K.J. SOMAIYA INSTITUTE OF MANAGEMENT STUDIES & RESEARCH
MMM – I Sem.(2018-21 Batch)
Sub: Quantitative Methods in Business
(End Term Exam.)

Max. Marks: 50   **Time: 3 Hrs.**   **22/11/2018**

Instructions: Attempt any 5 questions. All questions carry 10 marks each.

1) Mitra Insurance is a nationally recognised insurance company in India. The company provides insurance policies that cover Physicians visit, Hospitalisation and Outpatient treatment. A compilation of region wise claims is as follows:

	West	South	North	East
Hospitalisation	75	128	29	52
Physicians visit	233	514	104	251
Outpatient Visit	100	326	65	99

i)   What is the probability that a policy is from the West or South?
ii)   What is the probability that the claim is for Hospitalization and is from the West?
iii)   What is the probability that the claim is for Hospitalization or OPD?
iv)   What is the probability that the claim is for Physicians visit, given that it is from the East?

2) An insurance company sells policies to 6 men of identical age and good health. According to the data, the probability that a man of this particular age will be alive after 30 years is 0.70
Find the probability that 30 years hence
i)   At least two men are alive
ii)   At least 3 men will be alive
iii)   None of the 6 are alive
iv)   At most one is alive

3) List any 3 unique properties of the Normal distribution. Give examples of variables which follow a Normal distribution
What is the probability that a standard normal variable (z)

i)   Lies between 1.5 and 2.5
ii)   Lies between -1 and 2
iii)   Lies between -1.75 and -2.5
iv)   Is greater than -1.5

4) Explain the difference between mutually exclusive events and independent events with examples. If A and B are 2 independent events and P(A) =0.5 and P(B) = 0.5, then what is the P(A and B)

ii) The weight of students in a class is normally distributed with a mean of 60 kg with a standard deviation of 5 kg. What is the probability that the weight of a student chosen at random is between 50 ft and 60 kgs?

5) A market research agency is trying to determine the average income of the target audience. A sample of100 people has an average income of Rs 3.0 lakhs per annum, with a standard deviation of Rs 20,000/

   Develop a 95 % confidence interval estimate for the average income of the total population

6) i) What is meant by Standard Error of the mean? Explain with an example
   ii) What is a "probability distribution"? Give an example
   iii) What is the difference between Arithmetic Mean and Geometric mean? Explain
   iv) What is meant by Coefficient of Variation? What does it indicate?

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