

9/3/15
Time : $2\frac{1}{2}$ Hrs.

FYBA SEM II
NO 3 ABI
Starts I

Max. Marks: 75

Note: -

1. All questions are compulsory.
2. Attempt any three sub questions from each question.
3. Figures to the right indicate marks.
4. Use of calculator is allowed.

Q.1) A) Define the following : (7)

- 1) Mean deviation from mean and its coefficient.
- 2) Quartile deviation and its coefficient.
- 3) Standard deviation and coefficient of variation.

B) Calculate mean deviation from mode for the following data (7)

Height (in cms)	160	164	168	172	176	180
No. of students	3	7	15	12	6	2

C) What is Skewness and Kurtosis? Represent Skewness and Kurtosis graphically. (6)

D) Calculate mean, standard deviation and coefficient of Skewness for the following data. $N=1000$ $\sum fx=420$ $\sum fx^2=1320$ $\sum fx^3=3320$. (6)

Q.2) A) Define: (7)

- 1) Pearson's coefficient of correlation..
- 2) Spearman's rank correlation.

State properties of correlation coefficient and prove any one of them.

B) For a certain bivariate data (7)

$$\bar{x}=65 \quad \sigma_x=2.5 \quad \bar{y}=70 \quad \sigma_y=3.5 \quad r=0.8$$

Find regression line of y on x and x on y. Estimate x when $y=75$.

C) Calculate Spearman's rank correlation coefficient for the following data (7)
representing marks awarded by sales manager and assistant sales manager to eight sales girls.

Sales girls	1	2	3	4	5	6	7	8
Marks by SM	68	75	52	65	70	68	59	65
Marks by ASM	84	91	67	72	72	71	74	79

D) The two regression lines are $10x + 3y - 62 = 0$ and $6x + 5y - 50 = 0$ (6)
Find i) \bar{x} , \bar{y} ii) r

Q.3) A) What is an index number? Explain with the help of suitable illustration. What are the limitations of index number. (7)

B) Find the current consumer price index for the following data. (6)

Item	Weight	Base year (Price in Rs.)	Current year (Price in Rs.)
Barber	15	150	225
Washerman	25	500	1000
Soap	10	80	200
Betel-nut	20	10	30
Cigarettes	30	60	50

C) Construct Laspeyre's, Paasche's and Fisher's index number for the following : (7)
Show that Fisher's index number satisfies time reversal test.

$$\sum p_0 q_0 = 160 \quad \sum p_1 q_0 = 200 \quad \sum p_0 q_1 = 100 \quad \sum p_1 q_1 = 128.$$

D) What is cost of living index number? Explain any one method of constructing cost of living index number. (6)

Q.4) A) The following results are obtained from wage distribution of workers in the two factories X and Y. (5)

Factory	No. of workers	Mean Daily wages	Variance of wages
X	400	450	100
Y	600	500	144

Calculate the combined standard deviation of wages of the two factories.

B) Show that $\mu_2^* = \mu_2' - \mu_1'^2$ (5)

C) If $N = 10$ $\sum x = 200$ $\sum y = 2200$ $\sum x^2 = 4900$ $\sum y^2 = 490400$ $\sum xy = 45800$ (5)
Calculate regression coefficients. Find regression line of y on x.

D) Calculate Marshall Edgeworth's index number (5)

Commodity	2008		2003	
	Quantity	Price	Quantity	Price
A	2	74	3	82
B	5	125	4	140
C	7	40	6	33

Calculate index number w.r.t. base year 2003.