Q. P. Code: 11248

(Time: $2\frac{1}{2}$ hours)

[Marks: 60]

Please check whether you have got the right question paper.

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculator is **allowed**.

1. **Attempt *any two* of the following:** **12**
a. Explain the definition and components of Artificial Intelligence.
b. State and explain the efficiency of Depth First Search algorithm.
c. What is refutation? Generate the refutation tree for the following expression: [P(x) V Q(x), ~P(x), ~Q(x) V R(y), ~R(y) V S(x) , ~S(x)]
d. Explain in brief about predicates. Convert the following sentences in Predicate form:
   i. Virat is batsman.
   ii. All cricketers are sportsman
   iii. Everybody loves someone sometime.
   iv. Roses are red and violets are blue.

2. **Attempt *any two* of the following:** **12**
a. What is semantic net? State and explain the properties of semantic net.
b. What is Script? State and explain the components of script.
c. Explain cased based reasoning with its components and functions.
d. Give the analysis of tic-tac-toe problem with respect to Alpha beta search method.

3. **Attempt *any two* of the following:** **12**
a. State and explain the relationship between hypothesis and evidence in Bayesian network.
b. Explain the process of knowledge acquisition system.
c. What is confidence factor? Explain uncertainty using deterministic method.
d. What is learning? Explain in brief about inductive learning.

4. **Attempt *any two* of the following:** **12**
a. State and explain the need and components of planning.
b. Illustrate in brief Generate and Test algorithm.
c. Give the illustration of map colouring problem.
d. Explain the block world problem.

5. **Attempt *any two* of the following:** **12**
a. What is knowledge based system? Explain the components of knowledge based system.
b. What is fact and rule in prolog? Give the syntax and example for the same.
c. Give the output for the following expressions:
   i. ?- [10,20,30,40,50] = [Head | Tail]
   ii. ?- [a,b,c,d,e,f] = [_, X \ _]
   iii. ?- concat_lists([4,5,6] , [p,q,r,s], X)
   iv. ?- analyse_list([mobile,laptop,desktop,ipod])
   v. ?- member(apple,[mobile, laptop, desktop, ipod])
d. Explain predicate with proper syntax. And write the prolog predicate *replace* to replace all occurrences of a given element (2nd argument) by another given element (3rd argument) in a given list (1st argument).

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