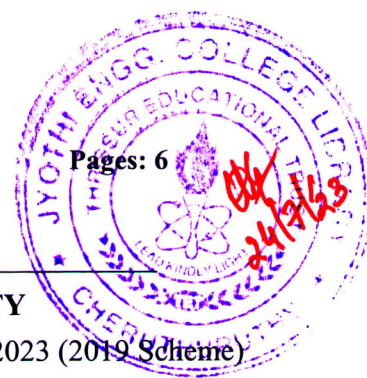




Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree Regular and Supplementary Examination June 2023 (2019 Scheme)

Course Code: ADT308**Course name: COMPREHENSIVE COURSE WORK**

Max. Marks: 50

Duration: 1Hour

- Instructions:** (1) Each question carries one mark. No negative marks for wrong answers
(2) Total number of questions: 50
(3) All questions are to be answered. Each question will be followed by 4 possible answers of which only ONE is correct.
(4) If more than one option is chosen, it will not be considered for valuation.

1. The problem of finding hidden structure in unlabelled data is called
 - a) Supervised learning
 - b) Unsupervised Learning
 - c) Reinforcement Learning
 - d) None
2. The ratio of correctly predicted labels and the total number of predicted labels is termed as
 - a) Accuracy
 - b) Precision
 - c) F1 score
 - d) Confusion matrix
3. Principal Components Analysis (PCA) is used for
 - a) Cross Validation
 - b) Loss estimation
 - c) Dimension Reduction
 - d) Performance metric
4. Support vector machine (SVM) algorithm solves
 - a) Entropy Maximization
 - b) Global minima
 - c) Local minima
 - d) Convex optimization problem
5. Which of the following is a heuristic for k-means clustering algorithm?
 - a) Ward's algorithm
 - b) Lloyd's algorithm
 - c) Both a and b
 - d) None
6. You are given seismic data and you want to predict next earthquake, this is an example of
 - a) Supervised learning
 - b) Unsupervised Learning
 - c) Reinforcement Learning
 - d) Dimension reduction
7. A feature F1 can take certain value: A, B, C, D, E, & F and represents grade of students from a college. Here feature type is.
 - a) Nominal
 - b) Categorical
 - c) Boolean
 - d) Ordinal
8. ML is a field of AI consisting of learning algorithms that
 - a) Improve their performance
 - b) At executing some task
 - c) Over time with experience
 - d) All of the above

9. The model will be trained with data in one single batch is known as
 a) Batch learning b) Offline learning c) Both a and b d) None
10. Which of the following is a widely used and effective machine learning algorithm based on the idea of bagging?
 a) Decision Tree b) Regression c) Classification d) Random Forest
11. Which sorting algorithm is best when list is already sorted
 a) Quick sort b) Merge sort c) Insertion sort d) Selection sort
12. What would be the output after performing the following operations in a Deque
 1. Insertfront(10);
 2. Insertfront(20);
 3. Insertrear(30);
 4. Insertrear(40);
 5. Deletefront();
 6. Insertfront(50);
 7. Deleterear();
 8. Display();
 a) 10,20,30 b) 50,10,30 c) 40,20,30 d) 20,30,40
13. Which of the following is a Divide and Conquer algorithm
 a) Bubble b) Heap c) Selection d) Merge
14. Select the postfix expression for the infix expression $a+b-c+d*(e/f)$
 a) $ab+c-d+e*f/$ b) $ab+c-def/*+$ c) $abc-+def/*+$ d) $ab+c-def/*+$
15. What is the time complexity of the binary search algorithm
 a) $O(n)$ b) $O(1)$ c) $O(\log 2n)$ d) $O(n^2)$
16. Which of the following algorithms are used to find the shortest path from a source node to all other nodes in a weighted graph
 a) Dijkstra's algorithm b) BFS c) Prims algorithm d)* Kruskal's algorithm
17. Consider the following sequence of operations on an empty stack.
 push(22); push(43); pop(); push(55); push(12); s=pop();
 Consider the following sequence of operations on an empty queue.
 enqueue(32); enqueue(27); dequeue(); enqueue(38); enqueue(12); q=dequeue();
 The value of s+q is
 a) 44 b) 54 c) 39 d) 70
18. What is the outcome of the prefix expression +, -, *, 3, 2, /, 8, 4, 1
 a) 4 b) 5 c) 11 d) 12

- 19 Which of the following options is not true about the Binary Search tree
- The value of the left child should be less than the root node
 - The value of the right child should be greater than the root node.
 - The left and right sub trees should also be a binary search tree
 - None
- 20 Which of these adjacency matrices represents a simple graph
- $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 1 & 1 \end{bmatrix}$
 - $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$
 - $\begin{bmatrix} 0 & 0 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$
 - $\begin{bmatrix} 0 & 0 & 1 \\ 1 & 0 & 1 \\ 1 & 0 & 0 \end{bmatrix}$
- 21 Calculate the internal fragmentation if page size is 4KB and process size is 103KB
- 1KB
 - 2KB
 - 3KB
 - 4KB
- 22 A process which is copied from main memory to secondary memory on the basis of requirement is known as
- Paging
 - Demand paging
 - Thread
 - Segmentation
- 23 If frame size is 4KB then a paging system with page table entry of 2 bytes can address _____ bytes of physical memory.
- 2^{12}
 - 2^{16}
 - 2^{18}
 - 2^{28}
- 24 Which of the following is true with regard to Round Robin scheduling technique
- Responds poorly to short process with small time quantum
 - Works like SJF for larger time quantum
 - Does not use a prior knowledge of burst times of processes
 - Ensure that the ready queue is always of the same size.
- 25 FIFO scheduling is a type of
- Non-pre-emptive scheduling
 - Pre-emptive scheduling
 - Deadline scheduling
 - None
- 26 For which of the following purposes in Banker's algorithm is used
- Preventing deadlock
 - Solving deadlock
 - Recovery from deadlock
 - None
- 27 In a timeshare operating system, when the time slot assigned to a process is completed, the process switches from the current state to?
- Suspended state
 - Terminated state
 - Blocked state
 - Ready state
- 28 The operating system keeps a small table containing information about all open files called

- a) File-open table b) Open directory table c) open-file table d) system table
- 29 The _____ program initializes all aspects of the system, from CPU registers to device controllers and the contents of main memory, and then starts the operating system.
a) bootstrap b) main c) bootloader d) rom
- 30 The operating system and the other processes are protected from being modified by an already running process because
a) They have a protection algorithm
b) They are in different memory spaces
c) Every address generated by the CPU is being checked against the relocation and limit registers
d) They are in different logical addresses
- 31 In E-R diagram an attribute is represented by
a) Circle b) Rectangle c) Square d) Ellipse
- 32 Which of the following SQL command is used for removing (or deleting) a relation from the database?
a) Drop b) Delete c) Roll back d) Remove
- 33 Which of the following can replace the below query?
SELECT name, course_id
FROM instructor, teaches
WHERE instructor_ID= teaches_ID;
a) Select name, course_id from instructor natural join teaches;
b) Select name, course_id from teaches, instructor where instructor_id=course_id;
c) Select name, course_id from instructor;
d) Select course_id from instructor join teaches;
- 34 Let E1, E2 and E3 be three entities in an E/R diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many, R2 is many- to-many. R3 is another relationship between E2 and E3 which is many-to-many. R1, R2 and R3 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model
a) 3 b) 4 c) 5 d) 6
- 35 Find the highest normal form of a relation R(A,B,C,D,E) with Functional Dependency {B->A, A->C, BC->D, AC->BE}
a) 1NF b) 2NF c) 3NF d) BCNF
- 36 To select some particular columns, which of the following command is used?
a) SELECTION b) JOIN c) UNION d) PROJECTION
- 37 Select the definition of the correct key which is used to represent relation between two tables?
a) Primary key b) Foreign key c) Super key d) Candidate key
- 38 Which of the following SQL statement can be used to select the name of customers who have no

address.

- a) Select Name from CUSTOMER where address IS EMPTY;
 - b) Select Name from CUSTOMER where address IS NULL;
 - c) Select Name from CUSTOMER where address=NULL;
 - d) All of the above
- 39 What do you mean by one to many relationships?
- a) One class may have many teachers
 - b) One teacher can have many classes
 - c) Many classes may have many teachers
 - d) Many teachers may have many classes
- 40 In SQL which command is used to issue multiple CREATE TABLE, CREATE VIEW and GRANT statements in a single transaction.
- a) Create package
 - b) Create schema
 - c) Create cluster
 - d) All of the above
- 41 ___ are used when we want to visually examine the relationship between two quantitative variable
- a) Scatterplot
 - b) Bar graph
 - c) Pie chart
 - d) Line graph
- 42 Which of the following language is used in Data science
- a) R
 - b) C
 - c) C++
 - d) Ruby
- 43 A _____ is a structured representation of data
- a) database table
 - b) functions
 - c) data preparation
 - d) data frame
- 44 Choose a disadvantage of decision trees among the following.
- a) Decision trees are prone to over fitting
 - b) Decision trees are robust to outliers
 - c) Factor analysis
 - d) All of the above
- 45 Amongst which of the following is / are the true about regression analysis
- a) Describes associations within the data
 - b) Modelling relationships within the data
 - c) Answering yes/no questions about the data
 - d) All of the mentioned above
- 46 Inference engines work on the principle of?
- a) Forward chaining
 - b) Simple chaining
 - c) Backward chaining
 - d) Both a and c
- 47 How do we perform Bayesian classification when some features are missing
- a) We integrate the posteriors probabilities over the missing features

- b) We ignore the missing features
 - c) We assuming the missing values as the mean of all values
 - d) Drop the features completely
- 48 The modern conception of data science as an independent discipline is sometimes attributed to?
- a) John McCarthy
 - b) Arthur Samuel
 - c) William S
 - d) Dennis Ritchie
- 49 The process of quantifying data is referred to as
- a) Structure
 - b) Decoding
 - c) Coding
 - d) Enumeration
- 50 Linear Regression is the supervised machine learning model in which the model finds the best fit between the independent and dependent variable.
- a) Linear line
 - b) Non linear line
 - c) Curved line
 - d) All of the above
