Total No. of Printed Pages—7

3 SEM TDC ECOH (CBCS) C 7

2022

(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 : 1×8=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)

(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)

(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

(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

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

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 :

$\Sigma X = 510$, $\Sigma Y = 7140$, $\Sigma X^2 = 4150$, $\Sigma XY = 54900$, $\Sigma Y^2 = 740200$ and $N = 102$

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

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 :

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

Also interpret the result. 9+2=11

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