SHIVAJI UNIVERSITY, KOLHAPUR
Ph.D. Entrance Examination, February-2024
COMPUTER SCIENCE AND ENGINEERING
(For M.E./M.Tech. Students)
Subject Code: 58748

Day and Date : Tuesday, 06-02-2024　　　　　　　　　　**Total Marks : 100**
Time : 4.00 p.m. to 6.00 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.

SECTION-I

1)　Which type of research is appropriate when proof is sought that certain variables affect other variables in some way?

　　A.　Applied research

　　B.　Qualitative research

　　C.　Conceptual research

　　D.　Empirical research

2) In the research process, literature survey is followed by which of the following process?

A. Development of working hypotheses

B. Preparing the research design

C. Determining sample design

D. Collecting the data

3) Which is the following means to collect the data?

A. Observation

B. Through personal interview

C. Mailing of questionnaires

D. All of these

4) Which of the following is a factor for good design?

A. The means of obtaining information

B. Finding a solution to any problem

C. The availability of time and money for the research work

D. All of the above

5) In a two-group simple randomized design, first of all the population is defined and then from the population a sample is selected randomly

A. Random replications design

B. Two-group simple randomized design

C. Randomized block design

D. Factorial designs.

6) *a* error is also called as ....

A. Type-I error

B. Type-II error

C. Type-III error

D. None of the above

7) Rearrange the following tasks for hypothesis testing

    1.   Making a formal statement

    2.   Calculation of the probability

    3.   Selecting a random sample

    4.   Selecting a significance level

    A.   1, 3, 4, 2   B.   1, 4, 2, 3

    C.   1, 4, 3, 2   D.   None of the above

8) Which of the following analyses refers to the study of parameters like mean, and standard deviation of the dataset?

    A.   Frequency Analysis.

    B.   Descriptive Analysis

    C.   Crosstab Analysis

    D.   None of the above

9) Which of the following is not the purpose of the research report?

    A.   Providing information

    B.   General Idea

    C.   Funding solutions

    D.   Deciding research budget

10) Correlation provides information about the ....

    A.   Mean value

    B.   Preakness of curve

    C.   Scattering of values from the mean

    D.   Association of variables.

11) Which of the following statement is characteristic of the hypothesis?

    A.   Hypothesis should be clear and precise

    B.   Hypothesis should be capable of being tested

    C.   Hypothesis should be limited in scope and must be specific

    D.   All of these

12)   If H_o is false and decision is Accept H_o then it is called as ....

A. Type-I error   B. Type-II error

C. Correct decision.   D. Can not say

13) The a error is also called as

A. Type-I error   B. Type-II error

C. Correct decision.   D. Can not say

14) Which of following test based on the normal probability distribution and is used for judging the significance of several statistical measures, particularly the mean.

A. Z test   B. T test

C. a test   D. None of the above

15) Which of the following testing technique is used when the data are classified on the basis of two factors.

A. One-way ANOVA technique

B. Two-way ANOVA technique

C. Three-way ANOVA technique

D. None of the above

16) Which of the following is an example of basic designs?

A. Factorial design   B. Latin square design

C. CR design   D. Solomon four group design

17) Sampling erros can be reduced by

A. Proper division of sampling units

B. Proper measuring device

C. Increasing sample size

D. Proper sampling frame

18) The data collected from the internet is called as

A. Primary Data   B. Ordinal data

C. Ratio data   D. Secondary data

19) Census is an example of which data collection method?

    A.   Observation method   B.   Interview method

    C.   Questionnaire method   D.   Schedule method

20) Which of the following is not essential for selecting a method of data collection?

    A.   Time   B.   Finance

    C.   Books   D.   Skilled researchers

21) The type of tests used to study the differences between the variances of two samples:

    A.   T-test   B.   Paired t test

    C.   F test   D.   Chi-squared test

22) The type of tests used to study difference between means in large sample size:

    A.   T test   B.   Z test

    C.   F test   D.   Chi-square test

23) .... can come in the starting of the report or in the last part

    A.   Information   B.   Executive summary

    C.   Table of content   D.   Primary pages

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

    A.   Two way ANOVA   B.   One way ANOVA

    C.   ANOCOVA   D.   None of the above

25) Which of the following contains the detailed background of the topic under study?

    A.   Information.   B.   Solution

    C.   Problem   D.   Introduction

SECTION- II

26. Which of the following is called a regular operation

    A) Union, star

    B) Concatenation

    C) Star, Concatenation

    D) Concatenation star, Union

27. Recursive enumerable languages are not closed under

    A) Union   B) Intersection

    C) Reversal   D) Complement

28. Context-free languages are closed under

    A) Concatenation and Union

    B) Kleene closure and union

    C) Concatenation and Kleene closure

    D) Concatenation, Union and Kleene Closure

29. P, Q, R are three languages; if P and R are regularand if PQ = R, then

    A) Q has to be regular.

    B) Q cannot be regular.

    C) Q need not be regular.

    D) Q cannot be a CFL

30. Context switching is part of

    A) Buffering   B) Process execution state

    C) Interrupt handling   D) Ready state

31. Interrupt is ....

    A) External to the execution of the current instruction

    B) Associated with the execution of the current instruction

    C) Explicit request

    D) Internal to the execution of the current program

32. Process no longer exist, but it leaves a record for its parent process to collect, the state of the process is ....

A) spawned.   C) zombie.

B) slipend.   D) running

33. In round-robin scheduling algorithm, throughput will

A) Remain as it is

B) Will be decreased

C) Will be increased

D) It depends, may either increase or decrease

34) If a binary search tree traversed in inorder then the number of nodes will be printed in

a) Ascending order   b) descending order

c) random order   d) None of these

35) Which of the following is known as two-way list?

a) Grounded header list.

b) Circular header list

c) Linked list with header & trailer

d) None of these

36) Which of the following operators cannot be overloaded in C++?

a) +   b) ?

c) = =   d) ::

37) Given two sorted list of size 'm' and 'n' respectively the number of comparison needed in the worst case by the merge sort algorithm will be

a) M * log n   b) min (m, n)

c) avg (m, n)   d) m+n-1

38) A complete full binary tree with 10 leaves

    a)   cannot have more than 4 nodes

    b)   has exactly 19 nodes

    c)   has exactly 17 nodes.

    d)   cannot have more than 19 nodes.

39) Merge sort uses..........

    a)   divide and conquer approach

    b)   heuristic approach

    c)   greedy approach

    d)   back tracking approach

40) Sorting is useful for

    a)   report generating

    b)   memory storage

    c)   compiler

    d)   making searching easier and efficient

41) Which of the following algorithm is stable?

    a)   quick sort and inserting sort

    b)   inserting sort and bubble sort

    c)   quick sort and heap sort

    d)   quick sort and bubble sort

42) 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.

43) RAD stands for.

 A) Read and destroy

 B) Read and develop

 C) Rapid application development

 D) Rapid application design.

44) Referential integrity is concerned with

 A) Primary key.   B) Foreign key.

 C) Alternate key.   D) Project Join key.

45) The value of particular field should be less than 50 if it is

 A) An integrity constraint.

 B) A referential constraint.

 C) A primary key constraint.

 D) A normalization constraint.

46) Which layer of OSI reference model is responsible for decomposition of messages and generation of sequence numbers to ensure correct re-composition from end-to-end communication in a network?

 A) Physical   B) Session

 C) Transport   D) Data link

47) Using the 8-bit sequence numbers, what is the maximum size of the sender and receiver window in selective repeat ARQ?

 A) 128 and 128   B) 1 and 127

 C) 128 and 127   D) 8 and 8

48) The time taken by Internet packets

 A) can be predetermined before transmission.

 B) depends upon the size of the packet.

 C) is irrelevant for audio packets.

 D) is irrelevant for video packets.

49) The DNS maps the IP addresses to

    A)   a binary address as strings.

    B)   an alphanumeric address.

    C)   a hierarchy of domain names.

    D)   a hexadecimal address.

50) Array processors is an example of

    A)   SISD

    B)   SIMD

    C)   MISD

    D)   MIMD

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