| Seat No. | |
|---|---|

**M.Phil./Ph.D. Entrance Examination, September - 2022**
**COMPUTER SCIENCE AND ENGINEERING**
**(For M.E./M.Tech. Students)**
**Sub. Code : 58748**

**Day and Date : Friday , 23 - 09 - 2022**          **Total Marks : 100**
**Time : 1.00 p.m. to 3.00 p.m.**

**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) **Use black ball point pen only for marking the circle. Do not make any stary mark on the OMR Answer Sheet.**
5) **Follow the instructions given on OMR Sheet.**
6) **Rough work shall be done on the sheet provided at the end of question paper.**
7) **Only non-programmable calculators are allowed.**

**(RESEARCH METHODOLOGY)**

1) Research is _____

   A) Searching again and again

   B) Finding solution to any problem

   C) Working in a scientific way to search for truth of any problem

   D) None of the above

2) Which of the following is the first step in starting the research process?

   A) Searching sources of information to locate problem

   B) Survey of related literature

   C) Identification of problem

   D) Searching for solutions to the problem

*P.T.O.*

3) In the process of conducting research "Formulation of Hypothesis" is followed by

A) Statement of Objectives    B) Analysis of Data

C) Selection of Research Tools    D) Collection of Data

4) A research paper is a brief report of research work based on

A) Primary Data only

B) Secondary Data only

C) Both Primary and Secondary Data

D) None of the above

5) Information is_____

A) Raw Data    B) Processed Data

C) Input data    D) Organized data

6) Questionnaire is a :

A) Research method    B) Measurement technique

C) Tool for data collection    D) Data analysis technique

7) "Controlled Group" is a term used in_____.

A) Survey research    B) Historical research

C) Experimental research    D) Descriptive research

8) Which of the following is not a "Graphic representation"?

   A) Pie Chart
   B) Bar Chart
   C) Table
   D) Histogram

9) Which of the following is not true about e journals?

   A) They are distributed through digital methods
   B) They also have editors or editorial boards
   C) They are publications of serial nature
   D) They are always free of cost

10) Sampling is advantageous as it_____

   A) Saves time
   B) Helps in Capital -saving
   C) Both (A) and (B)
   D) Increases accuracy

11) Random sampling is helpful as it is_____.

   A) Reasonably accurate
   B) Free from personal biases
   C) An economical method of data collection
   D) All the above

12) The data of research is _____

   A) Qualitative only
   B) Quantitative only
   C) Both (A) and (B)
   D) Neither (A) nor (B)

13) Which of the following is NOT the characteristic of a research?

   A) Research is systematic       B) Research is not passive

   C) Research is not a process     D) Research is problem oriented

14) Books and records are the primary sources of data in.

   A) clinical research

   B) historical research

   C) laboratory research

   D) participatory research

15) Which of the following is not the Method of Research?

   A) Survey            B) Historical

   C) Observation      D) Philosophical

16) To test null hypothesis, a researcher uses.

   A) X               B) t test

   C) ANOVA        D) factorial analysis

17) Bibliography given in a research report.

   A) has no relevance to research

   B) Shows vast knowledge of the researcher

   C) helps those interested in further research

   D) all the above

18) The main characteristic of scientific research is:

   A)  empirical                           B)  theoretical

   C)  experimental                        D)  all of these

19) A hypothesis is a

   A)  law                                 B)  canon

   C)  postulate                           D)  supposition

20) Which one of the following is not a non-parametric test?

   A)  t-test                              B)  Run Test

   C)  Sign Test                           D)  Chi-square test

21) Hypothesis should be

   A)  Subjective                          B)  Objective

   C)  Testable                            D)  All these

22) _____testing is used for directional hypothesis

   A)  One tailed                          B)  Two tailed

   C)  Both (A) and (B)                     D)  None

23) _____is also called as false positive.

   A) Type-I error                 B) Type-III error

   C) Type-II error                D) Type-IV error

24) _____refers to the test that is used to study the variance of sample.

   A) t test                       B) F test

   C) Z test                       D) chi-square test

25) Which of the following is NOT the purpose of writing the report?

   A) Providing solutions          B) Finding solutions

   C) Providing literature         D) Providing results

## (COMPUTER SCIENCE AND ENGINEERING)

26) Which of the following regular expression identity is true?

   A) $r(*) = r*$                   B) $(r*s*)* = (r+s)*$

   C) $(r+s)* = r* + s*$            D) $r*s* = r* + s*$

27) Recursive languages are_____

   A) a proper superset of CFL     B) always recognized by PDA

   C) are also called type 0 languages    D) always recognized by FSA

28) What are the characteristics of Distributed Operating system?

    A) Users are aware of multiplicity of machines

    B) Access is done like local resources

    C) Users are aware of multiplicity of machines

    D) They have multiple zones to access files

29) Which of the following is non-liner data structure?

    A) Stacks                B) List

    C) Strings              D) Trees

30) What are the connection strategies not used in distributed systems?

    A) Circuit switching         B) Message switching

    C) Token switching           D) Packet switching

31) What are design issues in distributed system structure?

    A) Scalability            B) Fault-tolerance

    C) Clustering            D) All of the mentioned

32) The number of comparisons done by sequential search is_____

    A) (N/2)+1           B) (N+1)/2

    C) (N-1)/2           D) (N+2)/2

33) Which of the following data structure can't store the non-homogeneous data elements?

    A)   Arrays                       B)   Records

    C)   Pointers                    D)   Stacks

34) DHTML is the combination of _____

    A)   XML and XHTML            B)   HTML and JavaScript

    C)   XHTML and HTML           D)   HTML and CSS

35) JavaScript allows you to write code to control all

    A)   XML elements               B)   HTML Elements

    C)   XHTML Elements            D)   CSS elements

36) What is the average case time complexity of Merge Sort?

    A)   O(n log n) [Big Oh of n log n]

    B)   O(n*n) [Big Oh of n-square]

    C)   O(n) [Big Oh of n]

    D)   O(n*n*n) [Big Oh of n-cube]

37) What is a Greedy strategy for Optimal storage on tapes?

    A)   Arrange all programs in decreasing order of length

    B)   Arrange all programs in First in first come basis

    C)   Arrange all programs in increasing order of length

    D)   Arrange all programs in random order

38) A _____is a round trip path along n edges of Graph G that visits every vertex once and returns to its starting position.

A) Minimum cost Spanning Tree

B) Travelling Sales person Problem

C) Multistage Graph

D) Hamiltonian Cycle

39) Complexity of All Pairs shortest Path Problem is _____

A) O(n * n) [Big Oh of n-square]

B) O(n *n*n) [Big Oh of n-cube]

C) O(2^n) [Big Oh of 2 raise to n]

D) O(n log n) [Big Oh of n log n]

40) In Optimal Binary Search Tree, total 8 nodes are present. Node number 5 is chosen as root of the final tree. How many nodes will be there in left sub-tree and right sub-tree respectively?

A) 4 nodes in left sub-tree and 3 nodes in rights sub-tree

B) 4 nodes in left sub-tree and 4 nodes in right sub-tree

C) 5 node in left sub-tree and 3 nodes in right sub-tree

D) 5 nodes in left sub-tree and 4 nodes in right sub-tree

41) What are the advantages of Replication of data in Distributed database?

A) Availability, Parallelism, Increased data transfer

B) Availability, Parallelism, Reduced data transfer

C) Availability, Increased parallelism, cost of updates

D) All of the above

42) Let us suppose that in a distributed database, during a transaction T1, one of the sites, say S1, is failed . When recovers, the site S1 has to check its log file (log based recovery) to decide the next move on the transaction T1. If the log contains a record, what the site S1 has to do?

A) Need not do anything     B) Perform Undo

C) Perform Redo     D) Abort the transaction

43) Grants privileges on SQL authorization mechanism_____

A) Entire relation Specified tuples     B) Specified attributes

C) Both (A) and (B)     D) All of these

44) A view whose contents are computed and stored is called as_____

A) Storage view     B) Backup view

C) Materialized view     D) Advanced view

45) DHCP is used for _____

A) IPv6     B) IPv4

C) Both (A) and (B)     D) None of the mentioned

46) To increase the speed of memory access in pipelining, we make use of _____

A) Special memory locations     B) Special purpose registers

C) Cache     D) Buffers

47) The situation where in the data of operands are not available is called _____.

A) Data hazard     B) Stock

C) Deadlock     D) Structural hazard

48) Two processors A and B have clock frequencies of 700 Mhz and 900 Mhz respectively.Suppose A can execute an instruction with an average of 3 steps and B can execute with an average of 5 steps. For the execution of the same instruction which processor is faster?

A)  Processor A

B)  Processor B

C)  Both take the same time

D)  Insufficient information

49) The fetch and execution cycles are interleaved with the help of _____

A)  Modification in processor architecture

B)  Clock

C)  Special unit

D)  Control unit

50) ODL supports which of the following types of association relationships?

A)  Unary

B)  Unary and Binary

C)  Unary and Binary and Ternary

D)  Unary and Binary and Ternary and higher

**Rough Work**