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

**2025**

( 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) On which of the following measures  
extreme values have no effect?

(i) Arithmetic mean

(ii) Median

(iii) Geometric mean

(iv) Harmonic mean

( Choose the correct answer )

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(b) Mention one limitation of mean deviation.

(c) When two coins are tossed, the probability of getting at least one tail is

(i)  $\frac{1}{4}$

(ii)  $\frac{1}{2}$

(iii)  $\frac{3}{4}$

(iv) None of the above

( Choose the correct answer )

(d) Define secondary data.

(e) Mention one property of rank correlation coefficient.

(f) When a die is thrown, the occurrences of an even number and an odd number are \_\_\_\_\_ events.

( Fill in the blank )

(g) The error of rejecting a true or correct hypothesis is termed as non-sampling error.

( Write True or False )

(h) When  $r = +1$ , it means there is \_\_\_\_\_ relationship.

( Fill in the blank )

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( Continued )

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

(a) Kurtosis

(b) Properties of regression coefficient

(c) Random variable

(d) Sampling error

(e) Sample space

3. (a) Discuss the relationship among mean, median and mode. Which one is the best average and why?  $4+7=11$

Or

(b) Find the standard deviation and its coefficient from the following data :  $8+3=11$

Variable	Frequency
More than 90	0
" " 80	5
" " 70	14
" " 60	34
" " 50	65
" " 40	110
" " 30	150
" " 20	170
" " 10	176
" " 0	180

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4. (a) (i) Explain the addition theorem of probability using Venn diagram in case of mutually exclusive events and events that are not mutually exclusive. 7
- (ii) A coin is tossed 6 times. What is the probability of getting at least 2 heads? 4

Or

- (b) There are 3 economists, 4 engineers, 2 statisticians and 1 doctor. A committee of 4 members from them is selected. Find the probability that the committee has—
- (i) one of each kind;
- (ii) at least one economist;
- (iii) the doctor as a member and three others.  $4+4+3=11$

5. (a) Write brief notes on the following :  $5+3+3=11$
- (i) Distinction between sampling and census
- (ii) Errors in statistics
- (iii) Testing of hypothesis

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( Continued )

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Or

- (b) In a survey conducted in a town, the following results were found :

	Male	Female	Total
Taking tea	56	31	87
Not taking tea	18	6	24
Total	74	37	111

Discuss whether there is any significant difference between male and female in the matter of taking tea.

[The value of  $\chi^2$  for 1 degree of freedom at 5% level of significance is 3.84.] 11

6. (a) (i) Mention the properties of Karl Pearson's coefficient of correlation. 4
- (ii) The following data relate to the age of employees and the number of days they were reported sick in a month :

Age (X)	:	30	32	35	40	48	50	52	55	57	61
Sick days (Y)	:	1	0	2	5	2	4	6	5	7	8

Calculate Pearson's coefficient of correlation. 8

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( 6 )

Or

- (b) The following data are given for marks in Economics (Y) and Statistics (X) in a certain year. Determine the two regression equations and also find the probable marks in Economics of a candidate who obtained 50 marks in Statistics :

$$5+5+2=12$$

Mean marks in Statistics : 39.5

Mean marks in Economics : 47.6

Standard deviation of marks  
in Statistics : 10.8

Standard deviation of marks  
in Economics : 16.9

$r$  between marks in Statistics  
and Economics : 0.42

7. (a) (i) State the distinctive features of normal distribution. 6
- (ii) Explain the importance of Poisson distribution. 5

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( Continued )

( 7 )

Or

- (b) Explain the following concepts :  
2+2+4+3=11

- (i) Discrete random variable  
(ii) Continuous random variable  
(iii) Properties of mathematical expectation  
(iv) Probability density function

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