



The ICFAI University, Dehradun
Ph.D. Entrance Examination, 2024

IUDRET-2024

Question Booklet

COMPUTER SCIENCE AND ENGINEERING

BOOKLET NO.:

666765

Signature and Name of Invigilators

1. (Signature): _____
(Name): _____

OMR Sheet No.: _____
(To be filled by the Candidate)

2. (Signature): _____
(Name): _____

Application No.: _____
(To be filled by the Candidate)

Time: 2 Hours

Maximum Marks: 50

Number of Pages in this Booklet: 07

Number of Questions in this Booklet: 50

General Instructions: -

1. Write the application number in the space provided.
2. This question booklet consists of fifty multiple-choice types of questions.
3. At the commencement of the examination, the question booklet will be given to you. In the first five minutes, you are required to open the question booklet and compulsorily examine it as below:
 - (i) To have access to the question booklet, tear off the paper seal on the edge of this cover page. Do not accept a question booklet without a sticker seal and do not accept an open question booklet.
 - (ii) Tally the number of pages and a number of questions in the booklet with the information printed on the cover page. A faulty question booklet due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be replaced immediately by a correct booklet from the invigilators within five minutes. Afterward, neither the question booklet will be replaced nor any extra time will be given.
 - (iii) After this verification is over, the OMR Sheet Numbers should be entered into this question booklet.
4. Each item has four alternative responses marked (A), (B), (C), and (D). You have to darken the circle as indicated below on the correct response against each item.
Example: (A) (B) (C) (D) where (C) is the correct response.
5. Your responses to the items are to be indicated in the **OMR Sheet**. It will not be evaluated if you mark at any place other than in the circle in the OMR Sheet.
6. Rough Work is to be done in the space provided in the question booklet.
7. Before leaving the examination hall, candidate is required to return the question booklet and OMR sheet to the invigilators at the end of the examination compulsorily.
8. Use only Blue/Black Ball point pen.
9. Use of any calculator or log table etc., is prohibited.
10. There is no negative marking for incorrect answer.

IUDRET-2024

CSE



COMPUTER SCIENCE AND ENGINEERING

Note: This question booklet contains **fifty (50)** objective-type questions, each carrying one (01) mark.

1. Research is
 - (A) A purposeful, systematic activity
 - (B) Conducted for purely academic purposes
 - (C) Conducted to answer questions about practical issues
 - (D) A random, unplanned process of discovery
2. Qualitative research is
 - (A) Without any specific purpose
 - (B) Primarily concerned with in-depth exploration of phenomena
 - (C) Deals with the collection and analysis of numerical data
 - (D) Dependent upon spiritual aspects only
3. The quality of the research journal is indicated by its
 - (A) h-index
 - (B) g-index
 - (C) Impact factor
 - (D) i10-index
4. Research can be classified as
 - (A) Basic, applied, and action research
 - (B) Quantitative and qualitative research
 - (C) Philosophical, historical, survey, and experimental research.
 - (D) All the above
5. Which of the following can best be described as an ordinal variable?
 - (A) Gender
 - (B) Rank
 - (C) Color
 - (D) Religion
6. The correlation coefficient describes
 - (A) Only magnitude
 - (B) Both magnitude and direction
 - (C) Only direction
 - (D) None of the above
7. plagiarism is allowed as per UGC Regulations, 2018
 - (A) 10%
 - (B) 20%
 - (C) 40%
 - (D) 25%
8. Arrange the following sections of a research report in correct sequence
 1. Abstract
 2. Results
 3. Introduction
 4. Methods
 - (A) 1, 2, 3, 4
 - (B) 1, 2, 4, 3
 - (C) 4, 2, 1, 3
 - (D) 1, 3, 4, 2



9. Match the following:

List - I	List - II
(Research Concept)	(Characteristics)
a. Hypothesis	1. It is statistical test that does not make assumptions about the parameters
b. Sample	2. Device using which data are collected in research
c. Research tool	3. A subset drawn from a larger set to represent it
d. Non parametric test	4. A tentative statement indicating relationship between two or more variables

Choose the correct answer from the options given below:

- (A) a - 4, b - 3, c - 2, D - 1
- (B) a - 1, b - 2, c - 3, d - 4
- (C) a - 2, b - 1, c - 4, d - 3
- (D) a - 3, b - 4, c - 1, d - 2

10. Which one of the following is not a type of hypothesis

- (A) Null hypothesis
- (B) Prediction hypothesis
- (C) Alternative hypothesis
- (D) Directional hypothesis

11. The process of selecting a subset of a population for a survey is known as

- (A) Survey research
- (B) Representation
- (C) Triangulation
- (D) Sampling

12. ICT stands for

- (A) Information and communication technology
- (B) Information-controlled technology
- (C) Information-capable technology
- (D) None of the above

13. A man's monthly income is 1400. What should be his average monthly expenditure so that he is able to save 3600 Rs. in a year?

- (A) 1000
- (B) 1100
- (C) 1150
- (D) 1200

14. If 'LIGHT' is coded as 'GILTH', then find the code for 'RAINY'

- (A) IARYN
- (B) ARINY
- (C) NAIRY
- (D) RINAY

15. Scopus is a

- (A) Full text database
- (B) Numerical database
- (C) Abstract and Citation database
- (D) None of the Above



Directions 16-20: Study the following table carefully and answer questions 16–20. It consists of data on the graduates and postgraduates living in various towns.

Towns	Graduates	Postgraduates
A	10,200	8000
B	25,250	18,000
C	15,150	10,500
D	20,200	16,250
E	24,000	20,000
F	16,500	18,450

16. What is the difference between the number of graduates and the number of postgraduates in town C?
(A) 4500
(B) 4600
(C) 4650
(D) 4560
17. What is the average number of postgraduates in all the towns together?
(A) 15, 000
(B) 15, 500
(C) 16, 250
(D) 15, 200
18. What is the ratio of the number of graduates from towns A and B together to the number of postgraduates from towns A and E together?
(A) 709 : 580
(B) 709 : 560
(C) 560 : 709
(D) None of the above
19. What is the total number of graduates and postgraduates in towns A, D and F together?
(A) 85, 500
(B) 88, 600
(C) 89, 600
(D) 90, 600
20. The number of graduates in town F is approximately what percentage of the number of postgraduates in the same town?
(A) 84
(B) 89
(C) 92
(D) 95
21. Which data structure uses the FIFO (First In, First Out) principle?
(A) Stack
(B) Queue
(C) Array
(D) Tree
22. What does SQL stand for?
(A) Structured Query Language
(B) Simple Query Language
(C) Structured Question Language
(D) Simple Question Language
23. Which algorithm is known for its use in searching sorted arrays efficiently?
(A) Bubble Sort
(B) Merge Sort
(C) Binary Search
(D) Linear Search
24. In which layer of the OSI model does the TCP protocol operate?
(A) Physical layer
(B) Data link layer
(C) Network layer
(D) Transport layer



25. Which concept in Object-Oriented Programming involves defining a new class based on an existing class?
- Abstraction
 - Encapsulation
 - Inheritance
 - Polymorphism
26. Which of the following is a NoSQL database?
- MySQL
 - PostgreSQL
 - MongoDB
 - Oracle
27. What is the primary purpose of an operating system?
- To allow direct hardware access
 - To manage software applications
 - To control and coordinate the use of hardware among various application programs
 - To perform arithmetic operations
28. Which data structure is used for breadth-first traversal of a graph?
- Stack
 - Queue
 - List
 - Tree
29. In an AVL tree, what property must be maintained after every insertion or deletion?
- The tree must remain a complete binary tree
 - The heights of the left and right subtrees of every node differ by at most 1
 - The tree must be a full binary tree
 - The tree must be balanced and height-balanced by maintaining the same number of nodes in left and right subtrees
30. What is the time complexity of accessing an element in an array by index?
- $O(1)$
 - $O(n)$
 - $O(\log n)$
 - $O(n^2)$
31. Which data structure is most efficient for implementing a priority queue?
- Stack
 - Queue
 - Linked List
 - Heap
32. Which protocol is used for secure communication over the internet?
- HTTP
 - FTP
 - HTTPS
 - SMTP
33. What is the main advantage of using a linked list over an array?
- Faster access time
 - Dynamic size
 - Simplified indexing
 - Increased memory usage
34. In the context of databases, what does ACID stand for?
- Automatic, Consistent, Isolation, Durability
 - Atomicity, Consistency, Isolation, Durability
 - Atomicity, Concurrency, Isolation, Durability
 - Automatic, Concurrency, Integrity, Durability



35. Which of the following is a machine learning algorithm for classification tasks?
(A) K-means
(B) Linear Regression
(C) Decision Tree
(D) Apriori
36. Which sorting algorithm is considered the fastest in the average case?
(A) Bubble Sort
(B) Insertion Sort
(C) Merge Sort
(D) Selection Sort
37. What is the function of a router in a network?
(A) To store data
(B) To direct data packets between networks
(C) To connect devices to a network
(D) To monitor network traffic
38. In Java, what does the 'extends' keyword indicate?
(A) Class encapsulation
(B) Class inheritance
(C) Class polymorphism
(D) Class abstraction
39. Which command is used to remove a directory in Unix/Linux?
(A) del
(B) rm
(C) rmdir
(D) delete
40. Which machine learning approach uses labeled data for training?
(A) Supervised Learning
(B) Unsupervised Learning
(C) Reinforcement Learning
(D) Semi-Supervised Learning
41. What is the main use of the Python 'pandas' library?
(A) Web development
(B) Data manipulation and analysis
(C) Machine learning
(D) Network programming
42. In relational databases, what is a 'foreign key'?
(A) A unique identifier for a table
(B) A key used to link two tables
(C) A primary key in a different table
(D) An attribute that can accept multiple values
43. Which of the following is a common use of AI in finance?
(A) Image recognition
(B) Automated trading
(C) Autonomous driving
(D) Natural language processing
44. What is the purpose of an IP address?
(A) To identify a device on a network
(B) To provide internet access
(C) To encrypt data
(D) To control access to a computer
45. Which programming language is known for its use in statistical computing and graphics?
(A) Python
(B) R
(C) Java
(D) C++
46. What does the term 'big data' refer to?
(A) Large-sized computers
(B) Vast volumes of data that can be analyzed for insights
(C) Data that is encrypted
(D) Data that is easy to manage

