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T.E. (Mechanical) (Insem)
Artificial intelligence & Machine Learning
(2019 Pattern) (Semester - II) (302049)

Time : 1 Hour]   *[Max. Marks : 30*

Instructions to the candidates:
1) *Answer Q.1, or Q.2, Q.3, or Q.4*
2) *Neat diagrams must be drawn wherever necessary*
3) *Figures to the right indicate full marks*
4) *Assume suitable data wherever necessary*
5) *Use of electronic pocket calculator is allowed.*

Q1) a) Discuss the need for AI in mechanical engineering with suitable example. **[7]**

     b) Discuss in brief planning, leaning, reasoning, problem solving in context of artificial intelligence. **[8]**

OR

Q2) a) How do cybernetics and brain simulation contribute to problem-solving and decision-making processes? **[6]**

     b) Compare the various types of machine learning techniques with their distinct characteristics, applications and potential advantages and limitations. **[9]**

Q3) a) Differentiate greedy forward & backward approach. **[6]**

     b) Calculate entropy & information gain for dataset containing the following attributes and corresponding class labels: **[9]**

Sample	Age Group	Purchased
1	Young	No
2	Young	No
3	Young	Yes
4	Middle-aged	Yes
5	Middle-aged	Yes
6	Middle-aged	No
7	Senior	Yes
8	Senior	Yes
9	Senior	Yes
10	Senior	Yes

OR

Q4) a) List out steps used in principal component analysis. **[6]**

b) Calculate entropy & information gain for dataset containing the following attributes and corresponding class labels & Interpret the result: **[9]**

Sample	Feature 1	Feature 2	Class
1	A	X	Positive
2	B	Y	Positive
3	A	X	Positive
4	C	Y	Negative
5	B	X	Negative

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