

12/12/2024 IT SEM-VI C SCHEME AI & DS-I QP CODE: 10068412

(3 Hours)**[Total Marks: 80]**

- N.B. (1) Question No. 1 is compulsory
 (2) Attempt any three questions out of the remaining five questions
 (3) Figures to the right indicate full marks
 (4) Assume suitable data whenever required

- Q1** a) What are the different issues in ML algorithms? **5M**
 b) Compare barplot and histogram. **5M**
 c) Define and state effects of overfitting and underfitting. **5M**
 d) Explain learning agents with example. **5M**
- Q2** a) What do you mean by covariance and correlation? Explain the range of coefficients of correlation and covariance. Calculate COV (Observed Value1, Observed Value2) and CORRCOV (Observed Value1, Observed Value2) for following data. How do you interpret these values? **10M**
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|------------------|----|----|----|----|----|----|----|----|----|----|
| Experiment No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Observed Value 1 | 20 | 10 | 30 | 15 | 45 | 40 | 30 | 35 | 45 | 30 |
| Observed value 2 | 20 | 15 | 30 | 10 | 40 | 45 | 20 | 35 | 40 | 25 |
- b) Compare Z-Test, T-Test and ANOVA in detail. **10M**
- Q3** a) What is SVM? Explain its significance in ML and compare it with logistic regression **10M**
 b) What are the different univariate plots in EDA? Explain them in detail. **10M**
- Q4** a) Differentiate between data scientists, big data professionals and data analysts. **10M**
 b) What is linear regression? Explain its significance in ML and compare it with logistic regression **10M**
- Q5** a) Describe steps for developing ML applications with a labeled diagram. **10M**
 b) What are the different types of environments? Give examples. Explain the vacuum world problem with its environment. **10M**
- Q6** Write Short Note on (Any four) **20M**
- CNF
 - Alpha Beta Pruning
 - A* algorithm
 - Skolemization
 - Rules in Propositional Logic