**GATE LEVEL MCQ QUIZ FOR ADVANCED LEARNERS**

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| **Name of the student** |  | | |
| **USN:** |  | | |
| **Marks Obtained:** |  | **Semester:** | **05** |
| **Max. Marks** |  | **Date:** |  |
| **Student Signature** |  | **Academic Year:** |  |

**Note:** Answer all the questions. Each question carries **One Mark.**

1. What is the primary focus of automata theory?

A) Study of machines that operate automatically

B) Analysis of computational problems

C) Investigation of languages and their acceptors

D) Development of artificial intelligence

**Answer: C**

1. Which of the following is NOT a type of automaton in automata theory?

A) Finite Automaton (FA)

B) Pushdown Automaton (PDA)

C) Deterministic Turing Machine (DTM)

D) Conditional Automaton (CA)

**Answer: D**

1. Which of the following languages can be recognized by a Finite Automaton (FA)?

A) Context-Free Languages

B) Regular Languages

C) Context-Sensitive Languages

D) Recursive Enumerable Languages

**Answer: B**

1. What is the defining characteristic of a Deterministic Finite Automaton (DFA)?

A) It has a stack for memory storage

B) It can transition to multiple states for a given input symbol

C) It accepts or rejects an input string by following a single path

D) It can recognize context-free languages

**Answer: C**

1. What is the purpose of the transition function in an automaton?

A) To determine the start state of the automaton

B) To specify the input alphabet of the automaton

C) To define the set of accepting states

D) To describe the behavior of the automaton for each input symbol and current state

**Answer: D**

1. Which of the following is NOT an example of a network topology?

A) Bus

B) Star

C) Circular

D) Stack

**Answer: D**

1. Which of the following is NOT a type of network transmission medium?

A) Ethernet cable

B) Fiber optic cable

C) Wi-Fi

D) RAM (Random Access Memory)

**Answer: D**

1. What is the maximum data rate of Ethernet using twisted pair cables in most common implementations?

A) 10 Mbps

B) 100 Mbps

C) 1 Gbps

D) 10 Gbps

**Answer: C**

1. What is the purpose of a firewall in computer networks?

A) To enhance the speed of data transmission

B) To prevent unauthorized access to or from a private network

C) To convert analog signals to digital signals

D) To provide physical protection to network infrastructure

**Answer: B**

1. Which of the following layers of the OSI model is responsible for logical addressing and routing?

A) Physical Layer

B) Data Link Layer

C) Network Layer

D) Transport Layer

**Answer: C**

1. Which of the following is NOT a subfield of artificial intelligence?

A) Machine Learning

B) Natural Language Processing

C) Data Mining

D) Computer Vision

**Answer: C**

12. Which of the following algorithms is a type of unsupervised learning?

A) Decision Trees

B) Support Vector Machines

C) k-means Clustering

D) Neural Networks

**Answer: C**

13. Which of the following is an example of a supervised learning task?

A) Sentiment analysis

B) Clustering

C) Dimensionality reduction

D) Anomaly detection

**Answer: A**

14. What is the primary function of a neural network in artificial intelligence?

A) To simulate the human brain's structure and function

B) To perform complex mathematical calculations

C) To generate random outputs

D) To encode and decode data for transmission

**Answer: A**

15. What is the primary goal of artificial intelligence (AI)?

A) To replicate human intelligence exactly

B) To create intelligent agents that can perform tasks requiring human intelligence

C) To replace human workers with machines

D) To develop robots that can think and feel like humans

**Answer: B**

16. Which of the following SQL commands is used to retrieve data from a database?

A) INSERT

B) UPDATE

C) SELECT

D) DELETE

**Answer: C**

17. Which of the following is NOT a type of database model?

A) Relational

B) Hierarchical

C) Network

D) Flat-file

**Answer: D**

**18.** Which of the following is NOT a property of ACID transactions in database management?

A) Atomicity

B) Consistency

C) Integrity

D) Durability

**Answer: C**

**19.** What is a primary key in a relational database?

A) A key used for authentication purposes

B) An attribute that uniquely identifies each record in a table

C) A key used for encryption of sensitive data

D) An attribute that allows for efficient sorting of records

**Answer: B**

**20**. What is the purpose of the WHERE clause in a SQL SELECT statement?

A) To specify the columns to be retrieved

B) To specify the tables to be queried

C) To filter rows based on a specified condition

D) To order the result set in ascending or descending order

**Answer: C**