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Question Paper Code : 50397

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

Fifth/Sixth Semester

Computer Science and Engineering

CS 6659 – ARTIFICIAL INTELLIGENCE

(Regulations 2013)

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

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. State the advantages of Breadth First Search.
2. What is Commutative production system ?
3. Convert the following into Horn clauses.
 $\forall x : \forall y : \text{cat}(x) \vee \text{fish}(y) \rightarrow \text{likes} - \text{to} - \text{eat}(x, y)$
4. Differentiate forward and backward reasoning.
5. Define Fuzzy reasoning.
6. Compare production based system with frame based system.
7. Define adaptive learning.
8. What is hierarchical planning ?
9. List the characteristic features of expert system.
10. What is MOLE ?

P.T.O.



PART – B

(5×13=65 Marks)

11. a) Explain the following types of Hill Climbing search techniques.
- i) Simple Hill Climbing. (4)
 - ii) Steepest-Ascent Hill Climbing. (5)
 - iii) Simulated Annealing. (4)
- (OR)
- b) Discuss Constraint Satisfaction problem with an algorithm for solving a Cryptarithmic problem. (13)
12. a) Consider the following sentences : (13)
- John likes all kinds of food
 - Apples are food
 - Chicken is food
 - Anything anyone eats and isn't killed by is food
 - Bill eats peanuts and is still alive
 - Sue eats everything Bill eats.
- i) Translate these sentences into formulas in predicate logic.
 - ii) Convert the formulas of part a into clause form.
- (OR)
- b) Trace the operation of the unification algorithm on each of the following pairs of literals : (13)
- i) $f(\text{Marcus})$ and $f(\text{Caesar})$
 - ii) $f(x)$ and $f(g(y))$
 - iii) $f(\text{Marcus}, g(x, y))$ and $f(x, g(\text{Caesar}, \text{Marcus}))$.
13. a) Explain the production based knowledge representation technique. (13)
- (OR)
- b) i) Discuss about Bayesian Theory and Bayesian Network. (6)
 - ii) Describe in detail about Dempster-Shafer theory. (7)



14. a) Write short notes on the
- i) Learning by Parameter Adjustment. (4)
 - ii) Learning with Macro-Operators. (4)
 - iii) Learning by Chunking. (5)

(OR)

- b) i) Write down STRIPS-style operators that corresponds to the following blocks world description. (8)

A	ON (A,B,S0) ^
B	ONTABLE(B,S0) ^ CLEAR (A,S0)

- ii) Write short notes on Nonlinear Planning using Constraint Posting. (5)

15. a) Explain the following expert systems :
- i) MYCIN. (7)
 - ii) DART. (6)

(OR)

- b) Explain the expert system architectures :
- i) Rule-based system architecture. (4)
 - ii) Associative or Semantic Network Architecture. (3)
 - iii) Network architecture. (3)
 - iv) Blackboard System Architectures. (3)

PART – C

(1×15=15 Marks)

16. a) Design an expert system for Travel recommendation and discuss its roles.
(OR)

- b) Analyse any two machine learning algorithms with an example.