Gujarat Secondary and Higher Secondary Education Board,

Gandhinagar

Unit Test

Standard: 12th (General Stream) **Max. Marks: 25**

Subject: Statistics (135) **Time: 1 hour**

- **There are total 11 questions in this test.**
- **Students have to write the answers of this unit test in their notebook.**

SECTION A

♦ **Choose the correct alternatives from the following options: [1 mark each]** **[03]**

1. Which method is useful to compare the long term variations in the values of the variable?

(a) Chain Base Method (b) Laspeyre's Method

(c) Fixed Base Method (d) Paasche's Method

2. What is the range of the correlation coefficient r?

(a) $-1 < r < 1$ (b) 0 to 1 (c) $-1 \leq r \leq 1$ (d) -1 to 0

3. The regression line always passes through which point?

(a) $(\bar{x}, \bar{y})$ (b) $(0, \bar{y})$ (c) $(\bar{x}, 0)$ (d) (0, 0)

SECTION B

♦ **Answer the following questions as required: [1 mark each]** **[03]**

4. What is base year?

5. Define Correlation.

6. The regression coefficient is not independent of which transformation?

SECTION C

♦ **Answer the following questions as required: [3 marks each]** **[09]**

7. The chain base index numbers for sales of a certain type of scooter from the year 2010 to 2015 are as follows. Find fixed base index numbers.

Year	2010	2011	2012	2013	2014	2015
Index Number of Sale	110	112	109	108	105	111

8. The singing talent of five singers A, B, C, D and E was judged by two judges in a singing competition. The ranks assigned to five singers are as follows.

Rank	1	2	3	4	5
By Judge 1	C	A	B	E	D
By Judge 2	B	C	D	A	E

Find the similarity between the decisions of the two judges from the rank correlation coefficient.

9. The information of investment (in lakh Rs.) and its market price (in lakh Rs.) after six months in share market in the last seven years for a Mutual Fund Company is obtained as follows:

Particulars	Investment (lakh Rs.) x	Market Price after six months (lakh Rs.) y
Mean	40	50
Variance	100	256
Covariance = 80		

Obtain the regression line of Y on X and estimate the market price in the share market after six months if there is an investment of Rs. 45 lakh in a year.

SECTION D

♦ **Answer the following questions as required: [5 marks each]** **[10]**

10. Compute the Laspeyre's, Paasche's and Fisher's index numbers for the year 2015 from the data given below:

Item	Quantity		Price (Rs.)	
	Year 2014	Year 2015	Year 2014	Year 2015
A	25 kg	32 kg	42	45
B	15 litre	20 litre	28	30
C	10 pieces	20 pieces	30	36
D	8 meter	15 meter	20	25
E	30 litre	36 litre	60	65

11. Find Karl Pearson's Correlation Coefficient between density of population (per square km) and death rate (per thousand) from the following data

City	A	B	C	D	E	F	G
Density (per sq. km)	750	600	350	500	200	700	850
Death rate (per thousand)	30	20	15	20	10	25	50

OR

11. To study the relationship between the time of usage of cars and its average annual maintenance cost, the following information is obtained:

Car	1	2	3	4	5	6
Time of usage of a car (years) x	3	1	2	2	5	3
Average annual maintenance cost (thousand Rs.) y	10	5	8	7	13	8

Obtain the regression line of Y on X. Find an estimate of average annual maintenance cost when the usage time of a car is 5 years. Also find its error.