

2023
B.A./B.Sc.
Sixth Semester
CORE – 13
COMPUTER SCIENCE
Course Code: CSC 6.11
(Artificial Intelligence)

Total Mark: 70
Time: 3 hours

Pass Mark: 28

Answer five questions, taking one from each unit.

UNIT-I

1. (a) What do you understand by the term artificial intelligence? What are the advantages that AI have over natural intelligence? 2+5=7
(b) List the four main approaches to AI. Explain any one in detail. 2+5=7
2. (a) What are agents? Give examples. 1+1=2
(b) Explain the structure of intelligent agents. 7
(c) Describe the application of AI in expert systems. 5

UNIT-II

3. (a) What do you understand by production system? Explain the requirements of a good control strategy. 2+4=6
(b) What are heuristic search techniques? Explain any one search strategy with example. 2+6=8
4. (a) Analyse the ‘missionaries and cannibals’ problem with respect to the seven problem characteristics. 7
(b) Define game playing in AI. What are the advantages and disadvantages of game playing in AI? 1+6=7

UNIT-III

5. (a) What is knowledge representation? Illustrate the knowledge cycle in AI with a diagram. 2+2=4

- (b) Consider the following sentences: 10
- (i) John likes all kinds of food.
 - (ii) Apples are food.
 - (iii) Chicken is food.
 - (iv) Anything anyone eats and isn't killed by it is food.
 - (v) Bill eats peanuts and is still alive.
 - (vi) Sue eats everything Bill eats.
- Prove by resolution that John likes peanuts.

6. (a) What is first order predicate logic (FOPL)? Represent the following facts in FOPL: 1+4=5
- (i) The members of the Elm St. Bridge Club are Joe, Sally, Bill and Ellen.
 - (ii) Joe is married to Sally.
 - (iii) Bill is Ellen's brother.
 - (iv) The spouse of every married person in the club is also in the club.
- (b) What is semantic network? What are the advantages of semantic network? 1+3=4
- (c) Compare logic notation with logic programming. 5

UNIT-IV

7. (a) What is uncertainty? What are the main sources of uncertainty? 2+2=4
- (b) What are the various types of nodes supported by TMS? 4
 - (c) Explain default reasoning with example. 6
8. (a) What do you understand by non-monotonic reasoning and probabilistic reasoning? 2+2=4
- (b) What is conditional probability? Explain Bayesian probabilistic inference. 2+8=10

UNIT-V

9. (a) Why is natural language processing needed? 2
- (b) Differentiate between syntactic and semantic analysis. 6

(c) What is context-free grammar (CFG)? Explain the components of CFG. 1+5=6

10. (a) What is natural language understanding (NLU) and natural language generation (NLG)? 4

(b) What do you understand by parsing and parser? Explain top-down and bottom-up parsing. 2+8=10
