

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

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1. a] State and prove Baye's theorem.
 b] Out of 15 items 4 are not in good condition, 4 are selected at a random. Find the probability that
 i) All are not good.
 ii) Two are not good. [8+8]
2. a] Two dice are thrown five times, find the probability of getting 7 as sum
 i) at least once. ii) Two times iii) $P(1 < X < 5)$.
 b] A random variables X has the following probability function

X_i	-3	-2	-1	0	1	2	3
$P(X_i)$	K	0.1	K	0.2	2k	0.4	2k

[8+8]

3. a] Define normal distribution and find its mean.
 b] The mean of binomial distribution is 3 and the variance is 9/4. Find
 i) The value of n ii) $P(X \geq 7)$ iii) $P(1 \leq X \leq 6)$. [8+8]
4. Samples of size 2 are taken from the population 1, 2, 3, 4, 5, 6 with replacement. Find
 a) The mean of the population.
 b) Standard deviation of population.
 c) The mean of the sampling distribution of means.
 d) The standard deviation of the sampling distribution of means. [16]
5. a] Explain about "Bayesian Estimation"
 b] What is a "Good Estimation". Explain its properties. [8+8]
6. a] Explain the procedure generally followed in testing of hypothesis.
 b] Write short notes on type I and Type II Error. [8+8]

7. 4 Coins were tossed 160 times and the following results were obtained.

No of Heads	0	1	2	3	4
Observed frequencies	17	52	54	31	6

Under the assumptions that coins are balanced, find the expected frequencies of 0, 1, 2, 3 or 4 heads and test the goodness of fit ($\alpha = 0.05$) [8+8]

8. Workers come to a tool store room to enquiry about the special tools (required by them) for a particular job. The average time between the arrivals is 60 seconds and the arrivals are assumed to be in Poisson distribution. The average service time is 40 seconds. Find:

- a) Average queue length
- b) Average length of non-empty queue. [16]
