

Seat No.

Total No. of Pages : 12

Ph.D. Entrance Examination 2025**COMPUTER SCIENCE****Subject Code: 58802**

Day and Date : Tuesday, 09-Sep-2025**Total Marks : 100****Time : 04.00 pm to 06.00 pm**

Instructions:

- 1) All questions are compulsory.
 - 2) Each question carries 2 mark.
 - 3) Answers should be marked in the given OMR answer sheet by darkening the appropriate option.
 - 4) Follow the instructions given on OMR sheet.
 - 5) Rough work shall be done on the sheet provided at the end of question paper.
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SECTION I

- Q1. Which of the following is not classified as a type of research?
- | | |
|---------------------|----------------------|
| a) Basic research | b) Novel research |
| c) Applied research | d) Discrete research |
- Q2. Which of the following is not generally a step in a research design?
- | | |
|-----------------------|--------------------|
| a) Hypothesis forming | b) Data collection |
| c) Data Analysis | d) Essay writing |
- Q3. Within the context of research, a hypothesis can best be described as:
- | | |
|------------------------|--------------------------|
| a) An intuitive guess. | b) A definitive outcome |
| c) A proven statement | d) An analytical premise |
- Q4. If given an unsorted array, which algorithm will best organise the data?
- | | |
|---------------------------|----------------------|
| a) Merge Sort | b) Binary Tree |
| c) Bellman-Ford algorithm | d) None of the above |

- Q5. A data structure where elements are added or removed at both ends is known as?
- a) Queue
 - b) Stack
 - c) De-queue
 - d) Tree
- Q6. is the determination of a statistical relationship between two or more variables.
- a) Regression
 - b) Correlation
 - c) Association
 - d) none of these
- Q.7 The principles of fundamental research are used in
- a) action research
 - b) applied research
 - c) philosophical research
 - d) historical research
- Q.8 Which is the main objective of research?
- a) to review the literature
 - b) to summarize what is already known
 - c) to get an academic degree
 - d) to discover new facts or to male fresh interpretation of known facts
- Q.9 Research ethics do not include
- a) honesty
 - b) subjectivity
 - c) integrity
 - d) objectivity

- Q.10 Which of the following is not an example of a continuous variable?
- a) family size
 - b) intelligence
 - c) height
 - d) attitude
- Q11. When data to be sorted is larger than the main memory capacity, which sorting algorithm would you prefer?
- a) Heap sort
 - b) Insertion sort
 - c) Quick sort
 - d) Merge sort
- Q12. is the class of decision problems that can be solved by non-deterministic polynomial algorithms.
- a) NP
 - b) P
 - c) Hard
 - d) Complete
13. An algorithm which uses the past results and uses them to find the new results is:
- a) Brute Force.
 - b) Divide and Conquer.
 - c) Dynamic programming algorithms.
 - d) None of the mentioned.
14. To remove noise and inconsistent data is needed.
- a) Data Cleaning
 - b) Data Transformation
 - c) Data Reduction
 - d) Data Integration

15. Which of the following describes the Filter pattern correctly?
- a) This pattern builds a complex object using simple objects and using a step by step approach.
 - b) This pattern refers to creating duplicate object while keeping performance in mind.
 - c) This pattern enables developers to filter a set of objects using different criteria and chaining them in a decoupled way through logical operations.
 - d) This pattern is used when we need to decouple an abstraction from its implementation so that the two can vary independently.

Q.16. What is Adaline in neural networks?

- a) Automatic Linear Element
- b) Adaptive Line Element
- c) Adaptive Linear Element
- d) Adaptive Nonlinear Element

Q.17. To remove noise and inconsistent data is needed.

- a) Data Cleaning
- b) Data Transformation
- c) Data Reduction
- d) Data Integration

Q.18. What is a term used to describe specific solutions to common problems in software design?

- a) Design Architecture
- b) Data Processing
- c) Algorithm optimization
- d) Design Patterns

Q.19. What is the purpose of algorithm optimization?

- a) To increase complexity
- b) To verify data inputs
- c) To improve efficiency
- d) To enhance design patterns

- Q.20 Which of the following is a key aspect of algorithm development highlighted in the text?
- a) Data encryption
 - b) Algorithm optimization
 - c) System security
 - d) Networking protocols
- Q21. Which of the following is not a type of cloud computing service model?
- a) SaaS
 - b) PaaS
 - c) IaaS
 - d) CaaS
- Q22. Which algorithm is commonly used for clustering tasks?
- a) Linear regression
 - b) K-means
 - c) Decision tree
 - d) Support vector machine
- Q23. Which of the following is not a characteristic of big data?
- a) Velocity
 - b) Variety
 - c) Veracity
 - d) Volume
- Q24. What is the Hadoop Distributed File System (HDFS) used for?
- a) Storing and processing large datasets
 - b) Analyzing structured data only
 - c) Managing cloud infrastructure
 - d) Building machine learning models
- Q25. Which type of machine learning algorithm is used for tasks like image classification and natural language processing?
- a) Supervised learning
 - b) Unsupervised learning
 - c) Reinforcement learning
 - d) All of the above

SECTION-II

- Q26. To keep the UI running smoothly, use for long-running tasks, such as all database operations.
- a) coroutines
 - b) View Models
 - c) returns
 - d) managed threads
- Q27. The travelling salesman problem can be solved using
- a) A spanning tree
 - b) A minimum spanning tree
 - c) Bellman-Ford algorithm
 - d) DFS traversal
- Q28. What is Morphological Segmentation?
- a) Does Discourse Analysis
 - b) Separate words into individual morphemes and identify the class of the morphemes
 - c) Is an extension of propositional logic
 - d) None of the mentioned
- Q29. Which of the following guidelines is applicable to initialization of the weight vector in a fully connected neural network.
- a) Should not set it to zero since otherwise it will cause overfitting
 - b) Should not set it to zero since otherwise (stochastic) gradient descent will explore a very small space
 - c) Should set it to zero since otherwise it causes a bias
 - d) Should set it to zero in order to preserve symmetry across all neurons

- Q30. As the number of training examples goes to infinity, your model trained on that data will have:
- a) Lower variance
 - b) Higher variance
 - c) Same variance
 - d) None of the above
- Q31. Which of the following statement is correct for AngularJS?
- a) AngularJS is an HTML framework
 - b) AngularJS is a Java framework
 - c) AngularJS is a JavaScript framework
 - d) AngularJS is a SQL framework
- Q32. Which of the following is NOT a data storage technology?
- a) SQL
 - b) NoSQL
 - c) HDFS
 - d) Python
- Q33. In the Hadoop ecosystem, what does MapReduce do?
- a) Stores data
 - b) Creates database schemas
 - c) Processes and transforms large amounts of data
 - d) Indexes data for search
- Q34. enables batch processing, which greatly speeds up high-processing applications.
- a) Scalability
 - b) Reliability
 - c) Elasticity
 - d) Utility
- Q35. Cloud computing shifts capital expenditures into expenditures.
- a) Operating
 - b) Service
 - c) Local
 - d) None of the mentioned

Q.36. What is the effect of the tag?

- a) It converts the text within it to bold font
- b) It is used to write black-colored font
- c) It is used to change the font size
- d) None of the above

Q.37. Cyber terrorism is used to shut down critical infrastructure like.....

- a) Energy
- b) Transportation
- c) Government Operation
- d) All of these

Q.38 Which of the following statements is correct about an Exception?

- a) It occurs during compilation
- b) It occurs during linking
- c) It occurs during runtime
- d) it occurs during Just-In-Time compilation

Q.39. Firewall policy is used because

- a) It blocks unauthorized access
- b) It is easy to use
- c) It is compulsory
- d) It update antivirus automatically

Q.40. Java Script is ideal to

- a) make computations in HTML simpler
- b) minimize storage requirements on the web server
- c) increase the download time for the client
- d) increase the loading time of the website

Q41. What is the purpose of the 'synchronized keyword in Java?

- a) To prevent multiple threads from accessing a shared resource simultaneously.
- b) To create a new thread.
- c) To perform input/output operations.
- d) To create a custom exception.

Q42. What is the difference between supervised and unsupervised learning?

- a) Supervised learning involves training the model on labeled data, while unsupervised learning involves training the model on unlabeled data.
- b) Supervised learning is used for prediction, while unsupervised learning is used for clustering.
- c) Supervised learning is more complex than unsupervised learning.
- d) There is no difference between supervised and unsupervised learning.

Q43. What is the purpose of the MapReduce programming model?

- a) To process large datasets in parallel.
- b) To create machine learning models.
- c) To store data in a distributed file system.
- d) To visualize data.

Q44. Which of the following algorithms is used for classification?

- a) K-Means
- b) Decision Tree
- c) PCA
- d) K-Nearest Neighbors

- Q45. In Android, what is the purpose of an Intent?
- a) To bind data to UI elements
 - b) To start a new activity or communicate between components
 - c) To manage threads
 - d) To store user preferences
- Q46. Let $R_1(a, b, c)$ and $R_2(x, y, z)$ be two relations in which a is the foreign key of R_1 that refers to the primary key of R_2 . Consider following four options. (a) Insert into R_1 (b) Insert into R_2 (c) Delete from R_2 (d) Delete from R_2 Which of the following is correct about the referential integrity constraint with respect to above?
- a) Operations (a) and (b) will cause violation.
 - b) Operations (b) and (c) will cause violation.
 - c) Operations (c) and (d) will cause violation.
 - d) Operations(d) and (a) will cause violation.
- Q47. Secure hash algorithm developed by
- a) National Institute of Standards and Technology(NIST)
 - b) IEEE
 - c) ANSI
 - d) None of above
- Q48. How do objects in OOP communicate with each other?
- a. Through global functions
 - b. By calling methods on each other
 - c. Using special oop communication operators
 - d. By accessing each other's memory

Q49. Which of the following does not interrupt the running process?

- a) Timer interrupt
- b) Device
- c) Power failure
- d) Scheduler process

Q50. What is Truncation in Java?

- a) Floating-point value assigned to a Floating type
- b) Floating-point value assigned to an integer type
- c) Integer value assigned to floating type
- d) Integer value assigned to floating type

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-- ROUGH WORK --