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3 SEM TDC ECOH (CBCS) C 7

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(Nov/Dec)

ECONOMICS

(Core)

Paper : C-7

(Statistical Methods for 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) Which of the following averages is appropriate for computing rate of growth?

(i) Median

(ii) Mode

(iii) GM

(iv) AM

(Choose the correct answer)

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(2)

(b) In measure of skewness, the absolute skewness is equal to

(i) Mean + Mode

(ii) Mean + Median

(iii) Mean - Mode

(iv) Mean - Median

(Choose the correct answer)

(c) What is random variable?

(d) Two events A and B are mutually exclusive, $P(A) = \frac{1}{5}$, $P(B) = \frac{1}{3}$. Find the probability that at least one will occur.

(i) $\frac{8}{15}$

(ii) $\frac{2}{15}$

(iii) $\frac{5}{15}$

(iv) $\frac{1}{15}$

(Choose the correct answer)

(3)

(e) Binomial distribution depends on

(i) n only

(ii) p only

(iii) n and p

(iv) None of the above

(Choose the correct answer)

(f) What is standard error?

(g) Spearman's correlation coefficient differs from Karl Pearson's coefficient of correlation when _____.

(Fill in the blank)

(h) If both the regression coefficients are negative, correlation coefficient would be _____.

(Fill in the blank)

2. Write short notes on any *four* of the following : 4×4=16

(a) Mathematical expectation and its properties

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(4)

- (b) Coefficient of determination and its uses
- (c) Sampling errors
- (d) Independent and dependent events
- (e) Formulation of null hypothesis

3. (a) Find the missing frequencies in the following distribution if $N = 100$ and the median of the distribution is 30 :

Marks	:	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	:	10	—	25	30	—	10

Also mention the properties of the median. 8+3=11

Or

(b) The arithmetic mean and the standard deviation of a set of 9 items are 43 and 5 respectively. If an item of value 63 is added to the set, find the mean and SD of all the 10 items. Also state the merits of SD. 8+3=11

(5)

4. (a) (i) State and prove the multiplication theorem when events are independent.
- (ii) Find the probability of drawing a king, a queen and a knave from a pack of cards in 3 consecutive draws, the cards drawn not being replaced. $7+5=12$

Or

- (b) If 2 dice are thrown, what is the probability of getting—
- (i) either total 8 or total 10;
- (ii) at least one six;
- (iii) total being multiple of 3 or 4;
- (iv) total 9? $4+3+3+2=12$

5. (a) (i) Point out the fallacy if any in the following statement : 4
- The mean of a binomial distribution is 10 and its SD is 4.
- (ii) Mention the properties and uses of Poisson distribution. $3+4=7$

(6)

Or

(b) 8 coins are thrown simultaneously.

(i) Show that the probability of obtaining at least 6 heads is $37/256$.

(ii) Find the probability of obtaining at most 3 heads. $7+4=11$

6. (a) Explain different methods of sampling. Mention two differences between sample and census. $9+2=11$

Or

(b) In a certain sample of non-Hindu 2000 families, 1400 families are consumers of tea. Out of 1800 Hindu families, 1236 families consume tea. Use χ^2 -test and state whether there is significant difference between consumption of tea among Hindu and non-Hindu families. 11

7. (a) From the data given below, compute two regression coefficients and formulate the two regression equations :

$$\begin{aligned} \Sigma X &= 510, & \Sigma Y &= 7140, & \Sigma X^2 &= 4150, \\ \Sigma XY &= 54900, & \Sigma Y^2 &= 740200 & \text{and} \\ N &= 102 \end{aligned}$$

Also determine the value of Y when $X = 7$. $9+2=11$

(7)

Or

(b) From the following data relating to sales and cost of sales of 10 companies, find out the Karl Pearson's coefficient of correlation by the direct method :

<i>Sales</i>	:	50	60	55	65	75	70	75	80	90	80
<i>Cost of Sales</i>	:	12	14	15	10	12	15	11	16	18	19

Also interpret the result. $9+2=11$
