

Code: 9ABS304

B.Tech II Year I Semester (R09) Supplementary Examinations June 2017

PROBABILITY & STATISTICS

(Common to MCT & CSE)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) If a test consists of 12 true false questions in how many different ways can a student make the test paper with one answer to each question?
(b) The bolts are drawn from a box containing 4 good and 6 bad bolts. Find the probability that the second bolt is good if the first one is found to be bad.
- 2 (a) Find the mean and variance of the uniform probability distribution given by $f(x) = 1/n$ for $x = 1, 2, 3, \dots, n$.
(b) For the continuous probability distribution $f(x) = kx^2e^{-x}$ where $x \geq 0$, find mean.
- 3 (a) The mean and variance of a binomial distribution are 4 and $4/3$ respectively. Find $p(x \geq 1)$.
(b) A manufacturer knows that the condensers he makes contain average 1% defectives. He packs them in boxes of 100. What is the probability that a box picked at random will contain 3 or more faulty condensers?
- 4 A random sample of size 64 is taken from a normal population with $\mu = 51.4$ and $\sigma = 68$. What is the probability that the mean of the sample will: (i) Exceed 52.9? (ii) Fall between 50.5 and 52.3. (iii) Be less than 50.6.
- 5 (a) Find 95% confidence limits for the mean of a normality distributed population from which of the following sample was taken 15,17,10,18,16,9,7,11,13,14.
(b) A sample of size 10 was taken from a population S.D of sample is 0.3. Find the maximum error with 99% confidence.
- 6 (a) An ambulance service claims that it takes on the average less than 10 minutes to reach its destination in emergency calls. A sample of 36 calls has a mean of 11 minutes and the clearance of 16 minutes. Test the significance at 0.05 level.
(b) If 80 patients are treated with an antibiotic 59 got cured. Find a 99% confidence limits to the true population of cure.
- 7 (a) The height of 10 males of a given locality are found to be 70, 67, 62, 68, 61, 68, 70, 64, 64 & 65 inches. Is it reasonable to believe that the average height is greater than 64 inches? Test at 5% significance level assuming that for 9 degrees of freedom.
(b) Define the statistics "F" and "t".
- 8 Assume that both arrival rate and service rate following Poisson distribution. The arrival and service rate are 25 and 35 customers per hour respectively at a single window in R.T.C reservation counter. Find: (i) ρ . (ii) L_s . (iii) L_q . (iv) W_s . (v) W_q .
