M/P ENT – 141

Total No. of Pages : 12

Seat No.	

M.Phil / Ph.D. Entrance Examination, October - 2021
COMPUTER SCIENCE AND ENGINEERING
(For M.E., M. Tech. Students)

Day and Date : Tuesday, 26 - 10 - 2021 **Total Marks : 100**
Time : 01.00 p.m. to 03.00 p.m.

Instructions :
1) **All questions are compulsory.**
2) **Each question carries 2 marks.**
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 stray 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 that is done to express new idea or topic is called.
(A) Exploratory Research (B) Descriptive Research
(C) Diagnostic Research (D) Fundamental Research

2) What are the core elements of a dissertation?
(A) Introduction;Data collection; Data Analysis; Conclusions and Recommendations
(B) Executive Summary; Literature Review; Data Gathered; Conclusions; Bibliography
(C) Research Plan; Research Data; Analysis; References
(D) Introduction; Literature Review; Research Methodology; Results; Discussions and Conclusions

3) A research problem is feasible only when _____.
(A) It has utility and relevance
(B) It is new and adds something to knowledge
(C) It is researchable
(D) All of the above

4) Which term is used to explain the marking of data with symbols, words, indicators or catagories?

(A) Symbolising
(B) Data analysis
(C) Coding
(D) Categorisation

5) What does the longitudinal research approach actually deal with?

(A) Long-term research
(B) Short-term research
(C) Horizontal research
(D) None of the above

6) How is random sampling helpful?

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

7) What is the name of the conceptual framework in which the research is carried out?

(A) Research hypothesis
(B) Synopsis of Research
(C) Research paradigm
(D) Research design

8) What is the major attribute of Correlation Analysis?

(A) Association among variables
(B) Difference among variables
(C) Regression among variables
(D) Variations among variables

9) While doing statistical analysis, what does $p < 0.05$ mean?

(A) $P < 0.05$ implies that there are less than 5% chances of making a type 1 error
(B) $P < 0.05$ indicates the power of sample in predicting the population characteristics
(C) $P < 0.05$ indicates that the null hypothsis is true
(D) $P < 0.05$ implies that there are less than 5% chances of making a type 2 error

10) Which of the following measures are used for descriptive analysis of data?

(A) Mean, Chi-square test and t-test

(B) Mean, median and mode

(C) Median, ANOVA, Chi-square

(D) ANOVA, Chi-square, t-test

11) Incorrect acceptance of a true null hypothesis leads to which type of research error?

(A) Bias (B) Type-I

(C) Type-II (D) Type-III

12) Developing and testing theory is _____types of research.

(A) Pure (B) Applied

(C) Descriptive (D) Conceptual

13) Sample is _____of population.

(A) Superset (B) Subset

(C) Union (D) Intersection

14) If the assumed hypothesis is tested for rejection, considering it to be true is called?

(A) Null Hypothesis (B) Statistical Hypothesis

(C) Simple Hypothesis (D) Composite Hypothesis

15) The type of tests used to study small samples.

(A) t test (B) z test

(C) F test (D) Chi-square test

16) The type of tests used to study proportion_____

(A) t test (B) z test

(C) F test (D) Chi-square test

17) The type of tests used to study variance_____

(A) t test

(B) z test

(C) Paired t test

(D) Chi-square test

18) In ANOVA, the total amount of variation in a dataset can be split into_____types.

(A) 2

(B) 4

(C) 3

(D) 5

19) The full form of ANOCOVA is _____

(A) Analysis of variance

(B) Analysis of coefficient

(C) Analysis of covariance

(D) Analysis of covariance of coefficient

20) Which of the following test 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

21) _____is a non-parametric test that is used to study more than two samples.

(A) Chi-square test of independence

(B) Mann-Whitney test

(C) ANOVA

(D) ANOCOVA

22) The type of model that uses mathematical techniques for decision-making is known as:

(A) Iconic
(B) Analogue
(C) Schematic
(D) Symbolic

23) _____contains the sources of secondary data while appendices contain the sources of primary data or some extra information about the topic.

(A) Appendices
(B) Table of content
(C) Bibliography
(D) Title pages

24) _____lay emphasis on simplicity and attractiveness in the presentation of information.

(A) Technical reports
(B) Popular reports
(C) Decision reports
(D) Information reports

25) The stage of writing in which the researcher makes a structure of the reports

(A) Final draft
(B) Final outline
(C) Rough draft
(D) Review of the rough draft

COMPUTER SCIENCE AND ENGINEERING

26) Which of following statement is false?

(A) For a finite automaton, the working can be described in terms of change of states
(B) For a push down automata the working can be described in terms of change of instantaneous description
(C) Both for a finite automaton, the working can be described in terms of change of states AND For a push down automata the working can be described in terms of change of instantaneous description
(D) Neither for a finite automaton, the working can be described in terms of change of states OR For a push down automata the working can be described in terms of change of instantaneous description

27) For a push down automaton $M=(Q,\sum,\Gamma,\delta,q_0,z_0,A)$, the set S(M) is accepted by empty stack is defined by

(A) $S(M) = \{s\in\sum^*| (q_0,s, Z_0)|^*(qf,\wedge,Z)$ for some $qf\in A$ and $Z\in\Gamma^*\}$

(B) $S(M) = \{s\in\sum^*| (q_0,s, Z_0)|^*(q,\wedge,\wedge)$ for some $q\in Q\}$

(C) Both $S(M) = \{s\in\sum^*| (q_0,s, Z_0)|^*(qf,\wedge,Z)$ for some $qf\in A$ and $Z\in\Gamma^*\}$ And $S(M) =\{s\in\sum^*| (q_0,s, Z_0)|^*(q,\wedge,\wedge)$ for some $q\in Q\}$

(D) Neither $S(M) = \{s\in\sum^*| (q_0,s, Z_0)|^*(qf,\wedge,Z)$ for some $qf\in A$ and $Z\in\Gamma^*\}$ OR $S(M) =\{s\in\sum^*| (q_0,s, Z_0)|^*(q,\wedge,\wedge)$ for some $q\in Q\}$

28) Which type of JavaScript language is-

(A) Object-Oriented

(B) Object-based

(C) Assembly Language

(D) High-level

29) Which of the following is true?

(A) PDA accepts all regular, all context free languages

(B) PDA accepts some regular, all context free and some non regular languages

(C) PDA accepts all regular, all non context free and some non regular languages

(D) PDA accepts all regular, all context free and all non regular languages

30) If a CFG is in Chomsky Normal Form, then

(A) There is restriction on the length of string on right had side of production rule.

(B) There is restriction on the type of symbols on right had side of production rule.

(C) Both There is restriction on the length of string on right had side of production rule AND There is restriction on the type of symbols on right had side of production rule.

(D) There is restriction on the length of string on right had side of production rule is TRUE AND There is restriction on the type of symbols on right had side of production rule is WRONG

31) A context-free grammar $S \rightarrow AB \mid b$ is in

(A) Greibach Normal Form

(B) Chomsky Normal Form

(C) Both Greibach Normal Form AND Chomsky Normal Form

(D) Neither Greibach Normal Form OR Chomsky Normal Form

32) A language L is said to be if there is a turing machine M such that L(M)=L and M halts at every point.

(A) turing acceptable

(B) decidable

(C) undecidable

(D) none of the mentioned

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

(A) Circuit switching

(B) Message switching

(C) Token switching

(D) Packet switching

34) In Distributed Systems Process Migration is done for

(A) Load balancing

(B) Computation speedup

(C) Hardware preference

(D) All of these

35) Which is not an example of state information?

(A) Mounting information

(B) Description of HDD space

(C) Session keys

(D) Lock status

36) What is a stateless file server?

(A) It keeps tracks of states of different objects

(B) It maintains internally no state information at all

(C) It maintains some information in them

(D) None of the mentioned

37) _____is not possible in distributed file system.

(A) File replication (B) Migration

(C) Client interface (D) Remote access

38) In a distributed file system, _____ is mapping between logical and physical objects.

(A) client interfacing (B) naming

(C) migration (D) heterogeneity

39) In distributed systems, election algorithms assumes that_____

(A) A unique priority number is associated with each active process in system

(B) There is no priority number associated with any process

(C) Priority of the processes is not required

(D) None of the mentioned

40) According to the ring algorithm, links between processes are _____

(A) bidirectional

(B) unidirectional

(C) both bidirectional and unidirectional

(D) none of the mentioned

41) If we parallelize the execution of large number of small transactions in a database system, then which of the following would be increased?

(A) Response time

(B) Rotational latency

(C) Throughput

(D) All of these

42) If the speed of a parallel system is N when the larger system has N times the resources of the smaller system, then the speedup is _____

(A) Linear Speedup

(B) Sublinear Speedup

(C) Superlinear Speedup

(D) None of these

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

(A) Avaliability, Parallelism, Increased data transfer

(B) Availability, Parallelism, Reduced data transfer

(C) Availability, Increased parallelism, Cost of updates

(D) All of these

44) Which of' the following is more suitable for parallelizing a single query?

(A) Coarse-granularity parallelism

(B) Fine-granularity parallelism

(C) Coarse-granularity & Fine-granularity parallelism

(D) None of them

45) Which of the following helps in implementing inter-operation parallelism?

(A) Interdependent parallelism (B) Intra-query parallelism

(C) Inter-query parallelism (D) Pipelined parallelism

46) Using OQL, you may do which of the following?

(A) Return an entire collection of elements including duplicates

(B) Return a collection of elements without duplicates

(C) Return a specific subset of elements using a given criteria

(D) All of these

47) What is the worst-case time complexity of Quick 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]

48) Which of the following methods can be used to solve the Knapsack problem?

(A) Brute force algorithm

(B) Recursion

(C) Dynamic programming

(D) Brute force, Recursion and Dynamic Programming

49) 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 right sub-tree

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

(C) 5 nodes 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

50) How many undirected graphs (not necessarily connected) can be constructed out of a given set V = {v1, v2, ... vn} of n vertices?

(A) n(n-1)/2

(B) 2^n

(C) n!

(D) $2^{n(n-1)/2}$

Rough Work

Rough Work