Hall Ticket Number:

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VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E (IT : CBCS) III-Semester Backlog (Old) Examinations, December 2018

Probability & Statistics

Time: 3 hours Max. Marks: 70

*Note: Answer ALL questions in **Part-A** and any **FIVE** questions from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. In how many different ways can one make a first, second, third, or fourth choice among 12 firms leasing construction equipment?
2. Define conditional probability.
3. Check whether the following can serve as probability distributions h (x) = x ^2/25 for x=0,1,2,3,4.
4. Define Poisson distribution with two examples.
5. Define Statistic and parameter.
6. Write a note on two types of errors.
7. The mean weight loss of n=16 grinding balls after a certain length of time in mill slurry is 3.42 grams with a s.d. of 0.68 gram. Construct a 99% confidence interval for the true mean weight loss of such grinding balls under the stated conditions.
8. State Chi-square test.
9. Write a note on Scatter diagram.
10. Write the normal equations by Principle of least squares of a straight line.

Part-B (5 × 10 = 50 Marks)
(All sub-questions carry equal marks)

11. a) State and prove multiplication law of probability for two events.

    b) A pair of dice is tossed twice. Find the probability of scoring 7 points (a) once, (b) at least once (c) twice.

12. a) The probability density function of a variate X is

X : 0	1	2	3	4	5	6
P(X) : k	3k	5k	7k	9k	11k	13k

    (i) Find $P(X < 4), P(X \geq 5), P(3 < X \leq 6)$

    (ii) What will be the minimum value of k so that $P(X \leq 2) > 0.3$

    b) If a bank receives on the average α=6 wrong cheques per day, what are the probabilities that will receive

    (i) four wrong cheques

    (ii) 10 wrong cheques over any two consecutive Days?

13. a) Explain the test of Significance for difference of means.

    b) The means of two single large samples of 1000 and 2000 are 67.5 inches and 68 inches respectively. Can the samples be regarded as drawn from the same population of s.d 2.5 inches? (test at 5% LOS value 3).

Contd... 2

14. a) Explain the t-test along with assumptions

    b) In experiments on pea breeding, the following frequencies of seeds were obtained:

Round &yellow	Wrinkled & yellow	Round & green	Wrinkled & green
315	101	108	32

Theory predicts that the frequencies should be in proportions 9:3:3:1. Examine the correspondence between theory and experiment. (Test at 5% LOS value as 7.82).

15. a) By the method of least squares, find the straight line that best fits the following data:

x :	1	2	3	4	5
y :	14	27	40	55	68

    b) Compute the regression line of x on y and estimate y when $x = 67$

x:	49	54	51	52	47	50	52	53	49
y:	52	55	50	53	50	54	54	53	45.

16. a) State and prove the addition theorem of Probability for two events.

    b) If X is a normal random variable with mean 30 and standard deviation 5, find the probabilities that (i) $26 \leq X \leq 40$, (ii) $X \geq 45$.(Table values are to be assumed as 0.2881, 0.4772 and 0.4986)

17. Answer any ***two*** of the following:

    a) Explain the test of significance for Single Mean

    b) Explain the test for variances.

    c) Define Regression and derive the regression line of Y on X.