

Indian Statistical Institute, Bangalore

M.S (QMS) First Year

First Semester - Statistics for Decision Making - I

Semester End Exam

Time: 3 Hours

Date: Nov 07, 2014

Note: Answer as much as you can. Maximum you can score is 50

1. The height of a particular group of students was having a Mean of 5 ft. 4.3 inches and a S.D. of 2.6 inches.

The same group of students were sent to a Health Centre for check-up. The scale which was used for checking height there was graduated in centimetres, and Lab Assistant who was measuring height there was unaware of the fact that the scale had a positive bias of +3.9 cm. (i.e., a person with a ht. of X cm. Would be read as $(X+3.9)$ cm).

What will be the Mean and S.D. of the height readings obtained in the Health Centre?
[6]

2. A milk vendor sells Sweetened Milk after boiling and processing it. He is assured of selling minimum 40 bottles in a day, while the maximum no. of bottles he can sell is 80. Milk cost him Rs. 8 per litre. He spends Rs. 4 per litre for sweetening and overheads. After bottling it in 250 ML bottles, he sells them at Rs. 8 per bottle. From his experience, he estimates the demand per day as follows:

Demand (Bottles) :	40	50	60	70	80
Prob. :	0.1	0.2	0.4	0.2	0.1

If any bottle remains unsold at the end of the day, the contents are to be thrown away.

What is the optimum stock? Also, find the Maximum Expected Profit. [10]

3. Using Random Number Table in "RMMR Tables", generate 20 random numbers. Use the same generate 20 random samples from $N(20, 3)$. [Computer usage not allowed] [12]

4. Hardness values, measured on 20 samples from a batch, are as follows:

26.9 54.7 26.4 40.3 30.7 46.6 36.2 45.7 23.9 33.2
15.1 25.4 24.4 37.9 29.5 42.8 33.5 39.6 48.2 39.2

Use Normal Probability Paper and infer whether the data follows Normal Distribution.
[12]

5. State and explain various methods of Sampling. [10]

6. What are the 7 Simple Tools of Quality? State briefly their usage. [10]