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No. of Questions : 50

Dr. Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar
PET 2024 (9010) Doctor of Philosophy (Computer Engineering)

(To be filled by the Candidate)

Candidate Seat Number
(As per Admit card)

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OMR Sheet Number

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Invigilator's signature with Date

Candidate's Seat No. in Words : _____

Name of the Center : _____

Paper Code & Name of Examination : **9010 - Doctor of Philosophy (Computer Engineering)**Date: **03/10/2024****PET 2024 - EXAMINATION**Time: **One Hours**Total Marks: **100****Important Instructions for the candidate**

- Write your seat number and OMR Sheet number on the question paper in the earmarked space
- This question paper carries Fifty (50) Multiple-choice type questions and each question carries 2 Marks
- At the commencement of examination, the question paper will be given to the student.
- Each question has four alternative responses marked (A) (B) (C) and (D). You have to darken the circle as indicated below on the correct response against each question
Example: where (C) is correct answer

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- Your responses to the answer are to be indicated in the OMR Sheet. If you mark at any place other than in the circle in the OMR Sheet it will not be evaluated.
- Rough work is to be done at the end of this question paper.
- You have to return OMR answer sheet and question paper to the invigilator at the end of examination compulsorily and must not carry with you outside the examination hall.
- Use only Black / Blue ball point pen
- Use of any type of calculator or log table etc. is prohibited.
- There is no negative marking for incorrect answers

विद्यार्थ्यांसाठी महत्त्वाच्या सूचना

- परीक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात तसेच आपणास दिलेल्या उत्तर पत्रिकेचा क्रमांक त्याखाली लिहावा.
- या प्रश्नपत्रिकेतील सर्व प्रश्न सोडवणे अनिवार्य आहे.
- परीक्षा सुरु झाल्यावर विद्यार्थ्यांला प्रश्नपत्रिका दिली जाईल.
- प्रत्येक प्रश्नासाठी (A) (B) (C) (D) अशी चार विकल्प उत्तरे दिली आहेत, त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा निळा करावा.
उदा: जर (C) हे उत्तर योग्य असेल तर

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- या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे ओएमआर उत्तर पत्रिकेतच दर्शवावीत इतर ठिकाणी लिहिलेली उत्तरे तपासली जाणार नाहीत.
- प्रश्नपत्रिकाच्या शेवटी कोऱ्या जागेवरच कच्चे काम करावे
- परीक्षा संपल्यानंतर विद्यार्थ्यांनी मूळ ओ. एम. आर उत्तरपत्रिका पर्यवेक्षकाकडे परत करणे आवश्यक आहे तथापि प्रश्नपत्रिका व ओ. एम. आर. उत्तरपत्रिका आपल्याबरोबर नेण्यास विद्यार्थ्यांला परवानगी नाही.
- फक्त काळ्या किंवा निळ्या बॉलपेनचाच वापर करावा
- कॅल्क्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही
- चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही

- | Q. No. | Question |
|--------|--|
| 1. | It refers to the percentage of probability, or certainty, that the confidence interval would contain the true population parameter when you draw a random sample many times
(A) Interval estimation (B) Standard ratio
(C) Confidence level (D) Mean |
| 2. | For a parameter whose value is unknown, the belief or claim that parameter is classified as.
(A) Hypothesis testing (B) Parameter claim testing
(C) Primary limit testing (D) Estimate limit testing |
| 3. | Both the standard normal distribution and t-distribution have the mean and variance.
(A) Same, same (B) Same, different
(C) Different, different (D) Different, same |
| 4. | Type 1 error occurs when?
(A) We reject Null hypothesis if it is True (B) We reject Null hypothesis if it is False
(C) We accept Null hypothesis if it is False (D) We accept Null hypothesis if it is True |
| 5. | The p-value of the test is the
(A) Smallest significance level at which the null hypothesis cannot be rejected
(B) Smallest significance level at which the null hypothesis can be rejected
(C) Largest significance level at which the null hypothesis cannot be rejected
(D) Largest significance level at which the null hypothesis can be rejected |
| 6. | In order to pursue the research, which of the following is priory required?
(A) Developing a research design (B) Formulating a research question
(C) Deciding about the data analysis procedure (D) Formulating a research hypothesis |
| 7. | Which method aims at studying the effect of an independent variable on a dependent variable, by keeping the other interdependent variables constant through some type of control?
(A) Historical Method (B) Comparative Method
(C) Survey method (D) Experimental Method |
| 8. | What is the main aim of interdisciplinary research?
(A) To over simplify the problem of research
(B) To bring out the holistic approach to research
(C) To create a new trend in research methodology
(D) To reduce the emphasis on a single subject in the research domain |
| 9. | 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 |
| 10. | Which of the following is not a method of collecting Primary data?
(A) Observation Method
(B) Through Local Reporters and Correspondents
(C) Interview method
(D) Published sources |

11. It measures the extent to which the items scatter from average.
 (A) Variation (B) Skewness
 (C) Kurtosis (D) Displacement
12. Most of the time, when we refer to the average of something, we are talking about
 (A) Arithmetic Mean (B) Mode
 (C) Geometric Mean (D) Harmonic Mean
13. It is a set of values of a variable or variables arranged over a period of time.
 (A) Pie graph (B) Time series
 (C) Frequency Distribution (D) Cumulative frequency
14. The higher the precision and confidence level required, the the sample size should be.
 (A) Larger (B) Smaller
 (C) Nil (D) Relative
15. In sampling the sample units are selected from the population at equal intervals in terms of time, space or order.
 (A) Quota (B) Convenience
 (C) Systematic (D) Stratified
16. What is the main challenge in patenting computer-based solutions?
 (A) Determining whether the invention is a mathematical algorithm or an abstract idea
 (B) The high cost of filing a patent application
 (C) The difficulty in defining the scope of the invention
 (D) The requirement to disclose the source code
17. What is a patent?
 (A) A document that provides proof of ownership for physical goods.
 (B) A legal right granted for an invention, allowing the inventor exclusive rights to use, make, and sell the invention
 (C) A certification issued by the government to recognize the quality of a product.
 (D) A trademark or brand name registration.
18. Which type of work does copyright NOT typically protect?
 (A) Software code (B) Musical compositions
 (C) Scientific discoveries (D) Literary works
19. In binomial distribution, each trial has only possible outcomes
 (A) Three (B) Four
 (C) Two (D) One
20. A variable that can assume any value between two given points is called _____
 (A) Uncertain random variable (B) Discrete random variable
 (C) Continuous random variable (D) Irregular random variable
21. A batsman hits boundaries for 6 times out of 30 balls. Find the probability that he did not hit the boundaries.
 (A) $1/5$ (B) $2/5$
 (C) $3/5$ (D) $4/5$

22. When the relationship between the variables is linear, the technique is called
 (A) Simple linear regression (B) Correlation
 (C) Standard Error (D) Logistic regression
23. The rank correlation coefficient is always
 (A) + 1 (B) - 1
 (C) Between + 1 and - 1 (D) 0
24. The unit of Coefficient of correlation is
 (A) Percentage (B) Ratio
 (C) Same unit of the data (D) No unit
25.attempts to determine the degree of relationship between variables.
 (A) Regression analysis (B) Correlation analysis
 (C) Inferential analysis (D) Co-variance
26. In image processing, which of the following techniques is commonly used to enhance the contrast of an image?
 (A) Gaussian Blur (B) Histogram Equalization
 (C) Edge Detection (D) Image Resizing
27. In supervised learning, which of the following is NOT a type of supervised learning task?
 (A) Classification (B) Regression
 (C) Clustering (D) Forecasting
28. In a relational database, what is the purpose of a primary key?
 (A) To ensure that each record in a table has a unique identifier
 (B) To link two tables together
 (C) To enforce data type constraints on a column
 (D) To automatically generate a unique value for each record
29. In an operating system, what does a context switch refer to?
 (A) Switching between different applications running on the same system
 (B) Switching between different user interfaces
 (C) Saving the state of a currently running process and loading the state of another process
 (D) Changing the system's hardware configuration
30. Which cryptographic algorithm is known for using the same key for both encryption and decryption?
 (A) RSA (B) AES
 (C) Diffie-Hellman (D) ElGamal
31. Which protocol is primarily used for sending email from a client to a server or between servers?
 (A) HTTP (B) FTP
 (C) SMTP (D) IMAP
32. In object-oriented programming, which of the following concepts allows a subclass to provide a specific implementation of a method that is already defined in its superclass?
 (A) Encapsulation (B) Inheritance
 (C) Polymorphism (D) Overriding

33. Which of the following architectures uses a single instruction stream to control multiple data streams?
 (A) SISD (Single Instruction, Single Data)
 (B) SIMD (Single Instruction, Multiple Data)
 (C) MISD (Multiple Instruction, Single Data)
 (D) MIMD (Multiple Instruction, Multiple Data)
34. Which one of the following is the overflow condition if linear queue is implemented using an array with a size MAX_SIZE?
 (A) rear = front
 (B) rear = front+1
 (C) rear=MAX_SIZE -1
 (D) rear = MAX_SIZE
35. Identify the type of learning in which labeled training data is used.
 (A) Semi-supervised learning
 (B) Supervised learning
 (C) Unsupervised learning
 (D) Reinforcement learning
36. Which technology is often used to process and analyze large scale datasets in data science?
 (A) Hadoop
 (B) Python
 (C) HTML
 (D) SQL
37. Which of the following operator's precedence order is correct (from highest to lowest)?
 (A) %, *, /, +, -
 (B) %, +, /, *, -
 (C) +, -, %, *, /
 (D) %, +, -, *, /
38. Which of the following is a technique used to handle missing data in a dataset?
 (A) Data imputation
 (B) Data augmentation
 (C) Data transformation
 (D) Data normalization
39. Gaussian Nave Baye's classifier is _____ distribution
 (A) Continuous
 (B) Discrete
 (C) Binary
 (D) Ternary
40. A binary search tree is generated by inserting in order the following integers
 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24
 The number of nodes in the left subtree and right subtree of the root respectively is,
 (A) (4, 7)
 (B) (7, 4)
 (C) (8, 3)
 (D) (3, 8)
41. Which data structure is used for implementing recursion?
 (A) Stack
 (B) Queue
 (C) List
 (D) Array
42. In reinforcement learning, which of the following is used to determine the action to be taken by an agent?
 (A) Reward Function
 (B) Policy
 (C) Loss Function
 (D) Gradient Descent
43. Which of the following is a feature of functional programming languages?
 (A) Mutable state
 (B) Object inheritance
 (C) First-class functions
 (D) Procedural abstraction

44. Which routing protocol is considered an interior gateway protocol (IGP) and uses link-state information to make routing decisions?
 (A) BGP (B) RIP
 (C) OSPF (D) EIGRP
45. Which of the following is a block cipher mode of operation that ensures confidentiality but not integrity?
 (A) Cipher Block Chaining (CBC) (B) Electronic Codebook (ECB)
 (C) Counter (CTR) (D) Galois/Counter Mode (GCM)
46. Which of the following is NOT a typical function of an operating system?
 (A) Memory Management (B) Process Scheduling
 (C) Disk Management (D) Application Development
47. In a relational database, what is a foreign key?
 (A) A key that uniquely identifies a record within its own table
 (B) A key that is used to link two tables together
 (C) A key that enforces unique values in a column
 (D) A key that automatically generates values for each record
48. In natural language processing (NLP), what is the purpose of a "stop word" list?
 (A) To list frequently occurring words that should be emphasized
 (B) To identify the root of a word
 (C) To remove common words that are unlikely to be useful in text analysis
 (D) To convert text into numerical vectors
49. Which of the following algorithms is used for edge detection in image processing?
 (A) K-means (B) Canny
 (C) PCA (D) K-nearest neighbors
50. In the context of neural networks, what does the term "overfitting" refer to?
 (A) The model performs well on training data but poorly on new, unseen data
 (B) The model is unable to capture the underlying trend of the data
 (C) The model performs equally well on both training and testing data
 (D) The model has too few parameters to adequately represent the data
