Code No.: **10M10/20M10** | **MR11 & MR12**

# MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
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**II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018**

Subject: **Probability and Statistics**

Branch: **IT**

**Time: 3 hours** **Max. Marks: 75**

**Answer Any 5 questions of the following** **5 x 15M=75 M**

1. a) Three students A, B and. C are in a running race. A and B have the same probability of winning and each is twice as likely to win as C. Find the Probability that B or C wins.
   b) If A and B are events with P(A) = 1/3 P(B)= 1/4 and P(AUB) = 1/2 find i) P(A/B) ii) P(A/ $\bar{B}$)

2. a) Let X denote the number of heads in a single loss of 4 fair coins. Determine i) P(X<2) ii) P (1< x<= 3) from the following

| X | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| P(X=x) | 1/16 | 1/16 | 1/16 | 1/16 | 1/16 |

   b) In a normal distribution 7% of the items are under 35 and 89% are under 63. Find the mean and standard deviation of the distribution.

3. a) A random sample of 400 items is found to have mean 82 and S.D of 18. Find the maximum error of estimation error of estimation at 95% confidence interval. Find the confidence limits for the mean if $\bar{x} = 82$.
   b) A random sample of size 100 is taken from an infinite population having the mean t = 76 and the variance is 256. What is the probability that x will be between 75 and 78. [5 M +10M]

4. a) In a city, 20% of a random sample of 900 school boys had a certain slight physical defect. In another city B, 18.5% of a random sample of 1600 school boys had the same defect. Is the difference between the proportions significant? [7M]
   b) A Sample of 10 measurements of the diameter of a sphere gave a mean of 12 cm and s.d 0.15 cm. find 95% confidence limits for the actual diameter. [8M]

5. By the method Last square a parabola of the form $y= a + bx + cx^2$ for the following data

| X: | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Y: | 3.07 | 12.85 | 31.47 | 57.38 | 91.259 |

6. Psychological tests of intelligence and engineering ability were applied to 10 students. Here is a record of ungrouped data showing intelligence ratio (I.R) and engineering ration (E.R). Caliculate the co-efficient of correlation. [15 M]

| Student | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| I.R | 105 | 104 | 102 | 101 | 100 | 99 | 98 | 96 | 93 | 92 |
| E.R | 101 | 103 | 100 | 98 | 95 | 96 | 104 | 92 | 97 | 94 |

7. A T.V. Repairman finds that the time spent on his jobs has an exponential distribution with mean 30 minutes. If he repairs sets in the order in which they came in, and if the arrival of sets is approximately Poisson with an average of 10 per 8-hour day, what is the repairman's expected idle team each day? How many jobs are ahead of the average set just brought in? [15M]

8. Define stochastic process and Markov chains with examples. Give the classifications of Markov chains and states. [15 M]