**Q 6501**

M.B.A. DEGREE EXAMINATION, MAY/JUNE 2006.

First Semester

BA 1601 – STATISTICS FOR MANAGEMENT

(Regulation 2005)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define probability. Explain its importance in statistics.

2. Define mutually exclusive events.

3. What is sampling? Why is sampling necessary?

4. Define pilot survey.

5. Write a note on the meaning and utility of standard error in sampling studies.

6. What do you mean by *t*–test? What are its applications?

7. Define Rank Sum test.

8. Define 'H' Test.

9. What do you mean by estimation?

10. What do you understand by secular trend?

PART B — (5 × 16 = 80 marks)

11. The following table shows the distribution of goals in a football match :

| No. of goals | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| No. of matches | 95 | 158 | 108 | 63 | 40 | 9 | 5 | 2 |

(i) Fit a Poisson distribution (10)

(ii) Test the goodness of fit (6)

(Table value at 5% = 9.488)

12. (a) How would you determine the size of a sample? What factors are to be taken into consideration for determining the size of a sample?

Or

(b) In order to compare the intelligence quotient of students, two schools were selected. A random sample of 90 students was selected from each school. At school A, the mean I.Q is 109 and the standard deviation is 11. At school B, the mean I. Q is 98 and standard deviation is 9.

Construct 95 percent confidence for the difference between mean I.Q of two schools.

13. (a) Two random samples give the following information regarding weights in pound s of a group of boys and girls :

| | Boys | Girls |
|---|---|---|
| Size of sample | 300 | 625 |
| Mean | 145 | 150 |
| Standard Deviation | 3 | 2.5 |

Do you think the two populations differ? You may assume that the populations are normal.

Or

(b) The weight gains in pounds under two systems of feeding of calves of 10 pairs of identical twins is given below :

| Twin Pair : | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Weights gains under : | | | | | | | | | | |
| System A | 43 | 39 | 39 | 42 | 46 | 43 | 38 | 44 | 51 | 43 |
| System B | 37 | 35 | 34 | 41 | 39 | 37 | 35 | 40 | 48 | 36 |

Discuss whether the difference between the two systems of feeding is significant. (Table value at 5% = 1.833)

14. (a) Calculate the coefficient of rank correlation from the following data :

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X | 48 | 34 | 40 | 12 | 16 | 16 | 66 | 25 | 16 | 57 |
| Y | 15 | 15 | 24 | 8 | 13 | 6 | 20 | 9 | 9 | 15 |

Or

(b) Use the sign test to see if there is a difference between the number of days until collection of an account receivable before and after a new collection policy. Use the 0.05 significance level.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Before | 30 | 28 | 34 | 35 | 40 | 42 | 33 | 38 | 34 | 45 | 28 | 27 | 25 | 41 | 36 |
| After | 32 | 29 | 33 | 32 | 37 | 43 | 40 | 41 | 37 | 44 | 27 | 33 | 30 | 38 | 36 |

15. (a) From the following data, calculate the coefficient of correlation between X and Y Series :

| | | |
|---|---|---|
| Mean of X series | = | 75 |
| Assumed mean of X series | = | 70 |
| Mean of Y series | = | 126 |
| Assumed mean of Y series | = | 113 |
| Standard deviation of X series | = | 13.5 |
| Standard deviation of Y series | = | 15.8 |
| Sum of products of corresponding deviations of X and Y series | = | 2186 |
| No. of pairs | = | 8 |

Or

(b) From the following data, find the equations of regression lines :

| | Marks in Mathematics | Marks in English |
|---|---|---|
| Mean | 62.5 | 39 |
| Standard Deviation | 9.5 | 10 |

Coefficient of correlation between marks in mathematics and English = 0.60.

(i) Estimate the marks in English when marks in Maths are 70

(ii) Estimate the marks in Maths corresponding to 54 marks in English.

---