DG-101

December-2021

B.B.A., Sem.-III

CC-206 : Elementary Statistics

Time : 2 Hours] [Max. Marks : 50

Instructions : (1) Graph paper will be supplied.

              (2) Use of simple circular is allowed.

              (3) All question in Section-I carry equal marks.

              (4) Attempt any two questions in Section-I.

              (5) Question-5 in Section-II is compulsory.

Section – I

1. (A) A bag contains 5 white, 3 black and 6 red balls. 3 balls are taken at random from the bag. Find the probability that (i) 2 balls are of white colour. (ii) all the three balls are of different colours. (iii) none of the ball is black. **10**

   (B) Define Mathematical expectation and state its properties. **10**

2. (A) State the properties of Binomial distribution and Poisson Distribution. **10**

   (B) 100 electric bulbs are found to be defective in a lot of 5000 bulbs. Find probability that at the most 3 bulbs are defective in a box of 100 bulbs.

   $$[e^{2} = 0.1353] \quad 10$$

3. (A) Calculate correlation coefficient from the following data : **10**

x	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
y	0.30	0.29	0.29	0.25	0.24	0.24	0.24	0.29	0.18	0.15

   (B) In a trivariate distribution $\sigma_1 = 2$, $\sigma_2 = 4$, $\sigma_3 = 12$ and $\begin{pmatrix} 1 & 0.6 & 0.4 \\ r_{21} & 1 & 0.5 \\ r_{31} & r_{32} & 1 \end{pmatrix}$

   Find $r_{32.1}$, $R_{3.21}$ and $b_{23.1}$ **10**

4. (A) Draw $\bar{X}$ and R chart from the following data : 10

Sample No.	1	2	3	4	5	6	7	8	9	10
$\bar{X}$	128	131	135	129	132	141	121	155	139	142
R	21	31	39	21	19	30	25	28	25	20

$[A_2 = 0.577, D_3 = 0, D_4 = 2.115]$

(B) For a SSP(2000, 300, 3), find (i) ASN (ii) AOQ if P = 1% (0.498) 10

Section – II

5. Give the following answer : (Attempt any 10) 10

(1) A set representing all possible outcomes of a random experiment is called a
_____.
   (a) Sample Space (b) Event
   (c) Probability (d) None

(2) If E(x) = 5, then find E(2X + 3).
   (a) 1.2 (b) 0.012
   (c) 0.12 (d) None

(3) What is the other name of classical definition of probability ?
   (a) Axiomatic (b) Mathematical
   (c) Statistical (d) None

(4) If A and B are mutually exclusive events then P(A ⇸ B) = _____.
   (a) P(A) (b) P(B)
   (c) P(A) + P(B) (d) None

(5) A box contains 6 black and 4 white balls. Two balls are drawn at random from it. Find the probability that both are black.
   (a) 0.23 (b) 0.24
   (c) 1 (d) 0.33

(6) If there is a matter of accident, _____ distribution is followed.
   (a) Poisson (b) Binomial
   (c) Normal (d) None

DG-101 2

(7) The Binomial Distribution is a distribution of _____ variable.

   (a) Random   (b) Discrete

   (c) Continuous   (d) None

(8) The mean of Poisson Distribution is 1.44, its S.D. = _____.

   (a) 1.22   (b) 1

   (c) 1.2   (d) None

(9) Hyper Geometric Distribution has a wide application in _____.

   (a) S.Q.C.   (b) Correlation

   (c) Normal   (d) Acceptance Sampling

(10) The formula of mean for Hypergeometric distribution is _____.

   (a) np (b) $\dfrac{mr}{m+n}$

   (c) e^{-m} (d) None

(11) In rank correlation if $\sum d^2 = 0$, r = _____.

   (a) –1   (b) 0

   (c) +1   (d) None

(12) If $b_{12.3} = 0.1705$ and $b_{21.3} = 2.7225$, find $r_{12.3}$

   (a) 0.5   (b) 1.5

   (c) 0.6813   (d) None

(13) On which distribution C-Chart is based ?

   (a) Normal   (b) Binomial

   (c) Poisson   (d) None

(14) Which type of chart is more sensitive ?

   (a) R   (b) np

   (c) C   (d) None

(15) If Pa = 0.92, what is Producer's Risk ?

   (a) 0.92   (b) 0.08

   (c) 1   (d) 0

_____