Ph.D. COMMON ENTRANCE TEST AUGUST 2024

SUBJECT – Computer Science & IT

PART B

Roll No:

Duration: 60 minutes **Maximum Marks: 50**

Instructions:

1. **This entrance test question paper is not to be taken out of the examination hall**
2. **Question paper consists of Section A and Section B**
3. **Section A consists of 30 MCQs carrying 1 Mark each. Write the Alphabet of the correct answer in the space given.**
4. **Section B consists of Descriptive questions carrying 5 marks each. Restrict your answer to 500 words. Additional plain sheets have been attached to the question paper to answer Section B**

SECTION – A

Answer the following questions by writing the Alphabet of the correct answer in the Box given: **30 X 1 = 30**

1. Reflected binary code is also known as _____
   A. BCD code
   B. Binary code
   C. ASCII code
   D. Gray Code

2. Which representation is most efficient to perform arithmetic operations on the numbers?
   A. Sign-magnitude
   B. 1's complement
   C. 2's complement
   D. None of the above

3. Gray code representation of 14 is
   A. 1010
   B. 1100
   C. 1001
   D. 1101

4. The control unit controls other units by generating _____
   A. Control signals
   B. Timing signals
   C. Transfer signals
   D. Command Signals

5. In general, control memory can be.
   A. ROM
   B. RAM
   C. All of the above
   D. None of the above

6. One security protocol for the e-mail system is _____
   A. IPSec
   B. SSL
   C. PGPCC
   D. All of the above

7. Which error detection method uses one's complement arithmetic?
   A. Simple parity check
   B. Two-dimensional parity check
   C. CRC
   D. Checksum

8. IPv6 has _____ -bit addresse
   A. 32
   B. 64
   C. 128
   D. 256

9. In the OSI model, as a data packet moves from the lower to the upper layers, headers are _____.
   A. Added
   B. Removed
   C. Rearranged
   D. Modified

10 The physical layer is concerned with the movement of _____ over the physical medium.
   A. Program
   B. Dialogs
   C. Protocols
   D. Bits

11 If A = {1, 2, 3, 4, 5, 6} and B = {3, 6, 9} then A ∩ B
   A. {1,4}
   B. {3, 6}
   C. {3,4}
   D. {2,6}

12 The function is defined as f : R →R f (x) = x^2 − 5 find the value of f(8)
   A. 46
   B. 57
   C. 59
   D. 54

13 0! = ?

A. 1
B. 0
C. 10
D. Not Defined

14 What is ACID properties of Transactions?

A. Atomicity,Consistency, Isolation, Durability
B. Atomicity, Consistency, Isolation, Database
C. Automatically, Concurrency, Isolation, Durability
D. Atomicity, Consistency, Inconsistent, Durability

15 Relational Algebra does not have_____.

A. Selection operator
B. Projection Operator
C. Aggregation Operator
D. Division Operator

16 A functional dependency is a relationship between or among _____ .

A. Tables
B. Rows
C. Relations
D. Attributes

17 What is the primary purpose of a digital signature in data security?

A. To encrypt the data
B. To ensure the authenticity and integrity of a message
C. To compress the data for efficient storage
D. To replace sensitive data with tokens

18 Which of the following best describes 'phishing'?

A. A type of malware that encrypts files
B. An attack that disrupts service by overwhelming resources
C. A method to secure data in transit
D. A technique used to capture user credentials by masquerading as a trusted entity

19 Which of the following is NOT a characteristic of cloud computing?

A. On-demand self-service
B. Broad network access
C. Resource Pooling
D. Fixed pricing models

20 Which data structure allows efficient insertion and deletion at bo

A. STACK
B. QUEUE
C. ARRAY
D. LINKED LIST

21 Which of the following data structures is used for implementing recursion

A. Stack
B. Queue
C. Heap
D. Linked List

22 Which of the following is an example of a non-linear data structure?

A. Queue
B. Stack
C. Linked List
D. Tree

23 What is the time complexity of binary search on a sorted array of size n?

A. O(n)
B. O(n log n)
C. O(log n)
D. O(1)

24 Which of the following is not a characteristic of a good hash function?

A. Deterministic
B. Fast to compute
C. Uniformly distributes keys
D. Causes many collisions

25 Which of the following algorithms can be used to find the shortest path in a gra

A. QuickSort
B. Dijkstra's Algorithm
C. Merge Sort
D. Depth-First Search

26 Which searching algorithm is based on Divide and Conquer Technique?

A. Binary Search
B. Linear Search
C. Depth First Search
D. Breadth First Search

27 What is the primary goal of AI ethics?

A. To ensure that AI systems are always more intelligent than humans.

B. To regulate the development and use of AI technologies
C. To prevent the advancement of AI technologies
D. To ensure that AI systems operate ethically and responsibly

28 Which algorithm is commonly used for clustering in Unsupervised Learning?

A. Support Vector Machines (SVM)
B. K-Means Clustering
C. Linear Regression
D. Gradient Boosting

29 What is internet?

A. A network of interconnected local area networks
B. A collection of unrelated computers
C. Interconnection of wide area networks
D. A single network

30 What is the full form of OSI?

A. optical service implementation
B. open service Internet
C. open system interconnection
D. operating system interface

Section - B

Answer any four questions (Each question carry 5 marks) 4*5 = 20

1. Explain about software development life cycle with neat diagram.

2. Discuss about various types of cloud computing.

3. What are the layers of OSI network model?

4. What are the three level architecture of DBMS?

5. Discuss about basic terminologies in tree data structure.

6. Explain about neural network architecture with neat sketch.