

Total No. of Printed Pages: 06

No. of Questions: 50

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PET 2024 (9011) Doctor of Philosophy(Computer Science)

(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 : **9011- Doctor of Philosophy(Computer Science)**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
- (A) (B) (C) (D)
- 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 सुरू 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
- (A) (B) (C) (D)
- 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. | Which of the following is the first step in starting the research process?
(A) Searching sources of information to locate problem.
(B) Survey of related literature
(C) Identification of problem
(D) Searching for solutions to the problem |
| 2. | -----are norms of conduct that distinguish between acceptable & unacceptable behavior.
(A) Ethics (B) Techniques
(C) Procedure (D) Sampling |
| 3. | What is the purpose of a research hypothesis?
(A) To summarize the research findings (B) To explain the research methodology
(C) To predict the outcome of the research (D) To describe the research participant |
| 4. | Which data collection method involves directly observing and recording behaviors, events, or phenomena as they occur?
(A) Observation (B) Interview
(C) Survey (D) Experiment |
| 5. | 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 |
| 6. | Which one is called non-probability sampling?
(A) Quota sampling (B) Cluster sampling
(C) Systematic sampling (D) Stratified random sampling |
| 7. | The-----aims at finding a solution for an immediate problem facing a society or an industrial/business organization.
(A) Applied research (B) Fundamental research
(C) Descriptive research (D) Exploratory research |
| 8. | Which statistical test would be appropriate for comparing the means of two independent groups?
(A) Chi-Square Test (B) Independent t-Test
(C) ANOVA (D) Correlation |
| 9. | In the case of-----, the intervals are adjusted in terms of some rule that has been established as a basis for making the units equal.
(A) Nominal scale (B) Interval scale
(C) Ratio scale (D) Ordinal |
| 10. | Content validity is best described as:
(A) The extent to which a test covers the representative sample of the domain of interest
(B) The degree to which test results correlate with other measures of the same construct
(C) The appearance that a test measures what it is intended to measure
(D) The stability of test scores across different administrations |
| 11. | Which of the following is used to describe a data set by displaying the number of observations (frequency) for each unique value of the variable?
(A) Histogram (B) Frequency Table
(C) Scatter Plot (D) Box Plot |

12. If the p-value obtained from a Chi-square test is less than 0.05, we:
 (A) Reject the null hypothesis
 (B) Fail to reject the null hypothesis
 (C) Accept the null hypothesis
 (D) Conclude that there is no relationship between the variables
13. Which of the following is a correct order for the sections in a typical research paper?
 (A) Introduction, Methods, Results, Discussion, References
 (B) Abstract, Introduction, Results, Methods, Discussion
 (C) Title, Abstract, Methods, Results, Discussion
 (D) Introduction, Abstract, Methods, Results, Discussion
14. Which of the following resources is an academic database commonly used in computer science research?
 (A) PubMed
 (B) IEEE Xplore
 (C) PsycINFO
 (D) LexisNexis
15. Which feature is commonly offered by reference management software like Mendeley?
 (A) Editing images
 (B) Formatting documents
 (C) Managing and citing references
 (D) Writing code
16. Which of the following best describes the role of 'footnotes' in a scientific report?
 (A) To provide a brief summary of the report
 (B) To offer additional information or citations without interrupting the main text
 (C) To list all the tables and figures in the report
 (D) To outline the research methodology
17. What is the purpose of data analysis in the research process?
 (A) To collect data from research participants
 (B) To test the research hypothesis
 (C) To review the existing literature
 (D) To design the research study
18. What is the primary purpose of a patent?
 (A) To protect the environment from pollution
 (B) To grant the inventor exclusive rights to their invention
 (C) To provide guidelines for ethical research
 (D) To ensure the reproducibility of scientific results
19. A-----is an account of what has been published on a topic by accredited scholars & researchers.
 (A) Research paper
 (B) Literature review
 (C) Articles
 (D) Thesis
20. In reading comprehension, what is the primary purpose of the 'Summary' section?
 (A) To provide a detailed analysis of the text
 (B) To briefly restate the main points of the text
 (C) To list all the references used in the text
 (D) To give a personal opinion on the text
21. If in a certain code, 'HELLO' is written as 'IFMMP', how is 'WORLD' written in that code?
 (A) XPSME
 (B) XPSNF
 (C) YQMSF
 (D) XPSME

22. In a Venn diagram where 'A' is for 'Students', 'B' is for 'Players', and 'C' is for 'Readers', what does the intersection of 'A' and 'B' represent?
- (A) Students who are not players
 (B) Students who are also players
 (C) Players who are not students
 (D) Students who are neither players nor readers
23. Pointing to a photograph, a man said, "I have no brother, and that man's father is my father's son." Whose photograph was it?
- (A) His son (B) His own
 (C) His father (D) His nephew
24. Arrange the following words in a meaningful sequence.
1. Infection
 2. Consultation
 3. Doctor
 4. Treatment
 5. Recovery
- (A) 1, 3, 4, 5, 2 (B) 1, 3, 2, 4, 5
 (C) 1, 2, 3, 4, 5 (D) 2, 3, 5, 1, 4
25. Statement: A severe drought is reported in many states of the country.
 Courses of action;
- I. The government should immediately provide financial assistance to the people of the affected states.
 - II. The government should immediately send food, water, and fodder to the affected states to save people and livestock.
- (A) Only I follows (B) Only II follows
 (C) Either I or II follows (D) Neither I nor II follows
26. Which algorithm uses the divide-and-conquer strategy?
- (A) Merge Sort (B) Bubble Sort
 (C) Insertion Sort (D) Selection Sort
27. What is the average time complexity for search operations in a hash table?
- (A) $O(1)$ (B) $O(n)$
 (C) $O(\log n)$ (D) $O(n \log n)$
28. In which traversal method is a graph explored as far as possible along each branch before backtracking?
- (A) Breadth-First Search (B) Depth-First Search
 (C) Dijkstra's Algorithm (D) Floyd-Warshall Algorithm
29. Which of the following automata can recognize context-free languages?
- (A) Finite Automata (B) Pushdown Automata
 (C) Turing Machines (D) Linear Bounded Automata
30. Which of the following properties is true for regular sets?
- (A) They are closed under union and intersection
 (B) They are closed under intersection and complementation
 (C) They are closed under union and complementation
 (D) They are closed under intersection and difference

31. What state is a process in when it is waiting for some event to occur, such as an I/O completion?
 (A) New (B) Running
 (C) Waiting (D) Terminated
32. What is the purpose of a semaphore in process synchronization?
 (A) To allocate memory (B) To handle deadlocks
 (C) To manage process scheduling (D) To control access to shared resources
33. What is the primary purpose of virtual memory?
 (A) To increase the speed of data access
 (B) To extend the apparent size of physical memory
 (C) To simplify the memory management process
 (D) To ensure data integrity
34. Which type of I/O control method uses polling to check the status of an I/O device?
 (A) Interrupt-driven I/O (B) Direct Memory Access (DMA)
 (C) Programmed I/O (D) Buffered I/O
35. What is the purpose of the buffer cache in a file system?
 (A) To store frequently accessed data in memory
 (B) To manage disk space allocation
 (C) To control access permissions
 (D) To schedule I/O operations
36. Which of the following best describes an intelligent agent?
 (A) A hardware device that senses its environment
 (B) A software entity that performs specific tasks
 (C) An entity that perceives its environment and takes actions to achieve its goals
 (D) A system that processes data for other applications
37. Which of the following is an example of a local search algorithm?
 (A) Breadth-First Search (B) A* Search
 (C) Hill-Climbing (D) Depth-First Search
38. What is the process of deriving new sentences from existing ones in first-order logic called?
 (A) Learning (B) Searching
 (C) Inference (D) Planning
39. What role does prior knowledge play in machine learning?
 (A) It helps improve the learning process (B) It is not relevant
 (C) It makes the process slower (D) It always leads to over fitting
40. What is a key philosophical question in AI?
 (A) How to improve computer hardware
 (B) What is the nature of consciousness and intelligence?
 (C) How to design efficient algorithms
 (D) How to store large datasets
41. The method for updating the main memory as soon as a word is removed from the Cache is called
 (A) Write-through (B) Write-back
 (C) Protected write (D) Cache-write

