scrum   (d) Kanban

2. ———————— is a software development activity that is not a part of software processes.   (CO1, K1)

    (a) Validation   (b) Specification
    (c) Development   (d) Dependence

3. Class-based modeling uses information derived from ———————— descriptions to   identify analysis classes.

    (CO2, K3)

    (a) Use cases and other
    (b) Written application
    (c) Both (a) and (b)
    (d) None of these

4. Which requirements modeling technique is best suited for capturing user interactions and system behavior? (CO2, K3)

   (a) Class diagrams

   (b) Use-case diagrams

   (c) Sequence diagrams

   (d) State diagrams

5. ——————— design principle emphasizes placing frequently accessed elements within easy reach of the users thumb. (CO3, K4)

   (a) Fitts's Law   (b) Gestalt Principles

   (c) Wire framing   (d) Material Design

6. ——————— is a design element helps guide users through a sequence of steps in a user interface. (CO3, K4)

   (a) Pagination

   (b) Parallax scrolling

   (c) Parallax navigation

   (d) Responsive design

7. Which of the following is not a dimension of software quality according to ISO 9126? (CO4, K2)

   (a) Functionality   (b) Reliability

   (c) Maintainability   (d) Productivity

8. ——————— is a review technique that involves a group of stakeholders examining code, aiming to identify defects. (CO4, K2)

   (a) Pair Programming

   (b) Walkthrough

   (c) Inspection

   (d) Ad hoc Review

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9.   ——————— estimation technique relies on historical data and similarity with previous projects. (CO5, K5)
   (a)   Expert judgment
   (b)   Delphi technique
   (c)   Parametric estimation
   (d)   Analogous estimation

10.   The scheduling technique allows for task dependencies to be represented graphically is ——————— (CO5, K5)
   (a)   Gantt charts   (b)   PERT charts
   (c)   Kanban boards   (d)   Waterfall charts

Part B   (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11.   (a)   Explain about Adaptive Software Development.
                                             (CO1, K2)
               Or
      (b)   Compare and contrast the Waterfall and Spiral model. (CO1, K2)

12.   (a)   How to identify events using Use-case scenario? (CO2, K3)
               Or
      (b)   Illustrate Scenario Based Methods for Mobile Applications. (CO2, K3)

13.   (a)   Explain the golden rules of UI design. (CO3, K4)
               Or
      (b)   Illustrate the concept of Mobile App Design. (CO3, K4)

14.   (a)   Discuss the role of software testing strategies for conventional software architecture. (CO4, K4)
               Or
      (b)   What are the review guidelines used in software development? Explain. (CO4, K4)

3   R1844

15. (a) Discuss the significance of project metrics in software development. (CO5, K5)

Or

(b) Describe process metrics used in software development. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Discuss the importance of human factors in the success of software engineering projects. (CO1, K2)

Or

(b) Analyze the nature of software in detail. (CO1, K2)

17. (a) Discuss in detail about CRC modeling. (CO2, K3)

Or

(b) Describe in detail about Behavioral Model. (CO2, K3)

18. (a) Discuss the importance of design principles in software development. (CO3, K4)

Or

(b) What are the issues faced in UI Design? Explain. (CO3, K4)

19. (a) Explain in detail about SQA. (CO4, K4)

Or

(b) Discuss the unique testing challenges associated with web applications. (CO4, K4)

20. (a) Write a detailed note on Risk management. (CO5, K5)

Or

(b) Discuss in detail about various software estimation techniques. (CO5, K5)

———————

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M.Voc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Software Development

DIGITAL ELECTRONICS AND COMPUTER SYSTEM ARCHITECTURE

(CBCS – 2022 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Convert the hexadecimal number 2F to its decimal equivalent.   (CO1, K2)

    (a)   47   (b)   48

    (c)   45   (d)   46

2. Which of the following codes is used for non-weighted binary coding?   (CO1, K2)

    (a)   ASCII Code   (b)   Excess-3 Code

    (c)   Gray Code   (d)   BCD Code

3. A decoder converts 'n' inputs to ——————— outputs.   (CO2, K3)

    (a) n (b) n^2

    (c) 2^n (d) n^n

4. The purpose of grouping adjacent 1's in a K-map is to
——————. (CO2, K3)

(a) Maximize the Boolean expression

(b) Covert SOP to POS

(c) Minimize the Boolean expression

(d) Increase number of terms

5. —————— is known for having a clock input that controls the timing of the output. (CO3, K3)

(a) RS Flip-Flop (b) JK Flip-Flop

(c) D Flip-Flop (d) T Flip-Flop

6. The T flip-flop can be constructed from which other flip-flop by connecting the Q output back to the input. (CO3, K3)

(a) RS Flip-Flop (b) JK Flip-Flop

(c) D Flip-Flop (d) Master-Slave Flip-Flop

7. A stack is typically used for ——————. (CO4, K5)

(a) Arithmetic Operations

(b) Logical Operations

(c) Subroutine calls and routines

(d) Data Transfer between CPU and memory

8. —————— operation is NOT performed by an ALU. (CO4, K5)

(a) Addition (b) Subtraction

(c) Multiplication (d) Fetching data

9. In register transfer language, the notation R1 ← R2 means ——————. (CO5, K1)

(a) The content of R1 is transferred to R2

(b) The content of R2 is transferred to R1

(c) Both R1 and R2 are cleared

(d) The content of R1 is incremented by the content of R2

R1845

10. ——————— is used to add the contents of two registers. (CO5, K1)

(a) AND   (b) OR

(c) ADD   (d) NOT

Part B   (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Discuss the concept of Excess-3 code. (CO1, K2)

Or

(b) Describe the steps to convert a binary number to its hexadecimal representation. (CO1, K2)

12. (a) Illustrate De Morgan's Theorems in detail. (CO2, K3)

Or

(b) Describe the process of simplifying Boolean expressions using K-map. (CO2, K3)

13. (a) Explain the basic operation of RS flip-flop. (CO3, K3)

Or

(b) Discuss the characteristics of D Flip-Flop. (CO3, K3)

14. (a) What is program control? Explain the importance. (CO4, K5)

Or

(b) Describe the role of Arithmetic Logic Unit in CPU operations. (CO4, K5)

15. (a) Write a note on inter-register transfer. (CO5, K1)

Or

(b) Discuss the role of control functions in micro-operations. (CO5, K1)

3   **R1845**

Part C $(5 \times 8 = 40)$

Answer **all** questions not more than 1000 words each.

16. (a) Describe the process of finding the 2's complement of a binary number.   (CO1, K2)

Or

(b) Write a detailed note on Gray code.   (CO1, K2)

17. (a) Convert the following Boolean expression into standard SOP form: (CO2, K3)

(i) $A\overline{B}C + \overline{AB} + AB\overline{C}D$

(ii) $AB + AC' + BC$.

Or

(b) Discuss the function and design of multiplexers in detail.   (CO2, K3)

18. (a) Illustrate the circuit of 4-bit binary ripple counter.   (CO2, K3)

Or

(b) Discuss in detail about different types of shift registers.   (CO2, K3)

19. (a) Explain any four Addressing Modes in detail.   (CO4, K5)

Or

(b) Explain the significance of branching, looping, and conditional control instructions with examples.   (CO4, K5)

20. (a) How control signals manage the execution of micro-operations? Explain.   (CO5, K1)

Or

(b) Describe the basic computer organization in detail.   (CO5, K1)

———————

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M.Voc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Software Development

MATHEMATICAL LOGICS FOR SOFTWARE DEVELOPMENT

(CBCS – 2022 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. If a set A has 3 elements then find the number of elements in power set of set A   (CO1, K1)

    (a)   1   (b)   2

    (c)   8   (d)   27

2. A formula is a tautology if ——————.   (CO1, K1)

    (a)   It is true for all possible truth values of its variables

    (b)   It is true for some values and false for others

    (c)   It is false for all possible truth values of its variables

    (d)   It contains no variables

3. —————— is used to find a minimum spanning tree in a weighted graph.   (CO2, K2)

    (a)   Dijkstra's Algorithm

    (b)   Prim's Algorithm

    (c)   Floyd-Warshall Algorithm

    (d)   Bellman-Ford Algorithm

4. In a rooted tree, the root is ——————. (CO2, K2)

   (a) The node with the highest degree

   (b) The node with the lowest degree

   (c) Designated starting node with no parent

   (d) Node that connects to all other nodes

5. In the transportation table, what does each cell represent? (CO3, K3)

   (a) The cost of shipping one unit from a source to a destination

   (b) The total supply available at a source

   (c) The total demand at a destination

   (d) The difference between supply and demand

6. The purpose of the Stepping Stone Method in transportation problems is to ——————. (CO3, K3)

   (a) Find the initial feasible solution

   (b) Determine the optimal solution

   (c) Balance the transportation table

   (d) Covert problem to assignment problem

7. When conducting a hypothesis test on the mean of a population with unknown variance, —————— distribution is used for test statistic? (CO4, K3)

   (a) Normal Distribution

   (b) t-distribution

   (c) Chi-square distribution

   (d) F-distribution

R1846

8. The p-value in hypothesis testing represents ——————. (CO4, K3)

    (a) The probability of making a Type I error

    (b) The probability of making a Type II error

    (c) The probability of rejecting the null hypothesis when it is true

    (d) The probability of failing to reject the null hypothesis when it is false

9. Bayes' Theorem is used to ——————. (CO5, K4)

    (a) Find the joint probability of two events

    (b) Calculate the probability of an event given prior knowledge of related events

    (c) Determine the probability of independent events

    (d) Compute the expected value of an event

10. —————— is used to find the joint probability of two independent events. (CO5, K4)

    (a) Additional Law   (b) Multiplication Law

    (c) Bayes Theorem   (d) Total Probability Theorem

Part B $(5 \times 5 = 25)$

Answer **all** questions not more than 500 words each.

11. (a) Describe the structure of an TF statement with example. (CO1, K1)

                        Or

    (b) Difference between atomic and compound statements in propositional logic. (CO1, K1)

3   **R1846**

12. (a) How is a tree different from a general graph? Explain. (CO2, K2)

Or

(b) Describe the adjacency matrix representation of a graph. (CO2, K2)

13. (a) Discuss the characteristics of a balanced transportation problem. (CO3, K3)

Or

(b) How the Modified Distribution Method is used to optimize a transportation problem? (CO3, K3)

14. (a) Explain the steps involved in hypothesis testing for a population mean. (CO4, K4)

Or

(b) Discuss about chi-square goodness-of-fit test. (CO4, K4)

15. (a) Explain the three axioms of probability theory (Kolmogorov's axioms). (CO5, K5)

Or

(b) Describe the Addition Law of Probability. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Construct the truth table for $(\neg A \wedge B) \vee (A \wedge \neg B)$. Explain each step in detail. (CO1, K1)

Or

(b) Explain the concept of inclusion and equality of sets with examples. (CO1, K1)

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17. (a) How Binary Search tree differ from Binary tree? Explain in detail. (CO2, K2)

Or

(b) Explain Prim's algorithm for finding a minimum spanning tree. (CO2, K2)

18. (a) Solve the following unbalanced assignment problem of minimizing total time for doing all the jobs. (CO3, K3)

Operator	Jobs				
	1	2	3	4	5
1	6	2	5	2	6
2	2	5	8	7	7
3	7	8	6	9	8
4	6	2	3	4	5
5	9	3	8	9	7
6	4	7	4	6	8

Or

(b) A manufacturer has distribution centres at X, Y and Z. These centres have availability of 40, 20 and 40 units of the product. His retail outlets at A, B, C, D and E require 25,10,20,30 and 15 units respectively. The transport cost per unit between each centre and each outlet is given below. (CO3, K3)

Distribution Centre	Retail Outlets				
	A	B	C	D	E
X	55	30	40	50	50
Y	35	30	100	45	60
Z	40	60	95	35	30

Determine the optimal distribution to minimize the cost of transportation.

5

R1846

19. (a) Explain the concept of Type I and Type II errors in hypothesis testing with example. (CO4, K4)

Or

(b) Describe the process of conducting a one-sample chi-square test. (CO4, K4)

20. (a) How total probability applies in practical science? Explain with example. (CO5, K5)

Or

(b) Discuss about variance in probability theory. (CO5, K5)

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		2MS3C1

M.Voc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Software Development

PRINCIPLES OF IoT

(CBCS – 2022 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. ————— cellular technology is best for IoT projects requiring high data transfer rates.   (CO1, K2)

    (a) 2G   (b) 3G

    (c) 4G   (d) 5G

2. ————— is specifically designed for short-range communication within 10 meters in IoT applications.   (CO1, K2)

    (a) IEEE 802.15.4e   (b) IEEE 802.11ah

    (c) IEEE 802.15.4   (d) IEEE 802.11

3. In IoT architecture, ————— layer/layers use networking technologies to transfer data?   (CO2, K1)

    (a) Application Layer (b) Perception Layer

    (c) Network Layer   (d) All of the above

4. Which of the following is the correct layer in the IoT Reference Model that deals with processing and analyzing data from sensors and devices?   (CO2, K1)

    (a) Perception Layer (b) Network Layer

    (c) Application Layer (d) Processing Layer

5. ———————— IoT boards is known for its ease of use, large community support, and versatility in prototyping and development. (CO3, K2)

   (a) Raspberry Pi   (b) Arduino

   (c) ESP32   (d) Intel Edison

6. ———————— is the state-of-the-art communication technology enabling low-power, low-bandwidth, and long-range connectivity for IoT devices. (CO3, K2)

   (a) Wi-Fi

   (b) Bluetooth Low Energy (BLE)

   (c) LoRaWAN

   (d) 5G

7. Which of the following IoT applications is revolutionizing the manufacturing industry by enabling real-time monitoring, predictive maintenance, and optimized production workflows? (CO4, K3)

   (a) Smart Homes

   (b) Wearable Devices

   (c) Industrial Automation

   (d) Smart Cities

8. ———————— IoT technology helps track patients' medication adherence and dosing schedules. (CO4, K3)

   (a) Wearables   (b) Mobile Apps

   (c) Smart Pills   (d) Telemedicine

9. ———————— IoT privacy concern refers to the collection and analysis of personal data from devices, potentially infringing on users' right to privacy. (CO5, K1)

   (a) Data Breach

   (b) Device Hijacking

   (c) Surveillance Capitalism

   (d) Identity Theft

R1847

10. Which of the following is the primary IoT security vulnerability that allows hackers to access and control devices? (CO5, K1)

    (a) Weak Passwords (b) Outdated Software

    (c) Unencrypted Data (d) Default Factory Settings

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Discuss about the applications of IoT in detail. (CO1, K2)

    Or

    (b) Write a note on Data Management. (CO1, K2)

12. (a) Discuss about key components of IoT Reference Model in detail. (CO2, K3)

    Or

    (b) Explain about Information View in detail. (CO2, K3)

13. (a) Discuss about Domain Model Specification in IoT design methodology. (CO3, K3)

    Or

    (b) Write a note on Packages in python. (CO3, K3)

14. (a) Describe the features of Value Creations using IoT. (CO4, K3)

    Or

    (b) Write short notes on IoT for Retailing Industry. (CO4, K3)

15. (a) Illustrate Overview of Governance, Privacy and Security issues in detail. (CO5, K1)

    Or

    (b) Discuss about Smartie Approach in detail. (CO5, K1)

3 | **R1847** |

Part C (5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Explain about Network and Communication Processes in detail. (CO1, K2)

Or

(b) Discuss in detail about Security, Privacy and Trust issues in IoT. (CO1, K2)

17. (a) Illustrate the architecture of IoT Reference Model with neat sketch. (CO2, K3)

Or

(b) Explain in detail about Deployment and Operational view. (CO2, K3)

18. (a) What are the steps involved in IoT design methodology? Explain in detail. (CO3, K3)

Or

(b) Write a note on (CO3, K3)

(i) IF and IF_ELIF

(ii) FOR

(iii) WHILE in python.

19. (a) Explain in detail about IoT applications for Industry. (CO4, K3)

Or

(b) Describe about Value Creation from Bigdata and Serialization in detail. (CO4, K3)

20. (a) Explain about FP7 icore Access framework with neat sketch. (CO5, K1)

Or

(b) Discuss about Security, Privacy and Trust in IoT-Data platforms for smart cities. (CO5, K1)

——————

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M.Voc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Software Development

FUNDAMENTALS OF DATA SCIENCE

(CBCS – 2022 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. The process of identifying, acquiring, and preparing data for analysis is known as _____.   (CO1, K1)
   (a) Data Visualization
   (b) Data Mining
   (c) Data Wrangling
   (d) Data Modeling

2. The measure of the spread or dispersion of data and calculated as the square root of the variance is _____.   (CO1, K1)
   (a) Mean
   (b) Median
   (c) Standard Deviation
   (d) Interquartile Range

3. Data _____ involves transforming and aligning data from diverse sources into a unified format for analysis.   (CO2, K3)
   (a) Integration   (b) Mapping
   (c) Transformation   (d) Warehousing

4. The Naive Bayes algorithm is based on the principle of _____. (CO2, K3)

   (a) Conditional Probability

   (b) Joint Probability

   (c) Class Probability

   (d) Feature Independence

5. In data analysis, unordered factors are also known as _____ variables. (CO3, K4)

   (a) Categorical   (b) Numerical

   (c) Ordinal   (d) Continuous

6. _____ distribution is a continuous probability distribution commonly observed in natural phenomena, characterized by a bell-shaped curve. (CO3, K4)

   (a) Uniform   (b) Normal

   (c) Poisson   (d) Exponential

7. In Hadoop MapReduce, the _____ function takes input data, processes it, and produces key-value pairs as output. (CO4, K5)

   (a) Reduce   (b) Map

   (c) Combine   (d) Partition

8. HDFS stores data in _____ form, splitting files into fixed-size blocks for efficient storage and retrieval. (CO4, K5)

   (a) Compressed   (b) Encrypted

   (c) Block   (d) Fragmented

9. Effective documentation in data science projects ensures _____. (CO5, K5)

   (a) Data Quality

   (b) Model Accuracy

   (c) Transparency and Understanding

   (d) Computational Efficiency

R1848

10. Scatter plot matrices, also known as pair plots, are useful for visualizing _____ between multiple continuous variables. (CO5, K5)

    (a) correlations

    (b) categorical relationships

    (c) distribution shapes

    (d) outlier detection

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Describe about Life Cycle of Data Science in detail. (CO1, K2)

Or

    (b) How to work with data from files? Explain. (CO1, K2)

12. (a) Discuss in detail about Mapping Problem to Machine Learning. (CO2, K3)

Or

    (b) Explain about Advantages and Disadvantages of K-means Algorithm in detail. (CO2, K3)

13. (a) Demonstrate in detail about Factors in Data Frames. (CO3, K4)

Or

    (b) Analyze the Reading of CSV file in detail. (CO3, K4)

14. (a) Differentiate between Hadoop and RDBMS. (CO4, K5)

Or

    (b) Write a detailed note on Hadoop Map Reduce Program. (CO4, K5)

3   R1848

15. (a) Explain about Buzz dataset in detail. (CO5, K5)

Or

(b) Write a detailed note on plot() function. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** questions not more than 1,000 words each.

16. (a) Explain in detail about Stages in Data Science Project. (CO1, K2)

Or

(b) Analyze the Categories of NoSQL in detail. (CO1, K2)

17. (a) Describe in detail about Cluster Analysis. (CO2, K3)

Or

(b) Discuss about Evaluating Models in detail with neat diagram. (CO2, K3)

18. (a) Demonstrate about Reading and Getting data in R. (CO3, K4)

Or

(b) Explain in detail about R-Arrays with example. (CO3, K4)

19. (a) Illustrate the architecture of MapReduce with a neat sketch. (CO4, K5)

Or

(b) Discuss about design of Hadoop Distributed File System in detail. (CO4, K5)

20. (a) Write in detail about Effective Presentation. (CO5, K5)

Or

(b) Discuss about Graphics Analysis in detail. (CO5, K5)

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4 **R1848**

M.Voc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Software Development

FUNDAMENTALS OF AI AND ML

(CBCS – 2022 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1.   Which of the following year is the beginning of Artificial Intelligence as a field of research?   (CO1,K1)

   (a)   1950

   (b)   1956

   (c)   1960

   (d)   1969

2.   _____ is the type of intelligent agent uses knowledge and reasoning to achieve the goals but lack in learning capabilities.   (CO1, K1)

   (a)   Simple Reflex Agent

   (b)   Model-Based Reflex Agent

   (c)   Goal-Based Agent

   (d)   Utility-Based Agent

3. Heuristic search algorithm uses an evaluation function that estimates the total cost of reaching the goal, including both path cost and heuristic cost is known as _____. (CO2, K2)

    (a) Breadth-First Search (BFS)

    (b) Depth-First Search (DFS)

    (c) Uniform-Cost Search (UCS)

    (d) A* Search

4. _____ is the primary goal of Ends Analysis. (CO2, K2)

    (a) Means identification

    (b) Solution evaluation

    (c) Goal clarification

    (d) Project assessment

5. Which of the following is the type of knowledge represents general truths, facts, and rules that are widely accepted and applicable across various domains? (CO3, K2)

    (a) Domain Knowledge

    (b) Procedural Knowledge

    (c) Meta Knowledge

    (d) General Knowledge

6. _____ is the representation structure used in Semantic Networks to store knowledge. (CO3, K2)

    (a) Decision Trees

    (b) Graphs

    (c) Rules

    (d) Frames

R1849

7. Which of the following Machine Learning application involves training models to generate new data samples that resemble existing data? (CO4, K4)

    (a) Classification

    (b) Regression

    (c) Clustering

    (d) Generative Modeling

8. _____ metric is used to evaluate a classification model's performance with considering both precision and recall. (CO4, K4)

    (a) Accuracy

    (b) F1-score

    (c) ROC-AUC

    (d) Mean Squared Error

9. In Markov Decision Processes (MDPs), _____ represents the probability of transitioning from one state to another, given a specific action. (CO5, K2)

    (a) Reward Function

    (b) Transition Model

    (c) Policy

    (d) Value Function

10. Which evolutionary algorithm is inspired by the process of natural selection and uses principles of survival, mutation, and crossover to optimize solutions? (CO5, K2)

    (a) Genetic Algorithm

    (b) Evolutionary Programming

    (c) Evolution Strategies

    (d) Genetic Programming

R1849

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Discuss about the applications of AI. (CO1, K1)

Or

(b) Write a note on Environment for an Agent. (CO1, K1)

12. (a) How to describe a different problem using State Space Representation? Explain. (CO2, K2)

Or

(b) Write a detailed note on control strategies of Production Systems. (CO2, K2)

13. (a) Discuss in detail about Sets and Instance of Frames. (CO3, K2)

Or

(b) Write a note on Knowledge Management. (CO3, K2)

14. (a) Explain about the key aspects of Machine Learning. (CO4, K4)

Or

(b) What are the steps involved in Supervised Learning? Explain. (CO4, K4)

15. (a) Discuss the key feature of Reinforcement Learning. (CO5, K2)

Or

(b) Write the importance of Nature-inspired algorithms. (CO5, K2)

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R1849

Part C $(5 \times 8 = 40)$

Answer **all** questions not more than 1000 words each.

16. (a)   Write a detailed note on Branches of AI.   (CO1, K1)

                      Or

     (b)   Describe about various types of Agents in detail.
                                        (CO1, K1)

17. (a)   How can you apply Production Rules for Water Jug
           Problem? Explain.   (CO2, K2)

                      Or

     (b)   Describe how to solve crypt arithmetic puzzles
           problem using constraint satisfaction algorithm,
                                        (CO2, K2)

18. (a)   Explain about various types of Knowledge in detail.
                                        (CO3, K2)

                      Or

     (b)   Write a detailed note rules of Conceptual
           Dependency in detail.   (CO3, K2)

19. (a)   Explain about various types of Machine Learning in
           detail.   (CO4, K4)

                      Or

     (b)   Differentiate Supervised and Unsupervised
           Learning.   (CO4, K4)

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20. (a) Describe the Markov Decision Problem using Reinforcement Learning. (CO5, K2)

Or

(b) Write a detailed note on Q-Learning algorithm. (CO5, K2)

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6 **R1849**

R1850

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M.Voc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Software Development

Elective – CLOUD COMPUTING

(CBCS – 2022 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. The goal of "Lift and Shift" is _____in cloud migration.   (CO1, K1)

    (a) Optimize   (b) Migrate

    (c) Replace   (d) Scale

2. Virtualized computing resources provides _____ type of cloud services.   (CO1, K1)

    (a) IaaS   (b) PaaS

    (c) SaaS   (d) DaaS

3. Which of the following cloud architecture pattern involves breaking down applications into smaller, independent services?   (CO2, K2)

    (a) Monolithic Architecture

    (b) Microservices Architecture

    (c) Event-Driven Architecture

    (d) Serverless Architecture

4. _____ virtualization technique allows multiple virtual machines to share a single physical resource.

(CO2, K2)

(a) Hardware Virtualization

(b) Software Virtualization

(c) Resource Virtualization

(d) Desktop Virtualization

5. _____ cloud storage feature ensures data is stored in multiple locations, protecting against data loss.

(CO3, K3)

(a) Replication   (b) Backup

(c) Snapshot   (d) Encryption

6. PaaS provide _____ for app development.   (CO3, K3)

(a) Tools and Runtime

(b) Storage and Security

(c) Infrastructure and OS

(d) Software and Hardware

7. _____ risk management strategy involves identifying and mitigating potential cloud security threats.   (CO4, K5)

(a) Risk Avoidance   (b) Risk Transfer

(c) Risk Mitigation   (d) Risk Acceptance

8. Which of the following technology enables Cloud Mashups by allowing different services to communicate? (CO4, K5)

(a) APIs   (b) Web Services

(c) SOA   (d) ESB

9. _____ enables cloud applications to scale automatically.   (CO5, K5)

(a) Load Balancer   (b) Auto-Scaling

(c) Cloud Storage   (d) Serverless Computing

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10. Which of the following is the core cloud computing platform offered by Microsoft?   (CO5, K5)

   (a)   Microsoft Azure

   (b)   Microsoft Office 365

   (c)   Microsoft Dynamics 365

   (d)   Microsoft Visual Studio

Part B $(5 \times 5 = 25)$

Answer **all** the questions nor more than 500 words each.

11. (a)   Write the advantages and disadvantages of Cloud Computing.   (CO1, K1)

                         Or

   (b)   Illustrate Migration of Cloud in detail.   (CO1, K1)

12. (a)   Discuss about infrastructure of Virtualization in detail.   (CO2, K2)

                         Or

   (b)   Write a note on SaaS Model.   (CO2, K2)

13. (a)   Differentiate between Data Storage and Cloud Computing.   (CO3, K3)

                         Or

   (b)   Explain about various Services in Cloud.   (CO3, K3)

14. (a)   Describe in detail about Risks in Cloud Computing.   (CO4, K5)

                         Or

   (b)   Discuss   about   vulnerabilities   in   Cloud Environment.   (CO4, K5)

15. (a)   Write a detailed note on Microsoft Cloud Services.   (CO5, K5)

                         Or

   (b)   Discuss about Cloud Migration Strategy in detail.   (CO5, K5)

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Part C   (5 × 8 = 40)

Answer **all** the questions nor more than 1,000 words each.

16. (a)   Discuss about characteristics of Cloud Computing.
                                              (CO1, K1)

Or

     (b)   Write a detailed note on importance of Cloud
           Computing.   (CO1, K1)

17. (a)   Illustrate life cycle of Cloud Model.   (CO2, K2)

Or

     (b)   Describe   about   Reference   Model   of   Cloud
           Computing.   (CO2, K2)

18. (a)   Demonstrate Cloud Storage Technologies in detail.
                                              (CO3, K3)

Or

     (b)   Illustrate   the   working   principles   of   Cloud
           Computing.   (CO3, K3)

19. (a)   Demonstrate   about   Security   Risk   of   Cloud
           Computing.   (CO4, K5)

Or

     (b)   Explain about Tools and Technologies for Cloud in
           detail.   (CO4, K5)

20. (a)   Write in detail about Google Cloud Applications.
                                              (CO5, K5)

Or

     (b)   Differentiate between Google Cloud Platform, AWS
           and Azure.   (CO5, K5)

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