

Jagan Institute of Management Studies
End-Term Examination, September, 2016
Trimester I – PGDM 2016-18

Quantitative Techniques I
ET_PG_QT-I_2609

Time: 3 Hrs.

M. Marks: 70

INSTRUCTIONS: Attempt any SEVEN questions. All questions carry equal marks.

- Q 1 a)** The mean and standard deviation of a series of 100 items were found to be 60 and 10 respectively. While calculating, two items were wrongly taken as 5 and 45 instead of 30 and 20. Calculate corrected variance and corrected coefficient of variation.
- b)** Explain the importance of quantitative techniques in modern management from the point of view of decision making. **10**

- Q 2** Given below is the time series data on production (in thousand units) of a certain firm:
Years : 2010 2011 2012 2013 2014 2015 2016
Production: 84 98 124 150 184 244 316
Fit a straight-line trend to the above data and estimate the trend for the year 2017. **10**

- Q 3** Following data relate to income and expenditure of certain families. Calculate Karl Pearson's Coefficient of Correlation and comment on the result.

	Income (in Rs.)			
	1000-2000	2000-3000	3000-4000	4000-5000
800-1600	3	1	--	--
1600-2400	2	3	5	--
2400-3200	--	1	7	2
3200-4000	--	--	2	2
4000-4800	--	--	--	2

10

- Q 4 a)** The coefficient of variation of wages of male workers and female workers are 55 percent and 70 per cent respectively, while the standard deviations are 22.0 and 15.4 respectively. Calculate the overall average wages of all workers given that 80 percent of the workers are male.
- b)** The following results are obtained from wage distributions of workers in two factories X and Y:

Factory	No. of workers	Mean monthly wages (in Rs.)	Variance of wages (in Rs.)
X	400	450	100
Y	600	500	144

- i) Which factory pays larger amount as monthly wages?
- ii) Which factory has greater variability in individual wages? 10

Q 5 Following data represents marks of students in a certain subject. Find arithmetic mean, median, Mode, D_7 and P_{60} for the data. Comment on Skewness of data.

Marks	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90	90 – 100	Total
Students	1	3	11	-	43	32	9	120

10

Q 6 Following data relate to the age of a group of government employees. Calculate coefficient of range and variance for the data.

Age	50 – 55	45 – 50	40 – 45	35 – 40	30 – 35	25 – 30	20 – 25
Frequency	25	30	40	45	80	110	170

10

- Q 7 a)** State and explain utility of index numbers as economic barometers. Also state various index numbers with suitable explanation.
- b)** It is stated that Marshall- Edgeworth price index is good approximation to the Fisher’s ideal index numbers. Verify using the following data:

Commodity	2013		2014	
	Prize	Quantity	Prize	Quantity
A	2	74	3	82
B	5	125	4	140
C	7	40	6	33

10

Q 8 The following figures relate to heights of eight fathers and their sons:
 Height of Father (in inches): 65 66 67 67 68 69 71 73
 Height of Son (in inches): 67 68 64 68 72 70 69 70
 Obtain regression equations by calculating both regression coefficients. Estimate the likely height of the son when father’s height is 67.5 inches. 10

Q 9 Find the coefficient of determination (r^2) between price and sales, also interpret the result.

Price	100	90	85	92	90	84	88	90
Sales	500	610	700	630	670	800	800	750

10

- Q 10** Attempt any **TWO** of the following:
- a) Write the properties of Regression Coefficients.
 - b) Explain Absolute and Relative measures of skewness.
 - c) Distinguish between correlation and regression analysis.
 - d) Why arithmetic mean is considered superior to other measures of central tendency? But under what circumstances it should not be used? 10
