

Seat No.

Total No. of Pages : 12

Ph.D. Entrance Examination 2025
COMPUTER SCIENCE AND ENGINEERING
Sub. Code: 58748

Day and Date : Tuesday, 09/ Sep/2025
Time : 10.00 am to 12.00 noon

Total Marks : 100**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.
 - 6) Only non-programmable calculators are allowed.
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SECTION-I

- 1) A problem that motivates the researcher to carry out the research study is called.

A. Research hypotheses	B. Research problem
C. Research technique	D. Research method
- 2) Which one of the following is not required in conducting research?

A. Honesty	B. Misinterpretation of data
C. Integrity	D. Confidentiality
- 3) A method to gain knowledge by experience or observation is called:

A. Historical research.	B. Empirical research
C. Diagnostic research	D. Descriptive research

- 4) Variable that can take all values are called:
- A. Endogenous variable B. Exogenous variable
C. Discrete variable D. Continuous variable
- 5) Which of the following is not the component of research problem?
- A. Individual B. Objectives
C. Researcher's Interest D. Environment
- 6) Which of the following is an example of statistical design?
- A. Factorial design B. Randomized two-group design
C. Solomon four-group design D. Simulated before-after design
- 7) refers to the variable that can be measured or controlled by the researcher.
- A. Dependent variable B. Extraneous variables
C. Independent variables D. Blocking variables
- 8) A methodological plan to obtain sample from the complete population is called:
- A. Research design B. Sampling design
C. Sampling frame D. Sampling procedure
- 9) Sample is the of population
- A. Superset B. Union
C. Intersection D. Subset
- 10) Which of the following refers to the listing of all elements of a population?
- A. Sampling B. Sampling frame
C. Universe D. Sampling design

- 11) Which of the following is not a type of measurement scale?
- A. Nominal scale
 - B. Ordinal scale
 - C. Ratio scale
 - D. Difference scale
- 12) Questions not having predefined/fixed responses in a questionnaire are called
- A. Open-ended question
 - B. Close-ended questions
 - C. Dichotomous questions
 - D. Rank-order questions
- 13) In which type of observation method, the researcher has to wait for a particular event to occur?
- A. Natural method
 - B. Contrived method
 - C. Structured method
 - D. Direct method
- 14) When there are two variables in a population, it is called:
- A. Univariate population
 - B. Bivariate population
 - C. Multivariate population
 - D. Semivariate population
- 15) Multiple correlation provides information about the
- A. Mean value
 - B. Peakedness of the curve
 - C. Association between more than two variables
 - D. Scattering of more than two values around mean
- 16) is also called false positive.
- A. Type-I error
 - B. Type-II error
 - C. Type-III error
 - D. None of the above

- 17) The type of hypothesis that moves from specific to generic is known as
- A. Deductive hypothesis
 - B. Inductive hypothesis
 - C. Directional hypothesis
 - D. Null hypothesis
- 18) Which of the following is not a population parameter?
- A. Mean
 - B. Standard Deviation
 - C. Variance
 - D. Binomial distribution
- 19) The type of tests used to study the difference between means in large sample size:
- A. t test
 - B. z test
 - C. F test
 - D. Chi-square test
- 20) The type of test used to study small samples:
- A. t test
 - B. z test
 - C. F test
 - D. Chi-square test
- 21) In ANOVA, the total amount of variation in a dataset can be split into types.
- A. 2
 - B. 3
 - C. 4
 - D. 5
- 22) Which of the following tests is used to find out whether the two attributes are associated with each other or not?
- A. Two way ANOVA
 - B. One way ANOVA
 - C. ANOVA
 - D. Chi-square test of independence

- 23) include the heading of the report.
- | | |
|----------------------|-----------------------|
| A. Title pages | B. Table of content |
| C. Preliminary pages | D. Executive summary. |
- 24) Grouping of data is termed as
- | | |
|-------------------|---------------|
| A. Editing | B. Coding |
| C. Classification | D. Tabulation |
- 25) In which of the following, we calculate the mean value
- A. Measures of central tendency
 - B. Measures of dispersion
 - C. Measures of skewness.
 - D. Measures of relationship

SECTION-II

26. Deterministic context-free languages are
- A) closed under union
 - C) closed under intersection
 - B) closed under complementation
 - D) closed under concatenation
27. Recursive languages are
- A) a proper superset of context-free languages
 - B) also called O languages
 - C) recognizable by Turing machines
 - D) all of the above

28. The C language is
- A) A context-free language
 - C) A regular language
 - B) A context-sensitive language
 - D) Parsable fully only by a Turing machine
29. The language accepted by pushdown automation in which the stack is limited to 10 items is best described as
- A) context-free
 - C) deterministic context-free
 - B) regular
 - D) recursive
30. Banker's algorithm is applied for
- A) Deadlock detection
 - C) Deadlock recovery
 - B) Deadlock avoidance
 - D) Both a and c
31. Solution to the thrashing is
- A) Working set model
 - B) Increasing the degree of multiprogramming
 - C) Increasing the size of page table
 - D) Decreasing the size of the page
32. In a resource allocation graph, every resource has multiple instances, then cycle means
- A) Deadlock exists
 - B) Deadlock may exist
 - C) Cycle cannot exist
 - D) Deadlock can be avoided

33. Semaphores provide a solution for
 - A) Mutual exclusion
 - B) Process synchronization
 - C) Circular wait
 - D) None of the above
34. If there exists at least one path between every pair of vertices in a graph, the graph is called as
 - a) complete graph
 - b) Hamiltonian graph
 - c) connected graph
 - d) mesh
35. What will be the output after the second pass of bubble sort to sort the following number sequence in an ascending order?
3 5 7 6 4 2
 - a) 35 64 27
 - b) 35 46 27
 - c) 35 42 67
 - d) 23 46 57
36. Which of the following design technique is used in finding all pairs of shortest distance in a graph?
 - a) dynamic programming
 - b) back tracking.
 - c) greedy
 - d) divide and conquer
37. A binary tree is of level 7, the maximum number of nodes can be
 - a) 129
 - b) 128
 - c) 255
 - d) 256
38. What will be the maximum and minimum number of elements in a max heap of height h?
 - a) $2^h, 2^{h-1}$
 - b) $2^{h+1} - 1, 2^h$
 - c) $2^h - 1, 2^{h-1}$
 - d) None of these

39. How many distinct binary trees can be formed with three distinct keys?
 - a) 5
 - b) $5 * 3!$
 - c) $3!$
 - d) $3 * 5!$
40. Rotations performed while inserting elements 10, 20, 70, 35, 40 in sequence to create an AVL tree are
 - a) Left-1, Right-2
 - b) Right-2
 - c) Left-2
 - d) Left-2, Right-1
41. An attribute of one table having the same value of a primary key of another table is termed as
 - A) foreign key.
 - B) alternate key.
 - C) candidate key.
 - D) transitive key.
42. Relational algebra can be defined as
 - A) Procedural.
 - B) Non-procedural.
 - C) User dependent.
 - D) Domain dependent.
43. Which of the following is true?
 - A) A relation in BCNF is always in 3NF.
 - B) A relation in 3NF is always in BCNF.
 - C) PJNF and 3NF are same.
 - D) A relation in PJNF is not in 3NF.
44. RAD stands for
 - A) Read and destroy
 - B) Read and develop
 - C) Rapid application development
 - D) Rapid application design

45. Which layers of the OSI reference model are host-to-host layers?
- A) Transport, session, presentation, application
 - B) Session, presentation, application
 - C) Datalink, transport, presentation, application
 - D) Physical, datalink, network, transport
46. A nibble is used for packed sequence number- ing in a sliding window protocol used in a computer network. What is the maximum window size?
- A) Depends upon the underlying network protocol
 - B) Depends upon the number of nodes involved in the network
 - C) 15
 - D) 16
47. A bridge has access to address in the same network.
- A) Physical
 - B) Logical
 - C) Supernet
 - D) Link state
48. Which of the following addresses is used to deliver a message to the correct application program running on a host?
- A) Port
 - B) DNS address
 - C) Logical address
 - D) MAC address

49. XSL definition is used along with XML definition to specify

- A) the data structures and the links of XML document.
- B) the presentation of XML document.
- C) the layered display of XML with other documents.
- D) the structure of XML document.

10. The format of an HTML document is

- A) ASCII
- B) Special JPEG
- C) Special TIFF
- D) Special Web

50. The advantages of XML over HTML are:

- A) It allows processing of data stored in Web pages.
- B) It uses meaningful tags which aids in under-standing the nature of a document.
- C) is simpler than HTML
- D) It separates presentation and structure of document.

- A) A, B and C only
- B) A, C and D only
- C) A, B and D only
- D) B and D only

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-- ROUGH WORK --

