

## Faculty of Science &amp; Technology

## Fifth Semester B.Tech. (Computer Science &amp; Engg.) (C.B.C.S.) Examination

## ARTIFICIAL INTELLIGENCE

Time : Three Hours]

[Maximum Marks : 70

## INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve Question No. 1 **OR** Question No. 2.
- (3) Solve Question No. 3 **OR** Question No. 4.
- (4) Solve Question No. 5 **OR** Question No. 6.
- (5) Solve Question No. 7 **OR** Question No. 8.
- (6) Solve Question No. 9 **OR** Question No. 10.
- (7) Due credit will be given to neatness and adequate dimensions.
- (8) Assume suitable data whenever necessary.
- (9) Illustrate your answers whenever necessary with the help of neat sketches.

1. (a) Define Artificial Intelligence. Explain the task domains of AI. 7
- (b) Explain different problem characteristics in detail. 7

**OR**

2. (a) Define production system. Explain its characteristics and give the production system for a Water Jug Problem. 7
- (b) What is state space ? Explain with example. 7
3. (a) Explain Best first searching with example. Also give its advantages and disadvantages. 6
- (b) Explain simple hill climbing and steepest ascent hill climbing. 8

**OR**

4. (a) Explain Means-end analysis. 7
- (b) Write a short note on Heuristic search. 7
5. (a) Describe the Issues in Knowledge Representation in AI. 7
- (b) What are semantic networks ? What are the Properties of Semantic N/W ? 7

**OR**

6. (a) Consider the following sentences :

- (i) John Likes all kinds of food.
- (ii) Apples are food.
- (iii) Chicken is food.
- (iv) All employees earning rupees two lakhs or more pay taxes.
- (v) Everyone likes ice cream means there is no one who does not like ice cream.
- (vi) Brothers are siblings.
- (vii) All teenagers drive some kind of vehicle.
- (viii) Everyone is loyal to someone.

Translate these sentences into formulas in predicate logic.

(b) Write short notes on the following :—

8

- (i) Backward Chaining
- (ii) Frames
- (iii) Scripts.

7. (a) Discuss Baye's Theorem of Probability in detail.

6

(b) What is fuzzy logic ? How it is used for decision making under uncertainty ?

7

OR

7

8. (a) Explain goal based & utility based agent in detail.

7

(b) Explain Bayesian networks.

7

9. (a) What is learning ? Draw and explain the block diagram of general learning model.

6

(b) Define expert system. Write its characteristic features. Also give the block diagram architecture of expert system.

8

OR

10. (a) Explain Natural language processing and types of grammar used in Natural language Processing.

7

(b) What are the different types of learning ? Explain each one with example.

7

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