R13

B.Tech II Year I Semester (R13) Regular & Supplementary Examinations December 2015
PROBABILITY & STATISTICS
(Common to CSE 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) Explain random variable with suitable example.
   (c) What is the formula of confidence interval?
   (d) Explain alternative hypothesis.
   (e) Explain one way classification.
   (f)   Explain two way classifications.
   (g) What are the defects of quality of manufactured product?
   (h) What is X-bar chart?
   (i)   Explain about queuing characteristics.
   (j)   Write applications of queuing theory.

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

UNIT – I

2   State and prove Baye's theorem
OR
3   Find the mean and standard deviation of a normal distribution in which 7% of items are under 35 and 89% are under 63.

UNIT – II

4   A sample of 64 students has a mean weight of 70 k.gms. Can this be regarded as a sample from a population with mean weight 65 k gms and standard deviation 25 k.gm with level of significance 0.05?
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. Use chi-square distribution test with level of significance 0.05.

Soft drinks	Clerks	Teachers	Officers
Pepsi	10	25	65
Thumps UP	15	30	65
Fanta	50	60	30

UNIT – III

6   How to construct an X-Bar and R control chart.
OR
7   A drilling machine bores with a mean diameter of 0.5230 cm and S.D of 0.0032 cm. Calculate the 2-sigma and 3-sigma upper and lower control limits for means of sample 4 and prepare a control chart.

UNIT – IV

8   Suppose the National Transportation Safety Board (NTSB) wants to examine the safety of compact cars, midsize cars and full-size cars. It collects a sample of three for each of the treatments (cars types). Using the hypothetical data provided below, test whether the mean pressure applied to the driver's head during a crash test is equal for each types of car. Use $\alpha = 5\%$.
Table ANOVA.

	Compact cars	Midsize cars	Full-size cars
	643	469	484
	655	427	456
	702	525	402
X(mean)	666.67	473.67	447.33
S	31.18	49.17	41.68

OR
9   Explain two way classification in detail.

UNIT – V

10   Explain M/M/1: (infinity/FCFS) queuing model.
OR
11   Explain about queuing characteristics and discuss queuing theory.
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