

This question paper contains 2 printed pages.

Roll No.....

B.C.A. 304

304

Art. Intel.

B.C.A. Part-III EXAMINATION, 2025

(Faculty of Science)

(Three-Year Scheme of 10+2+3 Pattern)

Artificial Intelligence

Time Allowed : Three Hours

Maximum Marks: 100

समय : तीन घंटे

अधिकतम अंक : 100

Answers of all the questions (short answer as well as descriptive) are to be given in main answer-book only. Answer of short answer type questions must be given in sequential order. Similarly all the parts of question should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.

Write your roll number on question paper before start writing answers of the questions.

Question paper consists of three parts.

All three parts are compulsory.

Part-I : (Very short answer) consists of 10 questions of 2 marks each, Maximum limit for each question is up to 40 words.

Part-II : (Short answer) consists of 5 questions of 4 marks each, Maximum limit for each question is up to 80 words.

Part-III : (Long answer) consists of 5 questions of 12 marks each with one question from each unit with internal choice.

PART-I

1. Answer the following :

[10 × 2 = 20]

- (a) What are AI agents?
- (b) What is state space search?
- (c) What is Hill climbing?
- (d) Explain best first search.
- How is conversion to clause form done?
- Differentiate between LISP and PROLOG.

- (g) What are the goals of NLP?
- (h) What is FILLMORE's grammar?
- (i) What are the characteristics of an expert system?
- (j) What are the benefits of an expert system?

PART-II

Each question is of 4 marks. Word limit for each question is 80 words.

[5 × 4 = 20]

- 2. Discuss how AI, machine learning and deep learning are related.
- 3. With the help of suitable example, explain Game playing.
- 4. Explain different approaches of knowledge representation.
- 5. What is Discourse knowledge and Pragmatic knowledge?
- 6. What are the limitations of an expert system?

PART-III

- 7. Describe any two of the following:
 - (a) Water Jug problem
 - (b) Missionary cannibal problem
 - (c) Block words problem
 - (d) Monkey and Banana problem
- 8. Explain A* and AO* algorithms.

[5 × 12 = 60]

OR

- 9. Differentiate between breadth first search and depth first search.
- 9. What is the difference between procedural and declarative knowledge.

OR

Describe knowledge representation using propositional & predicate logic.

- 10. Explain the Chomsky Hierarchy of Grammars.

OR

How is parsing done? Explain different types of parsing.

- 11. Is Human expert better than a computer based expert system? Justify with reason.

OR

Explain the following case studies:

- (a) MYCIN
- (b) DEMDRAL