

Total No. of Printed Pages—7

### 3 SEM TDC ECOH (CBCS) C 7

2024

( Nov/Dec )

#### ECONOMICS

( Core )

Paper : C-7

( Statistical Methods in Economics )

Full Marks : 80

Pass Marks : 32

Time : 3 hours

*The figures in the margin indicate full marks  
for the questions*

1. Answer the following as directed :  $1 \times 8 = 8$

(a) Mean deviation can be computed from

(i) arithmetic mean

(ii) median

(iii) mode

(iv) All of the above

(Choose the correct answer)



( 2 )

(b) Which of the following is not a characteristic of a good measure of dispersion?

- (i) Clearly defined
- (ii) Easy to calculate
- (iii) Based on all observations
- (iv) Should be affected by extreme values

(Choose the correct answer)

(c) Mention one limitation of harmonic mean.

(d) If  $A$  and  $B$  are mutually exclusive events, then the probability of occurrence of either  $A$  or  $B$  denoted by  $P$  shall be given by \_\_\_\_.

(Fill in the blank)

(e) Let  $b_{xy}$  and  $b_{yx}$  be two regression coefficients. If  $b_{xy}$  is greater than unity, then  $b_{yx}$  must be

- (i) zero
- (ii) greater than unity
- (iii) equal to unity
- (iv) less than unity

(Choose the correct answer)

( 3 )

(f) Sampling errors are non-existent in complete enumeration survey.

(Write True or False)

(g) The regression analysis which studies more than two variables at a time is called \_\_\_\_ regression.

(Fill in the blank)

(h) In case of a normal distribution, the coefficient of skewness is

- (i) 1
- (ii) greater than 1
- (iii) 0
- (iv) less than 1

(Choose the correct answer)

2. Write short notes on any *four* of the following (**within 150 words** each) :  $4 \times 4 = 16$

- (a) The concept of moments
- (b) Systematic sampling
- (c) Properties of Poisson distribution
- (d) Coefficient of determination ( $R^2$ )
- (e) Mathematical expectation



( 4 )

3. (a) What do you mean by dispersion?  
Explain various methods of computing dispersion.  $2+9=11$

Or

- (b) Calculate the arithmetic mean and median of the frequency distribution given below. Also calculate the mode using the empirical relation among the three :  $4+4+3=11$

Class limit	Frequency
130-134	5
135-139	15
140-144	28
145-149	24
150-154	17
155-159	10
160-164	1

4. (a) (i) Explain the advantages of sampling over census. 5
- (ii) Describe the principal steps followed in a sample survey. 6

( 5 )

Or

- (b) The following table gives the classification of 100 workers according to the sex and the nature of work. Test whether there is any association between nature of work and the sex of the worker : 11

	Skilled	Unskilled
Males	40	20
Females	10	30

(For  $v=1$ , the table value of  $\chi^2$  at 5% level of significance is 3.84)

5. (a) Explain with examples the concepts of the following :  $2 \times 6 = 12$
- (i) Sample space
  - (ii) Equally likely events
  - (iii) Mutually exclusive events
  - (iv) Exhaustive events
  - (v) Favourable events
  - (vi) Random experiment



( 6 )

Or

(b) If one card is drawn from a well-shuffled pack of cards, what is the possibility of getting—

- (i) either a king or a queen;
  - (ii) either a spade or a diamond;
  - (iii) neither an ace nor a jack;
  - (iv) either a black king or a red queen?
- $3+3+3+3=12$

6. (a) (i) Mention the properties of binomial distribution. 4
- (ii) Prove that Poisson distribution is a limiting case of binomial distribution. 7

Or

- (b) Describe the following :  $5+3+3=11$
- (i) Random variable
  - (ii) Probability mass function
  - (iii) Probability density function

P25/310

( Continued )

( 7 )

7. (a) Mention the properties of Karl Pearson's coefficient of correlation. Find Pearsonian correlation coefficient between the following values of X and Y :  $3+8=11$

X	78	89	96	69	59	79
Y	125	137	156	112	107	136

Or

- (b) From the data given below

Marks in Economics	25	28	35	32	31	36	29
Marks in Statistics	43	46	49	41	36	32	31

find—

- (i) the two regression equations;
- (ii) the most likely marks in Statistics, when the marks in Economics is 30.  $10+1=11$

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P25—4000/310

3 SEM TDC ECOH (CBCS) C 7