**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI –600 086**
**(For candidates admitted from the academic year 2010 - 11)**

**M. Sc. DEGREE EXAMINATION, APRIL 2011**
**BIOINFORMATICS**
**SECOND SEMESTER**

COURSE   :   CORE
PAPER    :   BIOSTATISTICS
TIME     :   3 HOURS                                          MAX. MARKS:   100

**ANSWER ANY TEN OF THE FOLLOWING QUESTIONS            (10 x10=100)**

1. A) Draw a histogram and frequency curve  based on the following data

| Weight in Kgs | 41-45 | 46-50 | 51-56 | 56-60 | 61-65 | 66-70 | 71-75 | 76-80 |
|---|---|---|---|---|---|---|---|---|
| Number of men | 4 | 5 | 9 | 6 | 11 | 5 | 7 | 3 |

B) Explain the term classification of statistical data. What are the types of classification generally followed in statistical data?

2. Find the mean and median for the following data.

| Class | 1-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 3 | 7 | 13 | 17 | 12 | 10 | 8 | 8 | 6 | 6 |

3. The yield per hectare of two varieties of wheat from twelve plots is given below.

| A | 74 | 75 | 78 | 72 | 78 | 77 | 79 | 81 | 79 | 76 | 72 | 71 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | 87 | 84 | 80 | 88 | 89 | 85 | 86 | 82 | 82 | 79 | 86 | 80 |

Identify the more consistent variety by using coefficient of variation.

4. Find the Person's coefficient of skewness for the following frequency distribution.

| Height of plant | 0-20 | 20-40 | 40-60 | 60-80 | 80-100 | 100-120 |
|---|---|---|---|---|---|---|
| Number of plants | 20 | 50 | 59 | 30 | 25 | 16 |

5. The following are the ranks obtained by ten students in statistics and mathematics. To what extent is the knowledge of students in the two subjects correlated?

| Statistics | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Maths | 1 | 4 | 2 | 5 | 3 | 9 | 7 | 10 | 6 | 8 |

6. A) State the addition and multiplication theorems on probability.

   B) The incidence of sea sickness for passengers travelling by ships is such that every passenger has 20% chance of suffering from it. What is the probability that out of a team of 6 passengers 4 or more will suffer from sickness?

7. A) In the town of Cherapunji, if on the average rain falls on ten days in every thirty days, find the probability that rain falls on atleast three days of a given week.

   B) Explain the following terms with an illustration
   a) Mutually exclusive events
   b) Mutually exclusive and exhaustive events

8. A) Random samples drawn from two places gave the following data relating to the height of adult males.

   | Mean height | 68.50 | 68.58 |
   |---|---|---|
   | SD of height | 2.5 | 3.0 |
   | Sample size | 1200 | 1500 |

   Test at 5% level that the mean height is the same for adults in the two places (Table value of z at 5% level for two tailed test is 1.96).

   B) Differentiate between type I and type II error.

9. A) Write a short note on the Semi Markov process.
   B) Give the general procedure for testing any hypothesis in large sample tests.

10. Determine if the following figures provide evidence of effectiveness of inoculations using Chi square test.

    |  | Attacked | Not Attacked |
    |---|---|---|
    | Inoculated | 20 | 300 |
    | Not inoculated | 80 | 600 |

11. Write a note on the Hardy Weinberg equilibrium.

12. Find the equation of regression lines for the following data.

    | X | 25 | 28 | 35 | 32 | 36 | 36 | 29 | 38 | 34 | 32 |
    |---|---|---|---|---|---|---|---|---|---|---|
    | y | 43 | 46 | 49 | 41 | 36 | 32 | 31 | 30 | 33 | 39 |

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