

Model Question of HSC Examination-2016 (All Board)

Subject : Statistics 2nd Paper (Theory)

Subject Code: 130

Full Marks: 75

Time: 3 Hours

[N.B. Marks to the right margin indicate full marks.]

Group-A

Answer any four questions:

10×4=40

1. (a) Give definition with example.

1.5×4=6

i) Sample space

ii) Dependent event.

iii) event

iv) Mutually exclusive events.

(b) Prove that two events cannot be mutually exclusive and independent simultaneously. 4

2. (a) What is random variable? Distinguish between discrete random variable and continuous random variable. 1+3=4

(b) If $F(x) = ax^2$ $0 < x < 3$ 6
 $= 0$ Otherwise

(i) Find the value of a.

(ii) $P(1 < x < 2) = ?$

3. (a) Define variance and co-variance of random variable. 2+2=4

(b) If X and Y are two independent random variable then prove that— 6

(i) $V(X - Y) = V(x) + V(Y)$

(ii) $COV(X, Y) = 0$

4. (a) Write the necessary condition of Binomial distribution. 4+6=10

(b) Derive the probability function of Binomial distribution.

5. (a) What is sampling. What do you mean by simple random sampling. 2+3+5=10

(b) Show that in simple random sampling sample mean is an unbiased estimator of population mean.

6. (a) What is normal curve? Write down the properties of normal curve. 2+3+5=10

(b) The mean and variance of a Binomial distribution are 16 and $\frac{4}{\sqrt{5}}$ respectively. Find the value of parameters and probability function of Binomial distribution.

Part-B

Answer any seven questions:

5×7=35

7. For two mutually exclusive events state the additive law of probability and prove it. 5
8. Two dice are thrown together. Write down the sample space. Find the probabilities of the followings— 1+2+2=5
- i) Same value of two dice.
- ii) Even number of two dice.
9. Define distribution function. Write down the properties of variance of random variable. 2+3=5
10. What is price index number? Distinguish between price index number and cost of living index number. 1+4=5
11. What is poisson variate? Write down the properties of poisson distribution. 1+4=5
12. What do you mean by census and sample survey. Distinguish between them. 2+3=5
13. What do you mean by the period of time for being population double? Derive the formula of time period for being population double. 1+4=5
14. A coin has been tossed 200 times. Find the probability that the number of obtained heads are— 5
- (i) 80 or above (ii) 80 to 120
- [Given, $(2.83 < Z < 0) = .4977$]
15. What do you mean by Gross reproduction rate and Net reproduction rate. Distinguish between them. 5
16. Define probability. Distinguish between the classical probability and statistical probability. 1+4=5