**B.Sc. RESPIRATORY THERAPY**
**FIRST YEAR**
**PAPER IV – BIO STATISTICS AND PHYSICS**
*Q.P. Code: 802604*

**Time: Three Hours**                                                        **Maximum : 100 Marks**

**Answer All questions**

### I. Elaborate on:                                                        (3 x 10 = 30)

1. Explain the process of drawing a simple random sample with an example.
2. The test scores of 40 students are summarized in a frequency distribution below.
   Find the mean, variance and standard deviation for the data

   | Scores | 50-59 | 60-69 | 70-79 | 80-89 | 90-99 |
   |--------|-------|-------|-------|-------|-------|
   | Freq   | 8     | 7     | 10    | 9     | 6     |

3. Discuss factors affecting oxygenation and ventilation.

### II. Write Notes on:                                                        (8 x 5 = 40)

1. Discuss the applications of statistics in respiratory therapy.
2. Explain descriptive statistics.
3. Discuss the construction of frequency distribution.
4. The weekly salaries of 24 randomly selected employees of a company are given
   below. Construct a box plot for the dataset.

   | 310  | 320  | 450  | 460  | 470 | 500 | 520  | 540  | 580  | 600  |
   |------|------|------|------|-----|-----|------|------|------|------|
   | 650  | 700  | 710  | 840  | 870 | 900 | 1000 | 1200 | 1250 | 1300 |
   | 1400 | 1720 | 2500 | 3700 |     |     |      |      |      |      |

5. Explain normal distribution and its properties.
6. What are uses of a scatter diagram?
7. Illustrate the steps in conducting a paired –t-test.
8. Explain analysis of variance with relevant examples.

### III. Short Answers on:                                                        (10 x 3 = 30)

1. Define statistics.
2. What is mode?
3. Define quartiles.
4. What is an alternative hypothesis?
5. Define standard error.
6. Define range.
7. What is a random sample?
8. What is correlation analysis?
9. Discuss states of matter.
10. State Charles' laws.

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