2021

(Held in 2022)

ECONOMICS

Paper : CC–7

(Statistical Methods for Economics)

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Choose the correct answer from the following : 1×6=6

(a) If A and B are independent events, then $P(A \cap B) =$

(i) $P(A).P(B/A)$

(ii) $P(B).P(A/B)$

(iii) $P(A).P(B)$

(iv) None of the above

(b) The GM of two numbers 8 and 18 shall be

(i) 15

(ii) 14

(iii) 13

(iv) 12

(c) The mean of a binomial distribution is

(i) pq

(ii) np

(iii) nq

(iv) None of the above

(d) The relation among AM, GM and HM is

(i) AM > GM > HM

(ii) HM > GM > AM

(iii) AM = GM = HM

(iv) AM > HM > GM

(e) If the coefficient of variation of a distribution is 50 and its standard deviation is 20, then the mean value is

(i) 10

(ii) 30

(iii) 40

(iv) 45

(f) If $P(A \cap B) = 0{\cdot}16$, $P(A) = 0{\cdot}30$ and $P(B) = 0{\cdot}78$, then $P(A \cup B) =$

(i) 0·64

(ii) 0·92

(iii) 0·32

(iv) 1·24

2. Answer the following questions : 2×5=10

(a) The mode and median of moderately asymmetrical series are 35 and 30, respectively. Calculate the value of mean.

(b) What is compound event?

(c) Prove that the probability of any event lies between zero and one.

(d) Distinguish between absolute and relative dispersion.

(e) State additive theorem of mathematical expectation.

3. Answer any *six* of the following questions : 5×6=30

(a) The mean height of 25 male workers in a factory is 61 inches and the mean height of 35 female workers in the same factory is 58 inches. Find the combined mean height of 60 workers in the factory.

(b) Two dice are thrown, what is the mathematical expectation of the sum of the numbers shown on the dice?

(c) Mention five properties of Poisson distribution.

(d) Mean and standard deviations of two distributions of 100 and 150 items are 50, 5 and 40, 6, respectively. Find the standard deviation of all the 250 items taken together.

(e) Explain classical definition of probability with example.

(f) Calculate standard deviation of the following marks secured by some students of a class :

Marks	0–10	10–20	20–30	30–40
No. of Students	4	13	18	30
Marks	40–50	50–60	60–70	70–80
No. of Students	15	12	8	4

(g) Distinguish between point estimation and interval estimation.

(h) Mention the requisites of a good sample.

(i) From a pack of 52 cards, two draws of three cards are made without replacement. What is the probability that the first three are Hearts and the second three are Clubs?

4. Answer any *two* of the following questions : 10×2=20

(a) A bag contains 7 white and 8 black balls. Another bag contains 8 white and 9 black balls. Two balls are shifted from the first to the second bag and then a ball is drawn from the second bag. What is the probability that the ball drawn from the second bag is black?

(b) What do you mean by normal distribution? Write different properties and importance of normal distribution. 2+8=10

(c) Explain the advantages of sample method over census method. Mention the principal steps involved in a sample survey. 5+5=10

5. Answer any *one* of the following questions : 14

(a) *(i)* Explain Karl Pearson's coefficient of correlation.

(ii) Prove that Karl Pearson's correlation coefficient lies between +1 and –1.

(iii) Mention its merits and demerits of Karl Pearson's coefficient of correlation. 3+7+4=14

(b) What is an average? Mention its objectives. Explain the characteristics of a good average. 2+6+6=14

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