

B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Seventh Semester

18MEE499T - ARTIFICIAL INTELLIGENCE FOR MECHANICAL ENGINEERING*(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)***Note:**

- i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
- ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours**Max. Marks: 100****PART - A (20 × 1 = 20 Marks)**

Answer all Questions

Marks BL CO

- | | | | |
|---|---|---|---|
| 1. Who is the inventor of Artificial Intelligence? | 1 | 1 | 1 |
| (A) Geoffrey Hinton | | | |
| (B) John McCarthy | | | |
| (C) Jurgen Schmidhuber | | | |
| (D) Andrew Ng | | | |
| 2. Which of the following is the branch of Artificial Intelligence? | 1 | 1 | 1 |
| (A) Machine Learning. | | | |
| (B) Full-Stack Developer. | | | |
| (C) Network Design. | | | |
| (D) Cyber forensics | | | |
| 3. What is the goal of Artificial Intelligence? | 1 | 1 | 1 |
| (A) To solve artificial problems | | | |
| (B) To extract scientific causes | | | |
| (C) To explain various sorts of intelligence | | | |
| (D) To solve real-world problems | | | |
| 4. How many categories are there for the Artificial Intelligence process? | 1 | 1 | 1 |
| (A) 5 categories | | | |
| (B) processes are categorised based on the input provided | | | |
| (C) 3 categories | | | |
| (D) process is not categorised | | | |
| 5. Which of the following is a component of Artificial Intelligence? | 1 | 1 | 2 |
| (A) Learning. | | | |
| (B) Designing | | | |
| (C) Puzzling | | | |
| (D) Training | | | |
| 6. If machine learning model output involves target variable, then that model is called as. | 1 | 1 | 2 |
| (A) descriptive model. | | | |
| (B) predictive model | | | |
| (C) reinforcement learning | | | |
| (D) conceptual model | | | |
| 7. What are the 5 types of knowledge representation? | 1 | 1 | 2 |
| (A) DPMHS | | | |
| (B) SHMPD | | | |
| (C) PMDHS | | | |
| (D) DHMPS | | | |
| 8. Which algorithm will work backward from the goal to solve a problem? | 1 | 1 | 2 |
| (A) Forward chaining. | | | |
| (B) Backward chaining | | | |
| (C) Hill-climb algorithm | | | |
| (D) cluster algorithm | | | |
| 9. Which algorithm are in more similar to backward chaining algorithm? | 1 | 1 | 3 |
| (A) Depth-first search algorithm | | | |
| (B) Breadth-first search algorithm | | | |
| (C) Hill-climbing search algorithm | | | |
| (D) cluster algorithm | | | |
| 10. How the logic programming can be constructed? | 1 | 1 | 3 |
| (A) Variables. | | | |
| (B) Expressing knowledge in a formal language | | | |
| (C) Graph. | | | |
| (D) Repeated states | | | |

11. A turing machine that is able to simulate other turing machines: (A) Nested Turing machines (B) Universal Turing machine (C) Counter machine (D) Input tape	1	1	3
12. The value of n if turing machine is defined using n-tuples (A) 6. (B) 7 (C) 8 (D) 5	1	1	3
13. Zero sum game has to be a _____ game. (A) Single player (B) Two player (C) Multiplayer (D) Three player	1	1	4
14. What was the name of the very first AI programming language? (A) LISP (B) IPL (C) FORTRAN (D) BASIC	1	1	4
15. _____, or modeling, is the method using which we program a computer to exhibit human intelligence. (A) Simulation (B) Psychic Amelioration (C) Duplication (D) Cognitization	1	1	4
16. The Computer-Assisted Instruction (CAI) technique based on the programmed instruction is: (A) problem-solving CAI (B) generative CAI (C) intelligent CAI (D) frame-based CAI	1	1	4
17. What will happen when a chain-termination mutation is found in the S gene? (A) Cell lysis gets blocked. (B) The growth of cells containing low levels of packaging proteins is not allowed. (C) The lysis of cells cannot be carried artificially (D) Packaging cannot be carried out efficiently	1	1	5
18. Which AI technique enables the computers to understand the associations and relationships between objects and events? (A) Heuristic Processing (B) Cognitive Science (C) Relative Symbolism (D) Pattern Matching	1	1	5
19. The search algorithm, which is similar to the minimax search but removes the branches that don't affect the final output, is known as __. The search algorithm, which is similar to the minimax search but removes the branches that don't affect the final output, is known as __. (A) Depth-first search (B) Breadth-first search (C) Alpha-beta pruning (D) Beta-first search	1	1	5
20. A hybrid Bayesian Network consist _____. (A) Discrete variables only (B) Discontinuous Variable (C) Both Discrete and Continuous variables (D) Continuous Variable only	1	1	5

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

	Marks	BL	CO
21. Write a brief note on the key principles of AI.	4	1	1
22. Differentiate between weak and strong AI.	4	1	1
23. Write a brief summary of exploratory analysis and model-hypothesis selection.	4	1	2
24. Define Expert system characteristics and features.	4	1	3
25. Write a short note on Genetic Algorithm.	4	2	4
26. List a few applications of AI autonomous vehicles.	4	2	5

27. Define Bayesian reasoning	4	1	4
PART - C (5 × 12 = 60 Marks)			
Answer all Questions			
	Marks	BL	CO
28. (a) Draw a concise diagram outlining artificial intelligence's role in automotive engineering.	12	1	1
(OR)			
(b) Describe search algorithm case studies with a visually appealing illustration.			
29. (a) Construct a brief diagram that depicts knowledge discovery in a database.	12	1	2
(OR)			
(b) Describe in detail about knowledge and rationality.			
30. (a) Describe a neat illustration of decision tree learning.	12	3	3
(OR)			
(b) Describe in detail any two AI sensors with a neat sketch.			
31. (a) Describe a simple genetic algorithm using appropriate examples and illustrations.	12	1	4
(OR)			
(b) Write an appropriate case study and its solution on job-shop scheduling and routing issues.			
32. (a) Describe in detail AI-based autonomous vehicle applications.	12	3	5
(OR)			
(b) Describe the benefits of AI-based product development and design over traditional methods.			

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