

Code: 9ABS304

R09

II B. Tech I Semester (R09) Supplementary Examinations, May 2012

PROBABILITY & STATISTICS
(Computer Science & Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) What is the probability of picking an ace and a king from a 52 cards deck?
(b) For any three events A, B and C defined on the sample space S such that $B \subset C$ and $P(A) > 0$, show that $P(B/A) \leq P(C/A)$.

- 2 (a) A random variable x has the following probability distribution

x_i	-2	-1	0	1	2	3
$f(x) = P(X = x_i)$	0.1	k	0.2	2k	0.3	k

Find: (i) the value of k (ii) mean (iii) variance (iv) $P(x \geq 2)$ (v) $P(x < 2)$ (vi) $P(-1 < x < 3)$.

- (b) Out of 24 mangoes 6 are rotten, 2 mangoes are drawn obtain the probability distribution of the number of rotten mangoes that can be drawn.
- 3 A manufacturer of pins knows that 2% of his product is defective. If he sells pins in boxes of 100 and guarantees that not more than 4 pins will be defective. What is the probability that a box will fail to meet the guaranteed quantity?
- 4 A random sample of size 100 is taken from an infinite population having the mean $\mu = 76$ and the variance $\sigma^2 = 256$. What is the probability that \bar{x} will be between 75 and 78?
- 5 (a) Define estimate, estimator and estimation.
(b) In how many ways the estimation can be done and what are they. Explain in detail.
- 6 (a) Write a short note on type – I and type – II errors.
(b) In a random sample of 125 cool drinkers, 68 said they prefer Thumsup to Pepsi. Test the null hypothesis $P = 0.5$ against the alternative hypothesis $P > 0.5$.
(c) An ambulance service claims that it takes on average less than 10 min. to reach its destination in emergency calls. A sample of 36 calls has a mean of 11 min. and a variance of 16 min. Test the significance at 0.05 level.
- 7 The nicotine contents in milligrams in two samples of tobacco were found to be as follows:

Sample A	24	27	26	21	25	-
Sample B	27	30	28	31	22	36

Can it be said that the two samples have come from the same normal population.

- 8 (a) Explain about Poisson distribution in the queuing system.
(b) Explain about exponential distribution in the queuing system.
