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M.Sc. (Second Semester)

EXAMINATION, MAY-JUNE, 2022

COMPUTER SCIENCE

Paper Fifth (III)

(Elective)

(Artificial Intelligence and Expert System)

Time : Three Hours] *[Maximum Marks:100*

Note:- Attempt all sections as directed.

Section-A

(Objective/Multiple Choice Questions)

(1 mark each)

Note:- Attempt all questions.

Chose the correct answer:-

1. Which of the following is a type of artificial intelligence agent?

   (A) Learning AI Agent

   (B) Simple Reflex AI Agent

   (C) Goal-Based AI Agent

   (D) All of the above

2. The measure of performance of an AI agent is measured using?

   (A) Learning Agent

   (B) Changing Agent

   (C) Both (A) and (B)

   (D) None of the above

3. Which of the following isnot the commonly used programming languate for Artificial Intelligence?

   (A) Perl

   (B) Java

   (C) PROLOG

   (D) LISP

4. _____number of informed search method are there in Artificial Intelligence.

   (A) 4

   (B) 3

   (C) 2

   (D) 1

5. Among the given options, which search algorithm requires less momery?

   (A) Optional Search

   (B) Depth First Search

   (C) Breadth First Search

   (D) Linear Search

6. Which algorithm is used in the Game tree to make decisions of win/lose?

   (A) Heuristic Search Algorithm

   (B) DFS/BFS Algorithm

   (C) Greedy Search Algorithm

   (D) Min/Max Algorithm

7. The maximum depth to which the alpha-beta pruning can be applied.

   (A) Eight states

   (B) Six states

   (C) Ten states

   (D) Any depth

8. What is term used for describing the judgmental or commonsense part of problem solving?

   (A) Critical

   (B) Heuristic

   (C) Value based

   (D) Analytical

9. First order logic statements contains:

   (A) Predicate and preposition

   (B) Subject and an object

   (C) Predicate and subject

   (D) None of the above

10. AI Algorithm works backward from the target to solve a problem.

    (A) Backward chaining

    (B) Forward chaining

    (C) Hill-climb AI Algorithm

    (D) None of the above

11. What are semantic Networks?

    (A) A way of representing knowledge

    (B) Date structure

    (C) Data type

    (D) None of the mentioned

12. What is the total number of possible sources of complexity in the forward chaining approach?

    (A) 4

    (B) 3

    (C) 5

    (D) 2

13. The Bayesian Network gives-

    (A) Partial description of the problem

    (B) A complete description of the problem

    (C) A complete description of the domain

    (D) None of the above

14. What is the field of Natural Language Processing (NLP)

    (A) Computer science

    (B) Artificial Intelligence

    (C) Linguistics

    (D) All of the mentioned

15. Production Rule: aAb > agb belongs to which of the following category?

    (A) Regular language

    (B) Context free language

    (C) Context sensitive language

    (D) Recursively Ennumerable language

16. Which of the following relates to chomsky hierarchy?

    (A) Regular <CFL<CSL<unrestricted

    (B) CFL<CSL<unrestricted<Regular

    (C) CSL<unrestricted<CF<Regular

    (D) None of the mentioned

17. Which of the following are components of expert system?

    (A) Knowledge base

    (B) Inference engine

    (C) User interface

    (D) All of the above

18. How many types of rules are there in rule based system?

    (A) 5

    (B) 2

    (C) 4

    (D) 3

19. _____is/are the well known Expert System's for medical diagnosis systems -

    (A) CADUCEUS

    (B) DENDRAL

    (C) MYCIN

    (D) SMHPAL

20. Which of the following are the applications of expert systems?

    (A) Disease diagnosis

    (B) Planning and scheduling

    (C) Decision making

    (D) All of the mentioned

Section- B

(2 marks each)

(Very Short Answer Type Questions)

Note:- Attempt all questions.

1. What is an Agent?
2. Define the production system.
3. What is best first search?
4. Define Constraint satisfaction problem.
5. What is knowledge?
6. What is frame system?
7. Define Non-monotonic reasoning.
8. What is Goal stack planning?
9. What is expert system shells?
10. Define leaning.

Section-C

(3 marks each)

(Short Answer Type Questions)

Note:- Attempt all questions. Answer precisely using 75 words.

1. Give the list of application areas of artificial intelligence.
2. Explain the concept of planning with state space search using suitable examples.
3. Differentiate between Breadth First Search and Depth-First search.
4. Write down the A* algorithm with its merits & demerits.
5. Discuss conceptual dependency and explain how information can be represented using conceptual dependency.
6. Write short on semantic Networks.
7. State Bayes' theorem along with example.
8. Explain the block-word problem.
9. Describe the concept of expert system by considering MYCIN.
10. Explain the Rote learning.

Section-D

(6 marks each)

(Long Answer Type Questions)

Note:- Attempt all questions.

1. Define turing test. How to find out whether a computer is showing intelligent behavior or not?
2. Explain Branch and Bound technique
3. Describe the syntax and semantics of FOPL.
4. Explain context sensitive and context free grammar.
5. Explain non production system architecture.