**ANDHRA UNIVERSITY**
**SCHOOL OF DISTANCE EDUCATION**
**MASTER OF BUSINESS ADMINISTRATION (Old Regulations)**
**I YEAR ASSIGNMENT QUESTION PAPER 2010-11**

# 105: Quantitative Techniques for Managerial Decisions

## Assignment No. 1:

Answer all Questions: Marks : 5 x 5 = 25

1. (a) A money lender lends Rs. 1000/- and charges an overall interest of Rs.140/-. He recovers the loan and interest by 12 monthly installments each less by Rs.10/- than the preceding one. Find the amount of the first installment.

(b) A farmer with 4000 meters of fencing wants to enclose a rectangular plot that borders on a straight river. If the farmer does not fence the side along the river, what is the largest area that can be enclosed?

2. From the past experience the Cricket Control Board knows that if the average cost of the ticket is Rs.50 per match, 50,000 spectators turn up and for an increase of Rs.5 per ticket in the average cost, they lose 5000 spectators. On an average each spectator spends Rs. 4 in buying souvenir which is also income of the Cricket Control Board. The Board has to issue 3000 complementary passes and has to spend Rs. 17,500 in making arrangements. What should be the average cost of the ticket so as to maximize profit of the Board? What should be the expected number of spectators?

3. Explain the importance of statistics in management decision making.

4. If a machine is set up correctly it produces 90 per cent good items; if it is incorrectly set up then it produces 10 percent good items. The chance of correct set of the machine is 70 percent. After a setting is made, if the first two items produced are found to be good, what is the chance that the machine was correctly set up?

5. Determine the Karl Pearson's Co-efficient of skewness from the following data.

| Weekly Wages of Workers | No. of Workers |
|---|---|
| 200 - 250 | 150 |
| 250 –300 | 275 |
| 300 – 350 | 225 |
| 350 – 400 | 150 |

# 105:Quantitative Techniques for Managerial Decisions

## Assignment No. 2:

Answer all Questions: Marks : 5 x 5 = 25

1. Screws produced by a certain machine were checked by examining the number of deficiencies in a sample of 7. The following table shows the distribution of 128 samples according to number of defective items they contain.

| No. of defectives in a sample of 7 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Total |
| No. of samples | | | | | | | | |
| 7 | 6 | 19 | 35 | 30 | 23 | 7 | 1 | 128 |

(1) Fit a Binomial Probability distribution.
(2) Find the Expected frequencies if the chance of the machine being defective as 1/2.
(3) Find the mean and standard deviation of the fitted distribution.

2. (a) Explain the need for sampling.
(b) How do you control the errors in data collection?
(c) What are the advantages of cluster sampling over stratified sampling?

3. The following table shows the data on the level of advertising and the level of sales in ten areas.

| Area | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Advertising Cost (Rs. In Lakhs) | 2.5 | 3.7 | 5.2 | 6 | 3.5 | 6 | 7.2 | 10.5 | 8.2 | 9.7 |
| Sales (Rs. In Lakhs) | 25.4 | 32.6 | 48.5 | 50 | 30 | 52.9 | 60 | 65 | 70.5 | 75 |

(a) Determine the correlation co-efficient between advertising cost and sales.
(b) Estimate the linear regression of sales on advertising and forecast the sales when the level of advertisement is 10 lakhs rupees.

4.(a) Explain the test of hypothesis.
(b) What are the applications of Chi-square test?

5.(a) Explain the test of hypothesis.
(b) Explain the role of time series analysis in business forecasting.