

Code.No 43200

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**II.B.TECH - I SEMESTER REGULAR EXAMINATIONS NOVEMBER, 2009****PROBABILITY AND STATISTICS****(Common to CSE, IT, CSS)****Time: 3hours****Max.Marks:80****Answer any FIVE questions
All questions carry equal marks**

1. a] State the three axioms or probability.
 b] Prove that i) $P(A^c) = 1 - P(A) \leq 1$.
 ii) $P(B) \leq P(A)$ where $B \subset A$. [6+10]

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] For the discrete probability distribution

X	0	1	2	3	4	5	6
F	0	2k	2k	3k	k^2	$2k^2$	$7k^2 + k$

Find i) k ii) mean iii) Variance. [8+8]

3. a] Suppose 2% of the people on the average are left handed. Find
 i) The probability of finding 3 or more left handed.
 ii) the Probability of finding ≤ 1 left handed.
 b] The mean and standard deviation of a normal variable are 8 and 4 respectively.
 find i) $p(5 \leq X \leq 10)$
 ii) $p(X \geq 5)$. [8+8]
4. A population consists of six numbers 4,8,12,16,20,24. Consider all samples of size two which can be drawn with out replacement from this population.
 a) The population mean.
 b) The population standard deviation.
 c) The mean of the sampling distribution of means.
 d) The standard deviation of the sampling distribution of means. [4x4=16]

5. a] Define
 i) Estimate. ii) Estimator iii) Estimation.
 b] Explain about "Point Estimation". [8+8]
6. a] What is meant by level of significance?
 b] Write the formula for testing the hypothesis concerning "Two means". [8+8]

7. The life time of electric bulbs for a random sample of 10 from a large consignment gave the following data:

Item	1	2	3	4	5	6	7	8	9	10
Life in 000 hrs	1.2	4.6	3.9	4.1	5.2	3.8	3.9	4.3	4.4	5.6

Can we accept the hypothesis that the average life time of bulbs is 4000 hrs. [16]

8. A bank plans to open a single server drive in banking facilities at a particular center. It is estimated that 20 customers will arrive each hour on an average. If, on an average, it required 2 minutes to process a customers transaction, determine:
- a) The proportion of time that the system will be idle.
 - b) On the average how long a customer will have to wait before reaching the server?
 - c) Traffic intensity of Bank? [16]
