

II B.Tech I Semester(R05) Supplementary Examinations, May/June 2010

PROBABILITY AND STATISTICS

(Common to Computer Science & Engineering, Information Technology and Computer Science & Systems Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Define a random experiment, sample space, event and mutually exclusive events. Give examples of each.
- (b) Box A contains 5 red and 3 white marbles and box B contains 2 red and 6 white marbles.
 - i. If a marble is drawn from each box, what is the probability that they are both of the same colour? [8+8]
2. (a) If X and Y are discrete random variables and K is a constant then prove that.
 - i. $E(X + K) = E(X) + K$
 - ii. $E(X+Y) = E(X) + E(Y)$
- (b) Out of 800 families with 5 childrens each, how many would you expect to have
 - i. 3 boys
 - ii. At least one boy. [8+8]
3. (a) Show that the mean and variance of a Poisson distribution are equal.
- (b) Determine the minimum mark a student should get in order to receive an A grade if the top 10% of the students are awarded A grades in an examination where the mean mark is 72 and standard deviation is 9. [8+8]
4. Sample of size 2 are taken from the population 1,2,3,4,5,6 without replacement Find
 - (a) The mean of the population.
 - (b) The standard deviation of the population.
 - (c) The mean of sampling distribution of means.
 - (d) The standard deviation of sampling distribution of means. [4+4]
5. (a) A random sample of size 81 was taken whose variance is 20.25 and mean 32 construct 98% confidence interval
- (b) A manufacturer claims that only 4% of his products are defective. A random sample of 500 were taken among which 100 defective Test the hypothesis at 0.05 level [8+8]
6. The following data gives the fields of interest and attitude to religion:

	Arts & Commerce	Science & Engineering	Total
Conformist	109	51	160
Non-Conformist	23	17	40
Total	132	68	200

Examine whether the field of interest and attitude to religion are associated. [16]

7. Fit an equation of the form $Y=ab^x$ to the following data: [16]

x:	2	3	4	5	6
y:	144	172.8	207.4	248.8	298.5

8. The marks obtained by 10 students in mathematics and statistics are given below. Find the coefficient of correlation between the two subjects and the two lines of regression. [16]

Marks in maths	75	30	60	80	53	35	15	40	38	48
Marks in statistics	85	45	54	91	58	63	35	43	45	44
