



## Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)

Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B

Coimbatore - 641 043, Tamil Nadu, India

### Bachelor's Degree Examination – July 2020

#### IV Semester

Class: II UG

Major: Computer Applications

Time : 3 Hours

Max. Marks: 100

### 18BCAC17 Artificial Intelligence and Expert Systems

#### Part A

Choose the Correct Answer

10 X 1=10

- The main task of a problem-solving agent is
  - solve the given problem and reach to goal
  - to find out which sequence of action will get it to the goal state
  - both a and b
  - neither a nor b
- A problem in a search space is defined by
  - initial state
  - goal test
  - intermediate states
  - both a and b
- What is the general term of Blind searching?
  - Informed Search
  - Uninformed Search
  - Informed and Unformed Search
  - Heuristic Search
- Which of the following is/are Uninformed Search technique/techniques?
  - Breadth First Search (BFS)
  - Depth First Search (DFS)
  - Bidirectional Search
  - All of the above
- Which of the following propositions is tautology?
  - $(p \vee q) \rightarrow q$
  - $p \vee (q \rightarrow p)$
  - $p \vee (p \rightarrow q)$
  - Both (b) and (c)
- What can we correctly say about proposition P1:  
 $P1 : (p \vee \neg q) \wedge (q \rightarrow r) \vee (r \vee p) ?$ 
  - P1 is tautology
  - P1 is satisfiable
  - If p is true and q is false and r is false, the P1 is true
  - If p as true and q is true and r is false, then P1 is true
- What are the types of learning there in knowledge representation?
  - symbol
  - fact
  - both A and B
  - none of the above
- The process of forming general concept definition from examples of concept to be learned
  - deductive
  - abduction
  - inductive
  - conjunction
- Which of the following is a component of an expert system?
  - Explanation module
  - Knowledge base
  - Natural language interface for the user
  - All of the above
- Expert systems are part of the general area of research known
  - AI
  - ES
  - STUDENT
  - RAND

**Part B**

**5 x 6 = 30**

**Answer ALL questions**

**Each answer should not exceed 400 words or two pages**

11. a. Describe different type of problem solving.  
(or)  
11. b. Define Artificial intelligence. Classify the Searching problem.
12. a. Define A\* Algorithm. Examine the Algorithm.  
(or)  
12. b. List out the characteristics of Constraint satisfaction.
13. a. Define the proposition tautology and its features.  
(or)  
13. b. Write a short note on Predicate logic.
14. a. List out the Types of Learning.  
(or)  
14. b. Explain the Reinforcement learning.
15. a. Describe the characteristics of compound queries  
(or)  
15. b. Explain the Tools of Expert system.

**Part C**

**5 x 12 = 60**

**Answer ALL questions**

**Each answer should not exceed 800 words or four pages**

16. a. Illustrate the AI strategies of searching solutions.  
(or)  
16. b. Analyze the merits and demerits of Artificial Intelligence and its applications.
17. a. Define Heuristic search. Describe the Search Techniques.  
(or)  
17. b. Define and Elaborate the AO\* Algorithm. Give an example.
18. a. Describe in detail, the important aspects of free and Bound Variables.  
(or)  
18. b. Illustrate resolution principle based on the Herbrand's Theorem.
19. a. Explicate on learning decision trees with suitable diagram.  
(or)  
19. b. Discuss on the following:  
i. Statistical learning methods  
ii. Knowledge in learning
20. a. Explain the Logic Programming and Prolog.  
(or)  
20. b. Describe the modules of Expert system.

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