2024
B.A./B.Sc.
Sixth Semester
CORE – 13
COMPUTER SCIENCE
Course Code: CSC 6.11
(Artificial Intelligence)

Total Mark: 70 *Pass Mark: 28*
Time: 3 hours

Answer five *questions, taking* one *from each unit.*

UNIT–I

1. (a) What is the significance of artificial intelligence (AI) in the field of computer science? 2
   (b) Write a brief note on the historical development of AI from its inception to the present day. 5
   (c) Explain the use of AI in any one field using an example. 7

2. (a) Explain the concept of intelligent agent in AI. 3
   (b) Provide examples of how AI is utilized in everyday life. 4
   (c) Discuss the Turing test as a measure of AI intelligence. What are its limitations in evaluating AI system's capabilities? 5+2=7

UNIT–II

3. (a) Define the concept of problem solving in AI. 2
   (b) Analyse the problem of playing chess with respect to the seven problem characteristics. 7
   (c) Explain breadth-first search with an example. 5

4. (a) Explain the concept of "Task Environment" or PEAS using the example of an automated car. 5
   (b) How is informed search different from uninformed search? 4
   (c) Explain alpha-beta pruning algorithm for adversarial search. 5

UNIT–III

5. (a) What is knowledge representation in AI? 1
   (b) What are the types of knowledge that needs to be represented in AI? 5
   (c) Explain the different techniques of knowledge representation. 8

6. (a) What is propositional logic? What are its limitations? 1+2=3
   (b) Write the steps involved in resolution process. 4
   (c) Explain the concept of semantic networks as knowledge representation formalism in AI. 7

UNIT–IV

7. (a) What is uncertainty? 1
   (b) What is a truth maintenance system (TMS)? Explain the role of TMS in a problem solver module. 2+5=7
   (c) What is non-monotonic reasoning? Explain default reasoning with an example. 2+4=6

8. (a) What is probabilistic reasoning? What is the need for probabilistic reasoning in AI? 2+3=5
   (b) Explain the concept of conditional probability and Bayes' theorem in AI. What are the uses of Bayes' rule in AI? 4+2=6
   (c) What do you understand by possible world representations in AI? 3

UNIT–V

9. (a) What is natural language processing (NLP)? How does NLP enable AI systems to understand and generate human languages? 1+4=5
   (b) What are the steps involved in NLP? How do they contribute to understanding natural languages? 2+5=7
   (c) Explain lexical and structural ambiguity. 2

10. (a) What is parsing? Compare top-down and bottom-up parsing using an example. 1+6=7
    (b) Explain the concept of transformational grammar with an example. 5
    (c) Explain recursive transition networks (RTNs) and augmented transition networks (ATNs). 2