Time: 3 Hrs **Maximum marks = 80**

Note: 1) Question one is compulsory. Answer any 3 out of questions 2 to 6.
2) Each sub question of questions 2 to 6 carries 10 marks

Q1. Solve **any 4** out of 6, each question carries 5 marks.

a. What is bidirectional search?
b. Explain what role is played by Correlation and Covariance in EDA?
c. What are the Different Types of Machine Learning?
d. Draw and explain structure of rational agent
e. Explain various measures of the central tendencies of distribution.
f. What is the Difference between Univariate, Bivariate, and Multivariate analysis?

Q2 a. Explain the Confusion Matrix with respect to Machine Learning Algorithms. What is a False Positive and False Negative and how are they significant?
Q2 b. What is PEAS? State and explain PEAS of automated taxi driver.

Q3 a. In detail, explain steps in the Data Science Project.
Q3 b. Write a note on Hill climbing. Explain an application of it.

Q4 a. Given jugs of 4 and 9 litres measure 1 and 3 litres.
Q4 b. What are the steps of Exploratory Data Analysis?

Q5 a. What is ANOVA technique? Explain different types of ANOVA.
Q5 b. What are the different types of plans?

Q6 a. Explain Data Visualization and its importance in data analytics?
Q6 b. Consider you are performing ML for predicting housing prices you have trained three models and following data summarizes the predicted house price by each model for 5 different trial runs.

Model Code	House Price Predicted (Lakh Rs)				
	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
A	3.5	3.4	3.8	3.5	3.4
B	3.9	3.8	3.7	3.9	3.6
C	3.5	3.3	3.6	3.5	3.8

Perform One way ANOVA F Test on this data and comment on whether the mean house price predicted by models A, B, C are same with level of significance 0.05. (Use of F Table is allowed)

****

(3 Hours)

Total Marks: 80

N.B.: (1) Question No.1 is compulsory.

(2) Attempt any three questions from the remaining five questions.

(3) Make suitable assumptions wherever necessary but justify your assumptions.

1.	(a) Explain Mobile forensic. What are various challenges in mobile forensics	05
	(b) Explain Forensic Duplicates as Admissible Evidence.	05
	(c) What is evidence handling procedure?	05
	(d) What are Challenges in network forensics ?	05
2.	(a) Explain Incident Response Process and its methodology.	10
	(b) Compare active attacks vs Passive attacks. Classify the cybercrimes and explain any one briefly.	10
3.	(a) Discuss basic security precautions to be taken to safeguard Laptops and wireless devices and What are the devices related to security issues?	10
	(b) Explain Volatile Data Collection from Windows system	10
4.	(a) What do you understand by social engineering? Give classification	10
	(b) Briefly explain Types of digital Evidence with examples.	10
5.	(a) Explain process for collecting Network Based Evidence.	10
	(b) Explain various guidelines for digital forensic report writing along with its goals.	10
6.	Write a short note on **(Any Two)**	20

(1) Tools used in network forensics

(2) Roles of CSIRT in handling incident

(3) Email Tracing- Internet Fraud

Time: 3 Hours **Marks:80**

Note: 1. Q. No1 is compulsory

2. Solve any three questions out of the remaining five

3. Figures to right indicate full marks

4. Assume suitable data where necessary

Q.No1 Solve any four (20)

a) Explain the different features of VANET and E-VANET

b) Write note on UMTS security.

c) Compare FDMA, TDMA and CDMA

d) Outline the method that supports mobility in CISCO Unified Wireless Network

e) Differentiate between FHSS and DSSS.

Q.2

a. Draw and explain UMTS network architecture and compare GSM and UMTS (10)
b. Draw and explain the GSM time slot hierarchy. (10)

Q.3. a. Give the significance of WEP protocols. What are the features of WPA2 (10)

b. Draw and explain the architecture of Cisco UWN with its features. (10)

Q.4 a. Explain the architecture of WSN protocol and discuss applications of WSN. (10)

b. Draw and explain LTE network architecture in detail. (10)

Q.5

a. State different features of Zigbee and explain its protocol stack. (10)
b. Explain 4G network architecture with its specifications. (10)

Q.6

a. Draw and explain OFDMA technique for multiplexing. (10)

b. Draw and explain system architecture of IEEE802.11.Differentiate between IEEE802.11 and IEEE802.16 . (10)