

**K.J. Somaiya Institute of Management Studies & Research**  
**MIM – I Sem.(2017-20 Batch)**  
Sub: Quantitative Techniques in Management  
**(End Term Exam)**

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**23/11/2017**

**Max. Marks: 50**

**Time: 3 Hours**

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

1) An investment analyst collects data on stocks and notes whether or not dividends were paid over a period of time. Data are as under:

	Price increase	No price increase	Total
Dividends paid	34	78	112
No dividends paid	85	49	134
Total	119	127	246

- i) If a stock is randomly selected, what is the probability that it both increased and paid dividends?
- ii) What is the probability that a randomly selected stock neither paid dividends nor increased in price?
- iii) Given a stock has not paid dividends, what is the probability that it increased in price?
- iv) If a stock is selected at random, what is the probability that it paid dividends?

2) An insurance company sells policies to 5 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 0.66

Find the probability that 30 years hence

- i) At least one man is alive
- ii) At least 3 men will be alive
- iii) None of the 5 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 and 2
- ii) Lies between -1 and 2
- iii) Lies between -1 and -2
- 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  $P(A \text{ and } B)$

- ii) The height of students in a class is normally distributed with a mean of 5.5 ft with a standard deviation of 6 inches. What is the probability that the height of a student chosen at random is between 5 ft and 5 ft 4 inches?

- 5) i) A market research agency is trying to determine the average income of the target audience. A sample of 100 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

- ii) Explain the difference between discrete and complete variables with examples
- 6) Explain the difference between discrete and complete variables with examples
- ii) In a class of 50 students, 30 are female students. Derive a 95% confidence interval estimate for the proportion of female students in the entire population

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