

(3 Hours)

Max. Marks: 80

Please check whether you have got the right question paper

- N.B.:** (1) Question No. 1 is compulsory.
(2) Attempt any **Three** questions out of remaining **Five** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume suitable data if **necessary**.

- Qu-1 a) Discuss the performance of Iterative Deepening Depth First Search. 05
b) List and explain the best suited problem characteristics for Decision tree learning. 05
c) List and explain components of AI Program. 05
d) Explain Elements of Reinforcement Learning. 05
- Qu-2 a) Which agent is applicable for Automatic car and Robot Mail & Parcel sorting? Justify your choice of agent. 10
b) Explain Error Back propagation algorithm in detail. 10
- Qu-3 a) Explain Hidden Markov Model with the help of example which includes state transition matrix, observation probability matrix, and initial probability matrix. Explain how Viterbi algorithm reduces complexity from exponential to linear? 10
b) Explain stock price prediction using suitable model for learning, training and testing in detail. 10
- Qu-4 a) Explain working Support Vector Machine with suitable example. 10
b) Consider the following rule based system with 10
Rules:
R1: IF hot AND smoky THEN ADD fire
R2: IF alarm_beeps THEN ADD smoky
R3: IF fire THEN ADD switch_on_sprinklers
R4: IF dry THEN ADD switch_on_humidifier
R5: IF sprinklers_on THEN DELETE dry
Facts:
F1: alarm_beeps
F2: hot
F3: dry
Apply forward chaining algorithm and backward chaining algorithm to solve the problem.
- Qu-5 a) Explain Logistic Regression with suitable example. 10
b) Explain Naive Bayes classifier with suitable example. 10
- Qu-6 Write short note on any **FOUR** 20
a) Perceptron learning rule.
b) Partially Observable States.
c) Propositional logic
d) Local beam search
e) Applications of AI