

22589

24225

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : 10
- a) List examples of agents.
 - b) List any four search tree terminologies.
 - c) Define accuracy, precision w.r.t evaluation metrics.
 - d) List classification supervised ML algorithms (any four)
 - e) List types of clustering methods.
 - f) Define Determinism w.r.t. environment in AI.
 - g) Draw a labeled box plot.

P.T.O.

- 2. Attempt any THREE of the following :** **12**
- a) Define initial state, action, plan and path cost w.r.t state space search.
 - b) Compare uninformed and informed search algorithms. (any four points).
 - c) Explain variable transformation w.r.t. machine learning.
 - d) List any four key points of SVM algorithm.
- 3. Attempt any THREE of the following :** **12**
- a) Define the following properties of environment –
 - i) single agent/multiple agent
 - ii) accessible/inaccessible
 - iii) Episodic/Non-episodic
 - iv) Discrete/continuous
 - b) Write basic search algorithm.
 - c) Explain confusion matrix with one example.
 - d) List key points of K-means clustering algorithm (any four).
- 4. Attempt any THREE of the following :** **12**
- a) Explain the Steps to read csv and excel file in Jupyter notebook inside pandas.
 - b) Explain the concept of interlocking in robotic systems.
 - c) Explain the process of splitting training and testing dataset.
 - d) List any four key points of Decision tree classification algorithm.
 - e) Classify Machine learning and explain each type.

- 5. Attempt any TWO of the following :** **12**
- a) Explain k-fold cross validation w.r.t. Machine learning.
 - b) Differentiate Logistic regression and Support vector machine (any six points)
 - c) Compare clustering and classification. (any six points).
- 6. Attempt any TWO of the following :** **12**
- a) Explain different stages of data exploration.
 - b) Explain K-nearest neighbors supervised classification algorithm.
 - c) Explain the following applications of AI and ML in robotics.
 - i) Computer vision
 - ii) AI enabled manipulation and grasping
 - iii) natural language processing.
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