

Note : Answer **all** the questions.

PART – A

(10×2=20 Marks)

1. Answer the following questions in **not** exceeding **60** words **each** at **one** place only :

- Skewness and Kurtosis
- Mutually exclusive and independent events.
- Continuous and discrete probability distributions.
- Area property of normal distribution.
- Central limit theorem.
- Confidence interval.
- Assumptions for t-test.
- Uses of Chi-square.
- Multiple correlation coefficient.
- Multiplicative model of time series.

PART – B

(5×12=60 Marks)

- Explain the measures of central tendency and their merits and demerits.
 - Calculate the coefficient of variation from the following data :

Age :	Less than (<) 10	<20	<30	<40	<50	<60	<70	<80
No. of Persons :	15	30	53	75	100	110	115	125

OR

- A factory produces certain type of output by three machines. The respective daily production figures are Machine A – 3000 units, Machine B – 2500 units and Machine C – 4500 units. Past experience shows that 1 percent of the output produced by Machine A is defective. The corresponding fraction of defectives for other two machines respectively 12% and 2%. An item is drawn at random from the day's production run and is found to be defective. That is the probability that it comes from the output of three machines.
- Five fair coins were tossed 100 times. From the following outcomes calculate the expected frequencies :

No. of heads	0	1	2	3	4	5
Frequency	2	10	24	35	18	8

OR

- Define Poisson distribution. What are its properties ?
 - In a normal distribution 31% of the items are under 35 and 89% are under 63. Find the mean and standard deviation of the distribution.

OR
b) i) Explain the test of significance for difference of two standard deviations.

- ii) A man buys 100 electric bulbs each of two well known makes taken at random from stock for testing purpose. He finds that make A has a mean life of 1300 hours with s.d. of 82 hours and the make B has a mean life of 1248 hours with s.d. of 93 hours. Discuss the significance of these results. Construct a 95 percent confidence interval for the difference of the parameters.

5. a) The number of arrivals of ships per day at a port are as given below :

No. of arrivals	0	1	2	3	4	5	6	7	8	9	10
No. of days	20	53	80	83	64	34	18	8	3	1	1

Fit a Poisson distribution to the data and test for its goodness of fit.

OR

- b) The following table gives the number of table fans sold by four salesman in three months :

Month	Salesman			
	A	B	C	D
April	50	40	48	39
May	46	48	50	45
June	39	44	40	39

Is there a significant difference in

- i) sales made by the four salesmen ?
ii) sales made during different months ?

6. a) The prices of a commodity during 2006-2011 are given below. Fit a trend line $y = a + bx$ to this data. Estimate the price of commodity in 2013 :

Year	2006	2007	2008	2009	2010	2011
Price	100	107	128	140	181	292

OR

- b) From the following data calculate the rank correlation coefficient :

X :	48	33	40	9	16	65	24	16	57	16
Y :	13	13	24	6	15	20	9	6	19	4
