

**M.Sc. BIOTECHNOLOGY**  
**Third Semester**  
**BIOSTATISTICS, BIOINFORMATICS & IPR**  
**(MBT - 11)**

**Duration: 3Hrs.**

**Full Marks: 70**

Part-A (Objective) =20  
Part-B (Descriptive) =50

**(PART-B: Descriptive)**

**Duration: 2 hrs. 40 mins.**

**Marks: 50**

**Answer any *five* of the following questions:**

1. (a) Heights in a class of 9 students are given below: (5+5=10)  
30 32 26 35 29 27 33 25 24  
Calculate the value of coefficient of variation.  
(b) Weights in Kg of 15 students are given below-  
68 58 66 70 65 64 65 48 56 66 65 52 46 58 68  
Calculate the arithmetic mean and the mode.
2. (a) State the addition rule of probability. What will be the probability of getting a 3 or a 6 in throwing a dice?  
(b) Define correlation. What is positive correlation? (5+5=10)
3. What are the tools of bioinformatics? Explain each briefly with example. (2+8=10)
4. What is bioinformatics? Write the application and scope of bioinformatics. (10)
5. Write the definition of database with 3 examples. What is biological database, give its classification. (5+5=10)

6. Write short notes on: (any two)

(5+5=10)

(a) GI            (b) Copyright            (c) Trademark

7. Write a brief account on WTO.

(10)

8. Discuss the Basmati rice patent case and India's stand in it.

(10)

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**Duration: 20 minutes**

**Marks – 20**

**(PART A- Objective Type)**

**I. Choose the correct answer:**

**1×10=10**

1. The most commonly used measure of central tendency is:
  - i) standard deviation.
  - ii) arithmetic mean.
  - iii) correlation coefficient.
2. Probability of an event may be:
  - i) 0.5
  - ii) 3.2
  - iii) -0.8
3. Standard deviation is:
  - i) always negative.
  - ii) may be positive or negative.
  - iii) always positive.
4. Correlation between two variables x and y is:
  - i) always positive.
  - ii) always negative.
  - iii) either positive or negative.
5. Coefficient of variation is given by:
  - i) standard deviation/mean deviation.
  - ii) mean x standard deviation.
  - iii) standard deviation /mean x100.
6. Range is:
  - i) the difference between the highest and the lowest values.
  - ii) product of the highest and lowest value.
  - iii) square of lowest value.
7. In random sampling:
  - i) all units get chance for selection.
  - ii) only the best ones get chance for selection.
  - iii) some units are ignored.

8. Secondary data are obtained:
- i) from past records.
  - ii) by direct interview.
  - iii) from future studies.
9. In calculating mean deviation:
- i) modulus values of the deviations are considered.
  - ii) deviations are considered with their signs.
  - iii) deviations are taken from the median.
10. Two events are mutually exclusive if:
- i) one occurring the other cannot occur.
  - ii) both events occur simultaneously.
  - iii) the two events are independent.

**II. Match the following:**

**1×10=10**

- |                       |                             |
|-----------------------|-----------------------------|
| a) Darjeeling tea     | i) NCBI                     |
| b) KFC chicken        | ii) patent                  |
| c) Five point someone | iii) trademark              |
| d) pcr machine        | iv) traditional knowledge   |
| e) Logo of Nike       | v) copyright                |
| f) Turmeric           | vi) computer program        |
| g) Database           | vii) Plant breeders' rights |
| h) IPR                | ix) trade secret            |
| I) Rasmol             | x) WIPO                     |
| j) Golden rice        | xi) GI                      |

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