

Seat No. : 01508

**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 the probability that at the most 3 bulbs are defective in a box of 100 bulbs. 10
- [ $e^{-2} = 0.1353$ ]
- (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  $2\sigma_1 = 3\sigma_2 = 4\sigma_3 = 12$  and  $\Delta = \begin{bmatrix} 1 & 0.6 & 0.4 \\ r_{21} & 1 & 0.5 \\ r_{31} & r_{32} & 1 \end{bmatrix}$

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

10

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

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  $P = 1\%$  ( $e^{-3} = 0.0498$ )

### Section - II

5. Give the following answer : (Attempt any 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  $P(A \cup B) =$  \_\_\_\_\_.

- (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

- (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)  $\frac{mr}{m+n}$   
(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  $P_a = 0.92$ , what is Producer's Risk ?  
(a) 0.92 (b) 0.08  
(c) 1 (d) 0
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