EPCET LIBRARY BANGALORE-49

CBCS SCHEME

USN | | | | | | | | | | |

21CS752

Seventh Semester B.E./B.Tech. Degree Examination, June/July 2026
Introduction to AI and ML

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. What is Artificial Intelligence? List and explain foundations of Artificial Intelligence. **(10 Marks)**

b. Explain the following:
i) Turing Test Approach ii) Cognitive Model Approach
iii) Laws of Thought Approach iv) Rational Agent Approach **(10 Marks)**

OR

2 a. Demonstrate with a neat diagram how agents interact with environments through sensors and actuators. **(05 Marks)**

b. Discuss about nature of environment with an example. **(07 Marks)**

c. Explain structure of the agents and its types. **(08 Marks)**

Module-2

3 a. List and explain the phases of problem-solving process and well defined problems and solutions. **(08 Marks)**

b. Discuss the Breadth first search and depth first search algorithm with an example. **(12 Marks)**

OR

4 a. Discuss about heuristic function of greedy best first search. Apply GBFS to find out the most cost effective path from state A to goal state G. **(10 Marks)**

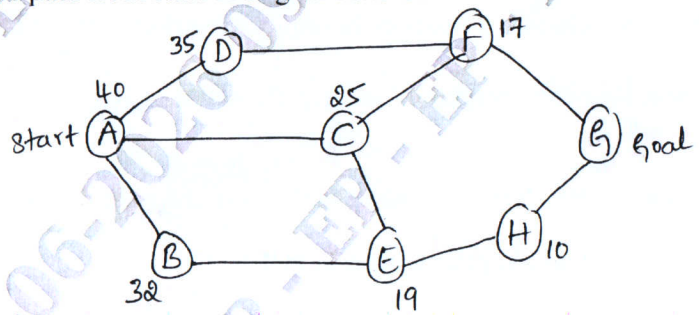

Fig.Q.4(a)

b. Apply A* algorithm to find out the most cost effective path from start state A to goal state G. **(10 Marks)**

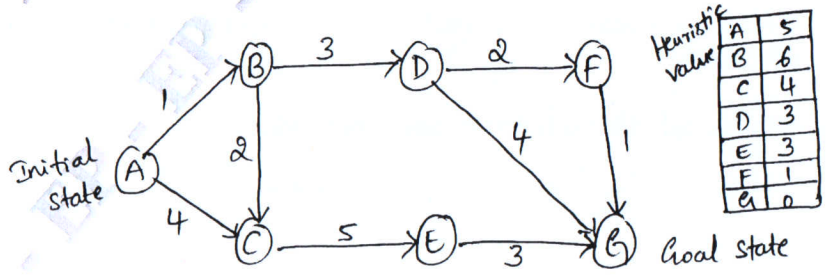

Fig.Q.4(b)

Module-3

5 a. Define Machine Learning. Summarize how machine learning is linked to AI, data science and statistics. **(07 Marks)**

b. Discuss the types of machine learning with examples. **(08 Marks)**

c. Explain the Machine Learning Process Model. **(05 Marks)**

OR

6 a. Define Data. Discuss the types of data and data storage and representation of data. **(07 Marks)**

b. Describe Big data analytics and types of analytics in detail. **(06 Marks)**

c. Explain the Big data analysis framework. **(07 Marks)**

Module-4

7 a. What is Bivariate and Multivariate? Discuss Bivariate and Multivariate statistics with examples. **(10 Marks)**

b. Define Probability Distributions. Explain the types of probability distributions. **(10 Marks)**

OR

8 a. Write find-s algorithm. Apply the find-s algorithm for the training dataset of 4 instances as shown below, which contains the details of the performance of students and their likelihood of getting a job offer or not in their final semester.

CGPA	Interactiveness	Practical knowledge	Communication skills	Logical thinking	Interest	Job offer
≥ 9	Yes	Excellent	Good	Fast	Yes	Yes
≥ 9	Yes	Good	Good	Fast	Yes	Yes
≥ 8	No	Good	Good	Fast	No	No
≥ 9	Yes	Good	Good	Slow	No	Yes

(10 Marks)

b. Differentiate between instance-based learning and model-based learning. **(05 Marks)**

c. Explain K-nearest neighbor learning algorithm. **(05 Marks)**

Module-5

9 a. Explain the structure of an ANN with a neat diagram. Discuss about the types of ANN. **(10 Marks)**

b. Write a short note on Perceptron Model. **(05 Marks)**

c. Write Perceptron Algorithm. **(05 Marks)**

OR

10 a. Discuss a learning in a multi-layer perceptron algorithm with forward and backward propogation. **(10 Marks)**

b. Explain radial basis function neural network. **(10 Marks)**

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