[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]**

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