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## Question Paper Code : X 20406

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020

Fifth/Sixth Semester

Computer Science and Engineering

CS 6659 – ARTIFICIAL INTELLIGENCE

(Common to Electronics and Instrumentation Engineering, Instrumentation and Control Engineering, Information Technology)

(Regulations 2013)

(Also Common to PTCS 6659 – Artificial Intelligence for B.E. Part-time – Fifth Semester – Computer Science and Engineering – Regulations 2014)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

### PART – A

(10×2=20 Marks)

1. List down the characteristics of intelligent agent.
2. List some of the uninformed search techniques.
3. List the two levels of knowledge representation.
4. What is backtracking search ?
5. Differentiate propositional and first order logic.
6. State Generalized Modus ponens.
7. What is non-linear planning ?
8. What is explanation based learning ?
9. What is meta knowledge ?
10. Describe how to acquire knowledge ?

### PART – B

(5×13=65 Marks)

11. a) Elaborate on the following search technique
  - i) Greedy best-first search. (5)
  - ii) A\* search. (5)
  - iii) Memory bounded heuristic search. (3)

(OR)

- b) Explain Backtrack searching for constraint satisfaction problem for Map Coloring Problem. (13)



12. a) What is alpha- beta pruning ? Implement alpha beta search procedure. Give an example to show the pruning technique.

(OR)

b) Give the role of computable functions in predicate logics with examples. Explain the steps to convert well formed formula into clause form with examples.

13. a) Explain in detail about forward chaining and backward chaining with algorithms.

(OR)

b) What is Dempster-Shafer theory ? Explain with suitable example.

14. a) Discuss in detail the process of machine learning with example.

(OR)

b) Explain in detail the STRIPS.

15. a) i) How do you examine performance measure in knowledge acquisition ? (7)

ii) Explain in detail about the characteristic features of an expert system. (6)

(OR)

b) Explain in detail about DART, MYCIN and XOON.

PART – C

(1×15=15 Marks)

16. a) Consider the problem of changing a flat tire. The goal is to have a good spare tire properly mounted onto the car's axle, where the initial state has a flat tire on the axle and a good spare tire in the trunk. To keep it simple, our version of the problem is an abstract one, with no sticky lug nuts or other complications. There are just four actions : removing the spare from the trunk, removing the flat tire from the axle, putting the spare on the axle and leaving the car unattended overnight. Write the STRIPS and find out the solutions.

(OR)

b) Construct a Bayesian network and define the necessary CPTs for the given scenario. We have a bag of three biased coins a, b and c with probabilities of coming up heads of 20%, 60% and 80%, respectively. One coin is drawn randomly from the bag (with equal likelihood of drawing each of the three coins) and then the coin is flipped three times to generate the outcomes X1, X2 and X3.

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