Seat No.	

M.Phil./ Ph.D. Entrance Examination, July- 2022
COMPUTER SCIENCE
(For M.Sc., MCA Students)

Day and Date : Saturday, 16- 07 - 2022   **Total Marks : 100**
Time : 02.00 p.m. to 04.00 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 research method is a bottom-up approach to research?

A) Deductive method

B) Explanatory method

C) Inductive method

D) Exploratory method

2) 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

3) Which of the following is recording source of data.

A) Books
B) Journals
C) Internet clippings
D) All of these

4) Alternative Hypothesis is also called as?

A) Composite hypothesis
B) Research Hypothesis
C) Simple hypothesis
D) Null Hypothesis

5) What is it called when the participants are not revealed to any one but researcher and staff?

A) Confidentiality
B) Anonymity
C) ethics
D) Discretion

6) The essential qualities of a researcher are

A) Spirits of free inquiry
B) Reliance on observation and evidence
C) Systemization
D) All of these

7) Facts, figures and other relevant materials serving as bases for a study is called

A) Sample
B) Method
C) Data
D) Theory

8) 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

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

   A)   Searching sources of information

   B)   Survey of related literature.

   C)   Identification of a broad area of research

   D)   Searching for solutions to problem

10) Action research means_____

   A)   A longitudinal research

   B)   An applied research

   C)   A research initiated to solve an immediate problem

   D)   A research with socio economic objective

11) Questionnaire is a _____

   A)   Research method   B)   Measurement technique

   C)   Tool for data collection   D)   Data analysis Technique

12) Two numbers are respectively 20% and 50% more than the third number. What % is the first number of the second

   A)   40%   B)   50%

   C)   80%   D)   70%

13) ELFA, GLHA, ILJA,____,MLNA

   A)   OLPA   B)   KLMA

   C)   LLMA   D)   KLLA

14) An algorithm which tries all the possibilities unless results are satisfactory and is generally time-consuming is_____

   A)   Brute force   B)   Divide and conquer

   C)   Dynamic programming   D)   Greedy approach

15) Which of the following is not NP complete?

   A)   Hamiltonian circuit

   B)   Bin Packing

   C)   Partition problem

   D)   Halting problem

16) Which method is used for encoding the categorical variables?

   A)   LabelEncoder   B)   OneHotEncoder

   C)   CategoryEncoder   D)   All of these

17) In which of the following pattern, a visitor class is used which changes the executing algorithm of an element class?

   A)   Visitor pattern

   B)   MVC pattern

   C)   Business Delegate pattern

   D)   Composite Entity pattern

18) A typical organization receives a constant user requests where the demand is unpredictable and change is rapid. The situation can be handled using.

   A)   Autoscaling vertical feature provided by cloud service provider

   B)   Autoscaling horizontal feature provided by cloud service provider.

   C)   Using right-sizing

   D)   Any of these

19) In hadoop installation, no of replications is configured in_____file

   A) core-site.xml   B) mapred-site.xml

   C) hdfs-site.xml   D) hadoop-env.sh

20) Suppose an application execution in a private cloud needs additional resource such as computing power, storage, etc. The public cloud will be used for those additional resources. This is referred to as:

   A) Cloud bursting   B) Cloud washing

   C) Cloud stack   D) None of these

21) Point out the correct statement.

   A) When the processing is done on the data algorithm is moved across the action nodes rather than data to the algorithm

   B) Moving computation is expensive than moving data

   C) Data locality means movement of the algorithm to the data instead of data to algorithm

   D) None of the mentioned

22) Suppose we are designing a time-series model for the forecasting of rainfall. The result of Augmented Dickey-Fuller Test shows 0.01 as p-value. What does the test reveals about the series.

   A) Stationary enough to do any kind of time-series modelling

   B) Time-series modelling can not be done

   C) Linear trend

   D) Non stationary time series

23) Output of the following line of code in R:

courses<-c('Python', 'Java', "Android", "CPP")

courses [1:3]

A) Error   B) "Java" "Android"

C) "Java" "Android" "CPP"   D) "Python" "Java" "Android"

24) What is true about Machine Learning?

A) Machine Learning (ML) is that field of computer science.

B) ML is a type of artificial intelligence that extract patterns out of raw data by using an algorithm or method

C) The main focus of ML is to allow computer systems learn from experience without being explicitly programmed of human intervention.

D) All of the above

25) _____a computer scientist at IBM and a pioneer in AI and computer gaming, coined the term "Machine Learning" in 1952.

A) Arthur Samuel   B) Tom M. Mitchell

C) Michael Jordan   D) None of these

SECTION -II

26) Suppose list 1 is [2, 33, 222, 14, 25], what is list 1[-1]?

A) 25   B) 2

C) 14   D) None of these

27) In java_____ is used for execution of stored procedures

A) Prepared statement   B) Callable statement

C) Statement   D) None of these

28) The _____ is not a framework of PHP.

A) CakePHP   B) CodeIgnitor

C) WordPress   D) Symfony

29) _____ is a strategy for software debugging in which the tester has limited knowledge of the internal details of the program.

A) Gray box testing   B) White box testing

C) Black box testing   D) None of these

30) The_____ is an architectural pattern as well as a collection of design principles that support loose coupling and reusability of different components in a distributed system.

A) Service-oriented architecture

B) Client-server architecture

C) Multiprocessor architecture

D) None of these

31) Under what case of Master's theorem will the recurrence relation of merge sort fall?

A) 1

B) 2

C) 3

D) it cannot be solved using Master theorem

32) What is contained within the layout xml file in android studio?

A) Orientations and layouts that specify what the display looks like
B) The permissions required by the app

C) The strings used in the app

D) The code which is compiled to run the app

33) Recursively enumerable languages are not closed under_____
   A) Homomorphism
   B) Complementation
   C) Concatenation
   D) Union

34) _____ tree construction uses bottom-up approach.
   A) Red-Black tree
   B) AVL
   C) Binary search tree
   D) B-tree

35) Newton-Raphson method is applicable to the solution of_____
   A) algebraic equations only
   B) transcendental equations only
   C) both algebraic and transcendental equations
   D) none of these

36) A researcher selects a probability sample of 100 out of the total population it is_____
   A) a cluster sample
   B) a random sample
   C) a systematic sample
   D) a stratified sample

37) Beam penetration method produces _____colors
   A) red, green and blue
   B) cyan, magenta and yellow
   C) cyan, magenta, yellow and black
   D) red, green, orange and yellow

38) The average time required to reach a storage location in memory and obtain its contents is called_____
   A) latency time
   B) access time
   C) turn around time
   D) response time

39) If the size of integer in 4 bytes, predict the output for the following C code snippet:

int score= {11, 12, 13, 14, 15}

printf("%d %d %d\n", sizeof(score), sizeof(*score), sizeof(score[0])

A) 20   4   4

B) 4   1   1

C) 20   1   1

D) 4   4   4

40) Public Key Cryptography is not a complete security solution by itself because:
   A) It is a weak and easy to break cryptography that must be complemented with secret key cryptography
   B) You must be confident that a public key belongs to a certain identity, which requires the support of other systems.
   C) At the end you have to share your private key.
   D) Key distribution and key maintenance are major issues

41) Suppose host A9 has sent following packets to host B:

Packet 1 : Seq=92, 8 bytes data

Packet 2 : Seq=100, 20 bytes data

And received following packet

ACK=120

This is an example for

A) lost ACK scenario   B) premature timeout

C) cumulative ACK scenario   D) none of these

42) The characteristics that makes cloud architecture above conventional architecture is
   A) According to the demand cloud architecture provides the hardware requirement
   B) Cloud architecture is capable of scaling the resource on demand
   C) Cloud architecture is capable of managing and handling dynamic workloads without failure
   D) All of these

43) Consider the following java code snippet

Integer a=128, b=128;

Integer c=100, d=100;

The following statements

System.out.println(a==b);

System.out.println(c==d);

generate_____output

A)   true, true   B)   true, false

C)   flase, true   D)   None of these

44) _____javascript function enables early DOM manipulation.

A)   onload ()   B)   onDocumentrReady ()

C)   onWindowLoad ()   D)   onChange ()

45) Consider a C++ class Y derived from another C++ class X. Consider the following statement

Y*d=new Y();

X*b=d;

delete b;

Pick up a correct statement from the following:

A)   In the above statements only the base class object is destroyed and code can be fixed by making derived class destructor virtual.

B)   In the above statements both the base class and derived class objects are destroyed.

C)   In the above statements only the base class object is destroyed and code can be fixed by making base class destructor virtual

D)   In the above statements only the base class object is destroyed and code can be fixed by making both base and derived class destructors virtual

46) For a hypothetical banking organization implementing multifactor authentication for securing online transactions, what is the right combination of authentication methods?

   A)   Using password and pin

   B)   Using smart cards and keys

   C)   Using facial recognition and iris scan

   D)   Using PIN and smart card

47) The relationship between three numeric variables can be visualized employing

   A)   Heat Maps   B)   Bar chart

   C)   Scatter plots   D)   Bubble charts

48) Depth-first search always expands the _____ node in the current fringe of the search tree.

   A)   Shallowest   B)   Child node

   C)   Deepest   D)   Minimum cost

49) Which of the following is the right, syntax for the assertion?

   A)   Create assertion 'assertion-name' check 'predicate';

   B)   Create assertion check 'predicate' 'assertion-name';

   C)   Create assertions 'predicates';

   D)   All of the mentioned

50) Which is the most optimal scheduling algorithm?

   A)   FCFS-First come First served   B)   SJF-Shortest Job First

   C)   RR- Round Robin   D)   None of the above

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Rough Work