Time: 2:30 hours Marks: 75

Note: 1) All Questions carry equal marks of 15 each.
2) Graph papers will be provided on request.
3) Use of Non-Programmable Calculators is allowed.
4) Figures to the right indicate full marks.
5) In Q no. 1 attempt both the sub parts A and B.

Q1a) Fill in the blanks **(any 8 out of 10)** 8q x 1m = 8m

i. The data collected for the first time is known as _____. (Secondary data, Primary Data, Raw data)
ii. The middlemost observation, dividing the entire distribution into two equal parts is known as _____. (Mean, Median, Mode)
iii. If the values of Arithmetic Mean and Median are 34.5 and 34.1 respectively, then the value of mode can be _____. (33.3, 40.2, 35)
iv. The diagram used to get rough idea about relationship between variables x and y is known as _____. (Scatter Diagram, Pie Diagram, Bar diagram)
v. The Co-efficient of Correlation always lies between _____. (0 & 1, -1 & 1, -1 & 0)
(Increasing, decreasing)
vi. The Correlation Co-efficient is _____ of Regression Co-efficients.
(Arithmetic Mean, Geometric Mean, Weighted mean)
vii. The method used to derive regression constants of a regression equation is known as _____. (Product moment, Least Squares, Moving average)
viii. There are _____ components of a time series. (3, 4, 5)
ix. Least Square Method is used to compute _____.
(Non Linear Trend, Linear Trend, Seasonal trend)
x. The _____ variation occur due to seasonal changes in a time series.
(Seasonal, Cyclic, irregular)

1b) State True or False for **any Seven out of Ten**. 7q x 1m = 7m

i) The Histogram can be used to locate graphically the value of Median.
ii) The suitable measure of dispersion to indicate extreme variations in the data is Range.
iii) If the value of co-efficient of variation is more, the consistency of the data is more.
iv) An occurrence of an outcome to any statistical experiment is called Sample Space.
v) The family Budget Method is used to calculate the Chain Base Index Numbers.
vi) Future trend values can be estimated with the help of Straight Line Trend.
vii) If the two regression coefficients are negative, then the value of the correlation co-efficient will be positive.
viii) While calculating rank correlation co-efficient, if the values of variable x are ranked in increasing order, then the values of variable y must be ranked in increasing order.
ix) If two variables x and y are highly correlated then Y can be estimated for a given value of X using Regression Equation of Y on X .
x) Mean Deviation is a Relative Measure of Dispersion.

2a) Represent the following data by a Subdivided Bar Diagram (7m)

	Year		
Exports	1995	2000	2005
Food & Drinks	25	32	35
Raw Materials	18	20	30
Miscellaneous	12	15	18
Total	55	67	83

2b) Calculate Median for the following data and locate it graphically (8m)

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 – 50
No of Students	18	22	30	28	15

(OR)

2p) The Regional percentage of viewers for a popular TV Serial on DD Metro Channel for 3 months are as follows. Represent the following data by Multiple Bar Diagram. (7m)

Month	North	South	West	East
April, 2012	40	45	32	25
May, 2012	50	55	40	30
June, 2012	45	49	38	38

2q) Calculate Arithmetic Mean and Mode from the following data. (8m)

Height	120 - 125	125 - 130	130 - 135	135 - 140	140 - 145	145 – 150
No of Children	7	10	18	25	13	7

3a) Calculate Mean Deviation from Mean and its Co-efficient for the following data. (8m)

Age	20 - 22	22 - 24	24 - 26	26 - 28	28 - 30	30 - 32	32 – 34
No of Employees	70	90	110	140	130	80	80

3b) Calculate Correlation Co-efficient for the following data. (7m)

x	17	8	12	13	10	12
y	13	7	10	11	8	9

(OR)

3p) Find Standard Deviation and Co-efficient of Variation for the following data. (8m)

Marks	0 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 – 50
No of Students	16	28	42	30	18	14

3q) Calculate Regression Equation of y on x for the following data. Also Estimate y when x = 70. (7m)

x	54	65	75	82	57	59	60	64	58	62
y	58	67	76	80	60	64	65	65	60	70

4a) Calculate Fishers Index Number for the following data. Also construct Cost of Living Index Number using Aggregate Expenditure Method. (8m)

Commodities	Base Year		Current Year	
	Price	Quantity	Price	Quantity
Rice	4	15	5	20
Pulses	8	20	12	30
Sugar	6	25	8	20
Oil	6	3	8	4
Milk	14	2	20	3

4b) Calculate Five Yearly Moving Averages and represent it graphically. (7m)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Exports	51	53	50	57	60	55	59	62	68	70	72

(OR)

4p) Calculate Chain Base Index Numbers for the following data. (7m)

Year	2000	2001	2002	2003	2004
Prices	15	18	25	32	40

4q) Fit a Straight Line Trend for the following Time Series and represent it graphically. (8m)

Year	2010	2011	2012	2013	2014	2015	2016	2017
Imports	87	90	92	98	105	93	100	110

5a) For the following probability distribution, obtain i) $P(X > 2)$ ii) $P(X \leq 1)$ iii) $P(X = 2 \text{ or } 3)$ iv) E(X) v) V(X) (7m)

x	-2	-1	0	1	2	3
P(x)	0.1	0.2	0.2	0.3	0.15	0.05

5b) For the following Payoff table, find the optimal decision using Laplace Criterion and Minimax Regret Criterion (8m)

Course of Action	States of Nature		
	S1	S2	S3
A1	100	150	190
A2	350	200	0
A3	-50	160	400

(OR)

5p) Write short notes on **any three out of five**. (3q x 5m = 15m)

i. Components of Decision Making
ii. Sources of collection of Primary Data
iii. State the Additive Law of Probability. How will the statement of the theorem be modified if the two events are Mutually Exclusive and Complimentary Events
iv. Components of Time Series
v. Distinguish between: Qualitative & Quantitative Data; Class Limits & Class Boundaries

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