



The ICFAI University, Dehradun
Ph.D. Entrance Examination, 2022
IUDRET-2022
Question Booklet

Computer Science and Engineering

Signature and Name of Invigilator

1. (Signature) _____

(Name) _____

2. (Signature) _____

(Name) _____

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

Application No.

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 (To be filled by the Candidate)

[Time: 2 Hours]

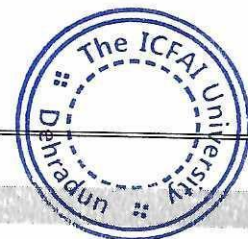
Number of Pages in this Booklet: 07

[Maximum Marks: 50]

Number of Questions in this Booklet: 50

General Instructions:-

1. Write your application number in the space provided on the top of this page.
2. This question booklet consists of fifty multiple-choice types of questions.
3. At the commencement of examination, the question booklet will be given to you. In the first 5 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 sticker-seal and do not accept an open question booklet.
 - (ii) Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty question booklet due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got replaced immediately by a correct booklet from the invigilators within the period of 5 minutes. Afterwards, neither the question booklet will be replaced nor any extra time will be given.
 - (iii) After this verification is over, the OMR Sheet Number should be entered on 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**. If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated.
6. Rough Work is to be done in the space provided in the question booklet.
7. You have to return the question booklet and Original OMR Sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are, however, allowed to carry duplicate copy of OMR Sheet on conclusion of examination.
8. Use only Blue/Black Ball point pen.
9. Use of any calculator or log table etc., is prohibited.
10. There is no negative marks for incorrect answers.



Computer Science and Engineering

Note: This question booklet contains **fifty (50)** objective type questions, each question carrying **one (01)** marks. Attempt **all** the questions.

1. The depth of any research can be judged by
 - (A) The title of the research
 - (B) Objective of the research
 - (C) Total expenditure on the research
 - (D) Duration of the research

2. In the context of survey research, the following steps are taken in certain order. Which of the following options represent the correct order?
 1. Sampling
 2. Inference
 3. Data Analysis
 4. Data Collection
 - (A) 2, 3, 1, 4
 - (B) 1, 4, 3, 2
 - (C) 3, 2, 4, 1
 - (D) 4, 1, 2, 3

3. The verification that the method of measurement actually measures what it is expected to measure is known as
 - (A) Content validity
 - (B) Face validity
 - (C) Construct validity
 - (D) Criterion validity

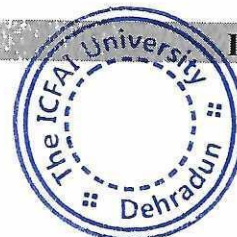
4. A null hypothesis is
 - (A) When there is no difference between the variables
 - (B) The same as research hypothesis.
 - (C) Subjective in nature.
 - (D) When there is difference between the variables

5. Which of the following can best be described as a categorical variable?
 - (A) Weight
 - (B) Annual income
 - (C) Grade point average
 - (D) Religion

6. Research is not considered ethical if it
 - (A) Tries to prove a particular point
 - (B) Does not ensure privacy and anonymity of the respondent.
 - (C) Does not investigate the data scientifically.
 - (D) Is not of a very high standard.

7. 'Shodhganga' is a repository of
 - (A) E-Resources
 - (B) E-theses
 - (C) E-journals
 - (D) E-books

8. Sampling frame is a term used for
 - (A) A list of random numbers
 - (B) A list of voters
 - (C) A list of sampling units of population
 - (D) None of the above



9. Match the following:

| List – I (Research Type) | List – II (Characteristics) |
|-----------------------------|--------------------------------|
| a. Historical method | 1. Past event |
| b. Survey method | 2. Vision |
| c. Philosophical method | 3. Present events |
| d. Experimental method | 4. Future Action |

Codes:

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

10. If 40% of the people read newspaper X, 50% read newspaper Y, and 10% read both the papers, then what percentage of the people read neither of the newspaper?

- (A) 10%
- (B) 15%
- (C) 20%
- (D) 25%

11. The average weight of 8 persons increases by 2.5 kg when a person weighing 60 kg is replaced by a new person. What might be the weight of the new person?

- (A) 76 kg.
- (B) 76.5 kg
- (C) 80 kg.
- (D) Data inadequate

12. The institution promoted by the Department of IT to provide communication infrastructure and services to academic research institutions in India is

- (A) INFLIBNET
- (B) UGC
- (C) ERNET
- (D) None of the above

13. A process by which we estimate the value of dependent variable on the basis of one or more independent variable is called?

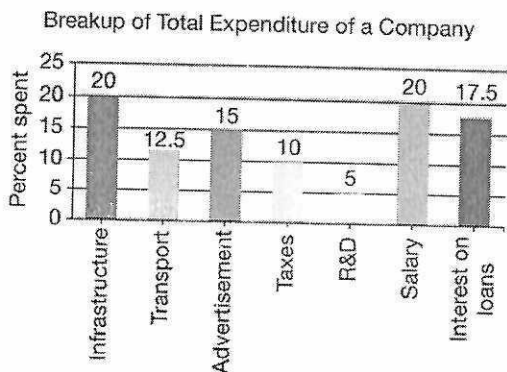
- (A) Correlation
- (B) Regression
- (C) Residual
- (D) Slope

14. If the S.D. of a set of observations is 4 and if each observation is divided by 4, find the S.D. of the new observations.

- (A) 4
- (B) 16
- (C) 2
- (D) 1



Directions: The bar graph given below shows the percentage distribution of the total expenditures of a company under various expense heads during 2003. Study it and answer questions 15 to 18.



15. The total amount of expenditure of the company is how many times the expenditure on research and development?
- (A) 27
(B) 20
(C) 18
(D) 8
16. If the expenditure on advertisement is 2.10 crore, then the difference between the expenditure on transport and taxes is
- (A) 1.25 crore
(B) 95 lakhs
(C) 65 lakhs
(D) 35 lakhs
17. The expenditure on the interest on loans is by what percent more than the expenditure on transport?
- (A) 5%
(B) 10%
(C) 20%
(D) 40%

18. What is the ratio of the total expenditure on infrastructure and transport to the total expenditure on taxes and interest on loans?
- (A) 5:4
(B) 8:7
(C) 9:7
(D) 13:11
19. The probability of impossible event is:
- (A) 0
(B) 1
(C) Infinite
(D) Insufficient Data.
20. Which of the following is one dimensional?
- (A) Bar diagram
(B) Pie-chart
(C) Cylinder
(D) A graph.
21. Which of the following computer language is written in binary codes only?
- (A) Paskal
(B) Machine Language
(C) C
(D) C#
22. Which of the following is not a characteristic of a computer?
- (E) Versatility
(F) Accuracy
(G) Diligence
(H) Intelligence Quotient (IQ)



23. All keywords in C are in _____
(A) Lower Case letters
(B) Upper Case letters
(C) CamelCase letters
(D) None of the above
24. Which of the following is true for variable names in C?
(A) They can contain alphanumeric characters as well as special characters
(B) It is not an error to declare a variable to be one of the keywords (like goto, static)
(C) Variable names cannot start with a digit
(D) Variable can be of any length
25. Which is not a feature of OOP in general definitions?
(A) Efficient Code
(B) Code reusability
(C) Modularity
(D) Duplicate/Redundant data
26. Which feature of OOP indicates code reusability?
(A) Abstraction
(B) Polymorphism
(C) Encapsulation
(D) Inheritance
27. Which header file is required in C++ to use OOP?
(A) OOP can be used without using any header file
(B) `stdlib.h`
(C) `iostream.h`
(D) `stdio.h`
28. Which is the core of the operating system?
(A) Shell
(B) Kernel
(C) Commands
(D) Script
29. Which among the following interacts directly with system hardware?
(A) Shell
(B) Commands
(C) Kernel
(D) Applications
30. Applications communicate with kernel by using:
(A) System Calls
(B) C Programs
(C) Shell Script
(D) Shell
31. Which of the following is a type of computer architecture?
(A) Microarchitecture
(B) Harvard Architecture
(C) Von-Neumann Architecture
(D) All of the mentioned
32. Which of the following is not a type of database?
(A) Hierarchical
(B) Network
(C) Distributed
(D) Decentralized



33. The feature of DBMS is:
- (A) Minimum Duplication and Redundancy of Data
 - (B) High Level of Security
 - (C) Single-user Access only
 - (D) Support ACID Property
34. Which of the following is not a function of the database?
- (A) Managing stored data
 - (B) Manipulating data
 - (C) Security for stored data
 - (D) Analyzing code
35. Which is not an objective of network security?
- (A) Identification
 - (B) Authentication
 - (C) Access control
 - (D) Lock
36. Which of these is a part of network identification?
- (A) User ID
 - (B) Password
 - (C) OTP
 - (D) Fingerprint
37. Security features that control that can access resources in the OS:
- (A) Authentication
 - (B) Identification
 - (C) Validation
 - (D) Access control
38. An algorithm in encryption is called _____
- (A) Algorithm
 - (B) Procedure
 - (C) Cipher
 - (D) Module
39. How many children does a binary tree have?
- (A) 2
 - (B) Any number of children
 - (C) 0 or 1 or 2
 - (D) 0 or 1
40. Which of the following real-world scenarios would you associate with a stack data structure?
- (A) Piling up of chairs one above the other
 - (B) People standing in a line to be serviced at a counter
 - (C) Offer services based on the priority of the customer
 - (D) Tatkal Ticket Booking in IRCTC
41. What does 'stack underflow' refer to?
- (A) Accessing item from an undefined stack
 - (B) Adding items to a full stack
 - (C) Removing items from an empty stack
 - (D) Index out of bounds exception
42. What is the time complexity of pop() operation when the stack is implemented using an array?
- (A) $O(1)$
 - (B) $O(n)$
 - (C) $O(\log n)$
 - (D) $O(n \log n)$



43. What is Software Engineering?
- (A) Designing a software
 - (B) Testing a software
 - (C) Application of engineering principles to the design a software
 - (D) None of the above
44. _____ is a software development activity that is not a part of software processes
- (A) Validation
 - (B) Specification
 - (C) Development
 - (D) Dependence
45. _____ is not a fundamental activity for software processes in software development
- (A) Evolution
 - (B) Design and implementation
 - (C) Validation
 - (D) Verification
46. What is the goal of Artificial Intelligence?
- (A) To solve artificial problems
 - (B) To extract scientific causes
 - (C) To explain various sorts of intelligence
 - (D) To solve real-world problems
47. Which of the following is an application of Artificial Intelligence?
- (A) It helps to exploit vulnerabilities to secure the firm
 - (B) Language understanding and problem-solving (Text analytics and NLP)
 - (C) Easy to create a website
 - (D) It helps to deploy applications on the cloud
48. Which of the following is a component of Artificial Intelligence?
- (A) Learning
 - (B) Training
 - (C) Designing
 - (D) Puzzling
49. Which of the following is not a type of Artificial Intelligence agent?
- (A) Learning AI agent
 - (B) Goal-based AI agent
 - (C) Simple reflex AI agent
 - (D) Unity-based AI agent
50. Which of the following machine requires input from the humans but can interpret the outputs themselves?
- (A) Actuators
 - (B) Sensor
 - (C) Agents
 - (D) AI system

