

M.C.A. DEGREE EXAMINATION, MAY – 2015

Second Year

Paper - VIII : PROBABILITY & STATISTICS

Time : 3 Hours

Maximum Marks: 75

SECTION - A

Answer any THREE of the following

(3×15 = 45)

- 1) a) State and prove Addition Theorem probability.
b) If X, Y are two random variables then prove that
 $E(aX+bY) = a E(X) + b E(Y)$
- 2) Two cards are selected at random from 10 each numbered 1 to 10. Find the probability that the sum is odd if
a) 2 cards are drawn
b) 2 cards are drawn one after another with replacement
c) 2 cards are drawn one after the another without replacement.
- 3) A Random Variable X has the following probability function

1. X_i :	2. -3	3. -2	4. -1	5. 0	6. 1	7. 2	8. 3
9. $P(X_i)$:	10. K	11. 0.1	12. K	13. 0.2	14. 2K	15. 0.4	16. 2K

Find a) K b) Mean c) Variance

- 4) Write about χ^2 -test. List out properties of χ^2 -test.
- 5) If the population is 3,6,9,5,27
a) List all possible samples of size 3 that can be taken without replacement from the finite population.

- b) Calculate the mean of each sampling distribution of means.
- c) Find the standard deviation of the sampling distribution of means.

SECTION – B

Answer any FIVE of the following

(5×5 = 25)

- 6) What are the properties of Normal Distribution?
- 7) Explain Sign test.
- 8) Define Binomial distribution and find its mean and variance.
- 9) A bag contains 4 green, 6 black and 7 white balls. A ball is drawn at random. What is the probability that it is either a green or a black ball.
- 10) Explain Two sample t-test for mean starting.
- 11) What are Two lines of Regression? Give their uses.
- 12) Discuss about F-test and its uses.
- 13) Explain discrete probability.

SECTION-C

Answer ALL of the following

(5×1 = 5)

- 14) Define Normal Distribution.
- 15) Define Poisson distribution.
- 16) Define Type-I error.
- 17) Define Replication.
- 18) Write F-test.

