

Max. Marks: 80

Duration: 3hr.

Instructions:

QP-10038602

- (1) Question one is Compulsory.
- (2) Assume suitable data wherever required but justify it.
- (3) Solve any THREE from Question No. 2 to 6.
- (4) Figure to the right indicate full marks.

Question
No.

Marks

- Q.1 (a) From below given probability distribution find $P(\neg \text{Cavity} | \text{Toothache})$ 5

	Toothache		\neg Toothache	
	Catch	\neg Catch	Catch	\neg Catch
Cavity	0.108	0.012	0.072	0.008
\neg Cavity	0.016	0.064	0.144	0.576

- (b) Define defuzzification and State the necessity of the defuzzification process. 5
- (c) Implement AND function using Mc-Culloch-Pitts neuron. (take binary data) ? 5
- (d) What is the significance of ROC curves? 5
- Q.2 (a) State Ensemble methods and describe anyone. 10
- (b) Illustrate usage of taxonomies and ontologies for knowledge representation in cognitive system. 10
- Q.3 (a) Explain the components of CNN architecture. 10
- (b) Perform a case study on book recommendation system (data science based) 10
- Q.4 (a) Describe the Properties of Fuzzy Sets with an example. 10
- (b) Illustrate inferencing in Bayesian Belief Network with an example. 10
- Q.5 (a) List and explain the design principles of Cognitive System. 10
- (b) State and elaborate the applications of deep learning. 10
- Q.6 (a) Calculate Accuracy, Precision, Recall, Sensitivity and Specificity for the following example. 10

Predicted Class \ Actual Class	Buys_Computer=yes	Buys_Computer=no
Buys_Computer=yes	6954	46
Buys_Computer=no	412	2588

- (b) Write a short note on- Data Science for Multi modal applications. 10
