M.Phil/Ph.D. Entrance Examination, October - 2021
COMPUTER SCIENCE (For M.Sc., MCA Students)

Day and Date : Wednesday, 27 - 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.

SECTION - I

1. Which of the following is not the method of Research?
   A) Survey
   B) Historical
   C) Observation
   D) Philosophical

2. Authenticity of a research finding is its
   A) Validity
   B) Objectivity
   C) Originality
   D) Funding

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

4. How to judge the depth of any research?
   A) By research title
   B) By research duration
   C) By research objectives
   D) By total expenditure on research

P.T.O.

5. The essential qualities of a researcher are

    A) spirits of free inquiry

    B) reliance on observation and evidence

    C) systemization

    D) all of these

6. Research hypothesis are:

    A) Formulated prior to a review of the literature

    B) Statements of predicted relationships between variables

    C) B but not A

    D) Both A and B

7. Ethical problems can arise when researching the Internet because:

    A) Everyone has access to digital media

    B) Respondents may fake their identities

    C) Researchers may fake their identities

    D) Internet research has to be covert

8. Which of the following is an example of primary data?

    A) Book   B) Journal

    C) News Paper   D) Census Report

9. Which form of reasoning is the process of drawing a specific conclusion from a set of premises?

    A) Objective reasoning

    B) Positivistic reasoning

    C) Inductive reasoning

    D) Deductive reasoning

10. Research is _____

   A) Searching again and again

   B) Finding solution to any problem

   C) Working in a scientific way to search for truth

   D) None of the Above

11. Inductive logic proceed from _____

   A) General to General   B) Particular to General

   C) General to Particular   D) Particular to Particular

12. Today is Ravi's birthday. After one year, he will become two times as he was ten years ago. Current age of Ravi?

   A) 19   B) 20

   C) 21   D) 22

13. Which word does not belong with the others?

   A) evaluate   B) assess

   C) appraise   D) instruct

14. Which design pattern provides a single class which provides simplified methods required by client and delegates call to those methods?

   A) Adapter pattern   B) Builder pattern

   C) Facade pattern   D) Prototype pattern

15. How to handle the missing values in the dataset?

   A) Dropping the missing rows or columns

   B) Imputation with mean/median/mode value

   C) Taking missing values into a new row or column

   D) All of these

16. Which case of Master theorem can be extended further?

A) 1   B) 2

C) 3   D) No case can be extended

17. An algorithm which uses the past results and uses them to find the new results is _____

A) Brute force   B) Divide and conquer

C) Dynamic programming   D) All of these

18. Total no.of permutations in a cloud cube model is

A) 4   B) 8

C) 16   D) 32

19. In _____ mode Hadoop is installed on a single server with Hadoop daemons running in a separate java processes.

A) Standalone mode   B) Pseudo distributed mode

C) Fully distributed mode   D) Hadoop cluster setup

20. Which of the following metrics specified in Cloud Service Level Agreements (SLAs)?

A) Response time - Is the application taking too long to respond?

B) Scheduled maintenance - Hardware and software upgrades and backups

C) Versioning - Can a new build break an existing application's functions?

D) All of these

21. Point out the wrong statement.

A) To read data from an HBase table, use the get() method of the HTable class

B) You can retrieve data from the HBase table using the get() method of the HTable class

C) While retrieving data, you can get a single row by id, or get a set of rows by a set of row ids, or scan an entire table or a subset of rows

D) None of the mentioned

22. Suppose, Receiver Operating Characteristic curve is used for the evaluation of supervised learning models. Area under the ROC curve given for 4 models. Which model will be selected?

A)   Model 1 - 0.64   B)   Model 2- 0.87

C)   Model 3 - 0.34   D)   Model 4 - 0.72

23. Identify the R code to fit neural network with two hidden layers for regression problem

A)   neuralnet(formula, data, hidden=c(2), linear.output=F)

B)   neuralnet(formula, data, hidden=c(5,3), linear.output=T)

C)   neuralnet(formula, data, hidden=c(5,3), linear.output=F)

D)   None of these

24. The essential qualities of research are

A)   Spirit of Free enquiry

B)   Reliance on observation and evidence

C)   Systematization of theorizing of knowledge

D)   All of the above

25. One of the following search engine is exclusively mean for scientific information

A)   Altavista   B)   Google

C)   Yahoo   D)   SCIRUS

SECTION -II

26. JSP_____ is a jsp tag which is used for enclosing a java code in the JSP pages.

A)   Scriplet   B)   Expression

C)   Declaration   D)   None of these

27. Which of the following is an invalid statement?

A)   abc = 1,000,000   B)   a b c = 1000 2000 3000

C)   a,b,c = 1000,2000,3000   D)   none of these

28. Which of the following tools is not required during system analysis phase of system development life cycle?

A) RAD tool

B) Reverse engineering

C) Case tool

D) None of these

29. The _____ is utilized to measure the inter-dependability of various elements defined in a module.

A) Coupling B) Cohesion

C) Concurrency D) None of these

30. Which one of the following is not used to generate dynamic web pages?

A) PHP B) ASP.NET

C) JSP D) None of these

31. Problems that can be solved in polynomial time are known as?

A) Intractable B) Tractable

C) Decision D) Complete

32. To create an emulator, you need an AVD. What does it stand for?

A) Android Virtual Display B) Android Virtual Device

C) Active Virtual Device D) Application Virtual Display

33. A language is represented by a regular expression(a)*(a + ba).

Which of the following string does not belong to the regular set represented by this expression.

A) aaa B) aba

C) ababa D) aa

34. In _____ tree all leaf nodes are at the same level.

A) Binary Search Tree   B) AVL

C) Red-Black Tree   D) B-Tree

35. In the Gauss elimination method for solving a system of linear algebraic equations, triangularization leads to _____

A) diagonal matrix   B) lower triangular matrix

C) upper triangular matrix   D) singular matrix

36. Poisson distribution is applied for _____

A) regular random variable   B) constant time function

C) discrete random variable   D) irregular random variable

37. The Cohen-Sutherland line clipping algorithm divides the two-dimensional space in _____ regions.

A) 4   B) 8

C) 9   D) 23

38. The operation executed on data stored in registers is called _____

A) bit operation   B) byte operation

C) macro operation   D) micro operation

39. Predict the output for the given C code snippet:

```
inti=-1;
+i;
printf("i = %d, +i = %d \n",i,+i);
```

A) i=1,+i=1   B) i=0,+i=1

C) i=-1,+i=-l   D) Run time error

40. When using Application-based authentication:

A) The only previous requirement is the download of the application by the user

B) It is required a previous pairing process between the application and the server

C) Applications cannot be used as credentials in any case

D) All of these

41. Arrange the following steps in proper sequence for executing file transfer application:

a) FTP client contacts FTP server at port 21, specifying TCP as transport protocol

b) Client browses remote directory by sending commands over control connection.

c) Client obtains authorization over control connection

d) When server receives a command for a file transfer, the server opens a TCP data connection to client

e) Server opens a second TCP data connection to transfer another file.

f) After transferring one file, server closes connection.

A) a,b,c,d,e,f   B) b,c,a,d,f,e

C) b,a,d,c,f,e   D) a,c,b,d,f,e

42. The hypervisor that runs directly on the physical hardware of the host machine and it doesn't have to load an underlying Operating System before that

A) Type 1 hypervisor

B) Type 2 hypervisor

C) Both type 1 and type 2 hypervisor

D) None of these

43. Consider the following statements:

Statement 1: A public class containing main( ) method cannot be declared as abstract.

Statement 2: The following program compiles but generates runtime error.

```
public class String {
      public static void main (String[] args) {
      System.out.println("Hello!");
      }
}
```

A)   Both Statement 1) and 2) are true

B)   Statement 1) is false while statement 2) is true

C)   Both Statement 1) and 2) are false

D)   Statement 1) is true while statement 2) is false

44. Consider the following javascript code

document.write(false == '0');

document.write(false == '0');

On execution of the above script — output is generated

A)   true,false

B)   false, true

C)   true, true

D)   false, false

45. Diamond problem arises due to — and in C++ it is taken care of by —

A)   Delegation, virtual derived classes

B)   Multilevel inheritance, virtual base classes

C)   Multiple inheritance, virtual functions

D)   Multiple inheritance, virtual base classes

46. The key used in encrypting the 8-bit message '10101010' to 8-bit cipher '01101001' using XOR algorithm is

A) 11110000

B) 11100111

C) 11000011

D) 00001111

47. A typical data science project employs two datasets. First dataset consists of 100000 rows of which 3000 rows contain missing values in certain columns while dataset 2 contains 500000 rows containing missing values in 30000 option columns. The missing values can be taken care of by _____

A) Deleting corresponding rows from both datasets

B) Deleting corresponding rows from first dataset and using mode for replacing the data in the second dataset

C) Deleting corresponding rows from first dataset and using mean for replacing the data in the second dataset

D) Using mean for replacing the data in both the datasets.

48. Which data structure conveniently used to implement BFS?

A) Stacks

B) Queues

C) Priority Queues

D) All of the mentioned

49. Which of the following is not an integrity constraint?.

A) Not null

B) Positive

C) Unique

D) Check'predicate'

50. A Process Control Block(PCB) does not contain which of the following?

A) Code

B) Stack

C) Bootstrap program

D) Data

❈ ❈ ❈

Rough Work

Rough Work