Code No. : 7884   Sub. Code : WAIM 11

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2023.

First Semester

Computer Science with Artificial Intelligence – Core

ARTIFICIAL INTELLIGENCE AND EXPERT
SYSTEMS

(For those who joined in July 2023 onwards)

Time : Three hours   Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following is a component of Artificial Intelligence?

    (a) Learning   (b) Training

    (c) Designing   (d) Puzzling

2. Which of the following is an application of Artificial Intelligence?

    (a) It helps to exploit vulnerabilities to secure the firm

    (b) Language understanding and problem-solving

    (c) Easy to create a website

    (d) It helps to deploy applications on the cloud

3. Which of the following is not the commonly used programming language for Artificial Intelligence?

    (a) Pen   (b) Java

    (c) PROLOG   (d) LISP

4. Which search is similar to minimax search?

    (a) Hill-climbing search (b) Depth-first search

    (c) Breadth-first search (d) Alpha-beta search

5. To which depth does the alpha-beta pruning can be applied?

    (a) 10 States   (b) 8 States

    (c) 6 States   (d) Any depth

6. What is the evaluation function in A* approach?

    (a) Heuristic function

    (b) Path cost from start node to current node

    (c) Path cost from start node to current node + Heuristic cost

    (d) Average of Path cost from start node to current node and Heuristic cost

7. Wumpus World is a classic problem, best example of

    (a) Single player Game

    (b) Two player Game

    (c) Reasoning with Knowledge

    (d) Knowledge based Game

8. Which is not Familiar Connectives in First Order Logic?

    (a) And   (b) Iff

    (c) Or   (d) Not

9. Inference algorithm is complete only if

    (a) It can derive any sentence

    (b) It can derive any sentence that is an entailed version

    (c) It is truth preserving

    (d) It can derive any sentence that is an entailed version and It is truth preserving

10. Which of the following is an advantage of using an expert system development tool?

    (a) Imposed structure

    (b) Knowledge engineering assistance

    (c) Rapid prototyping

    (d) All of the mentioned

11. Which of the following is not a Characteristics of Expert Systems?

    (a) Understandable   (b) Highly responsive

    (c) Unreliable   (d) High performance

12. Which of the following is not a benefit of Expert Systems?

    (a) Availability   (b) Speed

    (c) Time   (d) Less Error Rate

13. Prolog comes under

    (a) Logic Programming

    (b) Procedural Programming

    (c) OOP

    (d) Functional

[P.T.O.]

14. What is the use of '=' in prolog programming?

    (a) Unification

    (b) Arithmetic evaluation

    (c) Reduction

    (d) Concatenation

15. Why We Use Prolog Programming Language?

    (a) SWI-Prolog is free, open-source, and very well maintained

    (b) It's much easier to distribute SWI-Prolog applications than Java ones

    (c) Prolog is much less verbose, which is helpful when during development

    (d) All of the above

PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).

16. (a) Describe a breadth-first search.

Or

    (b) Explain about the task environment.

17. (a) Discuss about generate-and-test.

Or

    (b) Write down the AO* algorithm.

18. (a) Explain about inference.

Or

    (b) List down the seven step process for knowledge engineering.

19. (a) Write down the role of expert system.

Or

    (b) Analyze the function of MYCIN.

20. (a) Identify the data types in prolog programming language.

Or

    (b) How to use array in Prolog? Explain.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

21. (a) Summarize problem characteristics.

Or

    (b) Discuss about the concept of rationality.

22. (a) Briefly explain about hill climbing.

Or

    (b) Explain about alpha-beta cutoffs.

23. (a) Discuss about a resolution algorithm.

Or

    (b) Analyze the syntax and semantics of first-order logic.

24. (a) Describe about the steps to build expert system.

Or

    (b) Give an overview about the typical architecture of expert system.

25. (a) Differentiate logical variables and atoms in Prolog.

Or

    (b) Express the different ways to define a list in Prolog.

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