R13/SS

B.Tech II Year II Semester (R13) Supplementary Examinations December/January 2015/2016
PROBABILITY & STATISTICS
(Common to CE, ME and IT)
(Use of statistical tables is permitted in the examination hall)

Time: 3 hours   Max. Marks: 70

PART – A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
(a)   Define Conditional probability.
(b)   Find the probability of getting 4 heads when 6 coins tossed.
(c)   Define Null hypothesis.
(d)   What is the formula for F-distribution?
(e)   Define Random variable.
(f)   If the poison distribution is such that $P(x=k)=p(x=k+1)$, then the mean is ---------
(g)   Define Statistical quality control.
(h)   Explain X bar Chart with suitable example.
(i)   What is the model of (M/M/1) : (∞/FIFO), the expected number of customers in the system?
(j)   What is the model in which only arrivals are considered and no departure takes place?

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2   State and prove Bayes theorem.

OR

3   Explain the properties of the normal distribution

UNIT – II

4   A die was thrown 9000 times and of these 3220 yielded a 3 or 4. Is this consistent with the hypothesis that the die was unbiased?

OR

5   From the following data, find whether there is any significant liking in the habit of taking soft drinks among the categories of employees.

Soft Drinks	Clerks	Teachers	Officers
Pepsi	10	25	65
Thumsup	15	30	65
7Up	50	60	30

Use chi square test

UNIT – III

6   Derive the formula to estimate two missing plots in a RBD.

OR

7   Discuss the analysis of a Latin Square Design (LSD)

UNIT – IV

8   Explain control chart for fraction Defective

OR

9   The following figures give the number of defectives in 20 samples, each sample containing 2,000 items. 425, 430, 216, 341, 225, 322, 280, 306, 337, 305, 356, 402, 216, 264, 126, 409, 193, 326, 280, 389. Calculate the values for central line and control limits for p-chart

UNIT – V

10   Explain Pure Death and Birth process.

OR

11   A barber who has six chairs to accommodate people waiting for hair cut. Assume that customers who arrive when all the six chairs are full leave without entering the shop. Customers arrive at the average rate of 3 per hour and spend an average of 15 minutes for service. Find:
(a)   The probability that a customer can get directly into the barber chair upon arrival.
(b)   Expected number of customers waiting for a haircut.
(c)   Effective arrival rate.
(d)   The time a customer can expect to spend in the barber.

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