

Total No. of Questions : 10]

SEAT No. :

P3553

[Total No. of Pages : 3

[4959] - 1153

B.E. (Computer Engineering)
Smart System Design and Applications
(2012 Pattern) (End-Semester)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Questions Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8., and Q.9 or Q.10.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Assume suitable data, if necessary.*

- Q1)** a) Define artificial Intelligence and role of intelligent systems in smart applications. [6]
- b) Explain various types of intelligent agents, state limitations of each and how to overcome it. [6]
- c) Convert the following sentences into first-order logic and then to conjunctive Normal Form: [8]
- i) There is a girl who is beautiful.
 - ii) Elder people do not like rap music.
 - iii) Sister-in-law (Your spouse's sister).
 - iv) There is only one Rajnikant.

OR

- Q2)** a) Write the algorithm for hill climbing search problem. [6]
- b) Give steps to formulate a search problem for 2 player games. [6]
- c) What is Knowledge Engineering? Explain the steps. [8]

P.T.O.

- Q3)** a) What is the basic inference task that must be solved in a generic temporal model? [6]
b) Explain in details any one approach used in uncertain reasoning. [6]

OR

- Q4)** a) What are axioms of probability? Explain how to derive the useful facts from the basic axioms with suitable example. [6]
b) Write note on decision trees with suitable example. [6]

- Q5)** a) Explain Support Vector Machine with issues and applications. [6]
b) Explain components of designing an expert system. [6]

OR

- Q6)** a) Write a short note on: [6]
i) Active learning.
ii) Reinforcement learning.
b) What are Artificial Neural Networks? Explain their types. [6]

- Q7)** a) In a County, 51% of the adults are males. One adult is randomly selected for a survey involving credit card usage. [8]
i) Find the prior probability that the selected person is a male.
ii) It is later learned that the selected survey subject was Wearing spectacle, Also 9.5% of males wear spectacles, whereas 1.7% of females wear spectacles.

Use this additional information to find the probability that the selected subject is a male.

- b) Write a detailed note on Bayesian Networks. [4]

OR

- Q8)** a) What are methods of handling uncertain knowledge? Write down major challenges in handling uncertain knowledge. [6]

- b) Define : Bayesian probability, Joint Probability, Posterior probability, Conditional probability. [6]

- Q9)** a) What is Machine Learning? What are different paradigms of machine learning? [6]
- b) What is Artificial Neural Network (ANN)? List and explain applications of ANN. [8]

OR

- Q10)** a) What is Natural Language processing (NLP)? List and explain any 2 applications of NLP. [6]
- b) Explain the importance of robots in healthcare and medicine. [8]

