

Duration: 3hrs

[Max Marks:80]

- N.B. : (1) Question No 1 is Compulsory.
 (2) Attempt any three questions out of the remaining five.
 (3) All questions carry equal marks.
 (4) Assume suitable data, if required and state it clearly.

1 Attempt any FOUR [20]

- Explain Categorical data and quantitative data.
- Find S.D of the average temperature recorded over a five-day period last winter
18,22,19,25,12
- Define Binomial distribution and Poisson distribution.
- Explain Type1 and Type 2 error in detail.
- Define the following key terms for simple linear regression.
i) Response ii) Record iii) Independent variable iv) Regression co-efficient v) Residuals

2 a The runs scored in a cricket match by 11 players are as [10]

follows:7,16,121,51,101,81,1,16,9,11,16.

Find mean, mode, median for the given data.

b An agent sells life insurance policies to five equally aged healthy people. [10]

According to recent data, the probability of a person living in these conditions for 30 years or more is $\frac{2}{3}$. Calculate the probability that after 30 years if

- All five people are still living.
- At least three people are still living.
- Exactly two people are still living (Hint: Binomial Distribution)

3 a X is a normally distributed variable with mean $\mu=30$ S. D $\sigma=4$. Find i) $P(X<40)$ [10]

ii) $P(X>21)$ iii) $P(30<X<35)$

b Brief the steps in multinomial distribution goodness of fit. Elaborate the steps with an example. [10]

4 a Brief the steps in test of independence. Elaborate the steps with an example [10]

b Find the simple linear regression that fits the given data and co efficient of determination. [10]

Bill	34	108	64	88	99	54
Tip	5	17	11	8	14	5

- 5 a In the context of multiple linear regression. Explain what is over fitting and multi collinearity. [10]

- b Predict equation for y. [10]

y	x1	x2
-3.7	3	8
3.5	4	5
2.5	5	7
11.5	6	3
5.7	2	1

- 6 a Explain TIME SERIES PATTERNS [10]

i)Horizontal Pattern ii) Trend Pattern iii)Seasonal Pattern
iv)Trend and Seasonal Pattern v)Cyclical Pattern

- b Consider the following time series data. [10]

Week	1	2	3	4	5	6
Value	18	13	16	11	17	14

Using the naive method (most recent value) as the forecast for the next week, compute the following measures of forecast accuracy.

- i) Mean absolute error. ii) Mean squared error.
iii) Mean absolute percentage error. iv) Determine the forecast for week 7?
