22589

12425

03 Hours / 70 Marks Seat No. | | | | | | | | |

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) Use of Non-programmable Electronic Pocket Calculator is permissible.

(6) 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) Define observability w.r.t. environment.

b) List different types of uninformed search algorithms.

c) Define sensitivity, specificity w.r.t. evaluation metrics.

d) Define multiclass and multilabel w.r.t. ML.

e) List any two applications of AIML in Robotics.

f) Define intelligent agent.

g) Define predictive modeling.

Marks

2. Attempt any THREE of the following **12**

a) Define initial state, action, plan and path cost w.r.t. state space search.

b) Explain Breadth First Search uninformed search algorithm.

c) Explain outlier treatment process during data exploration w.r.t. machine learning.

d) List any 4 key points of K-nearest neighbour 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) Explain node data structure in search algorithm.

c) Explain Univariate analysis data exploration.

d) Explain association type unsupervised type machine learning.

4. Attempt any THREE of the following **12**

a) Write a program to illustrate BFS for given graph.

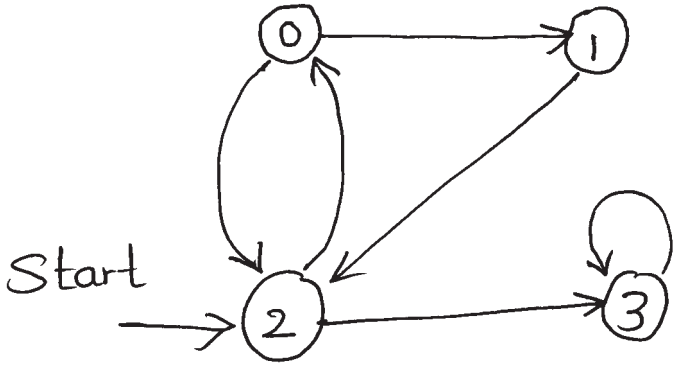

Fig. No. 1

b) Explain the process of missing value treatment in data exploration.

Marks

c) Explain the process of splitting and testing data set.

d) Describe terms related to supervised ML.

i) Regression

ii) Classification

e) Classify Machine learning and explain each type.

5. Attempt any TWO of the following **12**

a) Explain how to evaluate performance of model using evaluation metrics.

b) Differentiate Random forest and Decision Tree supervised ML algorithms (any 6 points)

c) Explain unsupervised learning algorithm.

6. Attempt any TWO of the following **12**

a) Explain the stages of machine learning pipe line.

b) List and explain key points of logistic regression algorithm for supervised learning.

c) Explain the following applications of AI and ML in robotics.

i) Computer vision

ii) AI enhanced navigation and motion control

iii) Natural language processing.