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 : 1×8=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)

(*Turn Over*)

(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, $P(A) = \dfrac{1}{5}$, $P(B) = \dfrac{1}{3}$. Find the probability that at least one will occur.

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

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

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

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

(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

(*Continued*)

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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