

OP3ACX

Time: 1<sup>1</sup>/<sub>2</sub> Hr

Marks:40

**Note:**

1. All questions are compulsory.
2. Attempt any two sub questions from each question
3. Figure to right indicates marks.
4. Use of calculator is allowed.

**Q1. Attempt any 2 from the following**

1. The following is age-distribution of 80 policy holders insured through an agent (5)

Age group	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60
No .of policy holder	8	15	13	20	11	7	3	2	1

Calculate mean deviation from median.

2. The following data refer to the weight distribution of 100 student in a class (5)

	No.	Mean Wt. (in kg)	S.D of Wt. (in kg.)
Boys	55	61	8
Girls	45	51	6

Find combined mean and combined standard deviation

3. Given that  $\sum fx=10$ ,  $\sum fx^2=400$ ,  $\sum fx^3=-1000$   $\sum fx^4=5000$  and  $N=10$  (5)  
obtain central moments and hence find  $\beta_1$  and comment.

**Q2 Attempt any 2 from the following**

1. Calculate Karl Pearson's coefficient of correlation for following data (5)

X	16	13	17	4	3	11
Y	88	87	89	72	82	78

2. For the following set of data calculate spearman's rank correlation coefficient (5)

X	53	98	95	81	75	61	59	55
Y	47	25	32	37	30	40	39	45



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3. From the data on amount of rainfall (in cms) and production of rice (in quintals) find the two regression equation also find the most likely production if rainfall is 50 (5)

	Rain fall (in cm)	Production of rice (in quintals)
Mean	35	50
S.D	5	8

Correlation between rainfall and production is 0.8

**Q3. Attempt any 2 from the following**

1. From the following data calculate Laspeyre's , paasche's, Fisher, Dorbisch – Bowley's , Marshall-edgeworth's index number (5)

commodity	Base year		Current year	
	price	quantity	price	quantity
A	4	15	5	20
B	8	20	12	30
C	6	25	8	20
D	6	3	8	4
E	14	2	20	3

2. Construct cost of living index number with the help of the data given below (5)

Item	Weights	Index Number
Food	35	221
Fuel and lighting	14	198
clothing	15	190
Rent	8	183
Miscellaneous	20	161

Fit a power curve of the form  $y=a \cdot x^b$  to the following data.

3. (5)
- |   |     |      |      |      |
|---|-----|------|------|------|
| x | 1   | 2    | 3    | 4    |
| y | 0.7 | 0.86 | 0.97 | 1.06 |

**Q4 Attempt any 2 from the following**

1. Find Range and coefficient of Range (5)

commodity	price		
A	110	120	115
B	560	575	590



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2. Two regression equations are  $10x+3y-62=0$  and  $6x+5y-50=0$  find mean value of x and y also find r (5)
3. Calculate the value of Karl pearson coefficient of correlation from the following data  $n=20$   $\sum x=240$   $\sum y=400$   $\sum xy=6960$   $\sum x^2=4560$   $\sum y^2=11020$  (5)