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Question Paper Code : 20373

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Fifth Semester

Computer Science and Engineering

CS 6659 — ARTIFICIAL INTELLIGENCE

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

(Regulations 2013)

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

- Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the ways to formulate a problem.
2. What is problem graph?
3. Differentiate declarative and procedural knowledge.
4. State how knowledge is represented using structured format.
5. Differentiate propositional and first order logic.
6. State Generalized Modus ponens.
7. Differentiate supervised learning and unsupervised learning.
8. List the purpose of STRIPS language.
9. Define Localization and list their techniques.
10. Write about Meta Knowledge acquisition in expert Systems.

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) Relate first order logic with proposition logic and discuss in detail about the same. (13)

Or

- (b) Describe a procedure for converting a sentence to CNF with an example. (13)
13. (a) Discuss about the exact inference in Bayesian networks. (13)

Or

- (b) Explain forward chaining and Backward Chaining for Proportional Definite Clauses. (13)
14. (a) Explain in detail about STRIPS and write the components of STRIPS for the given scenario: "Consider a flight journey in a luxurious flight from India to US". (13)

Or

- (b) (i) Express your views about Rote Learning. (7)
- (ii) How would you express Formal learning theory? (6)
15. (a) Illustrate in detail about the expert system shells. (13)

Or

- (b) Explain in detail about General Learning Model. (13)

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 solution.

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.

