B. Sc. Biotechnology (Repeat)

SECOND SEMESTER

BIOSTATISTICS &BIOINSTRUMENTATION

BBT -204

Duration: 3 Hrs.   Marks: 70

$$\left\{ \begin{array}{l} \text{PART : A (OBJECTIVE) } = 20 \\ \text{PART : B (DESCRIPTIVE) } = 50 \end{array} \right\}$$

[PART-B : Descriptive]

Duration: 2 Hrs. 40 Mins.   Marks: 50

[Answer question no. One (1) & any four (4) from the rest]

1. Calculate Mean and Median from the following data.   5+5=10

Marks	0-10	10-20	20-30	30-40	40-50
No of Students	10	20	25	30	15

2. (a) Give classical definition of probability.   2+8=10
    (b) If A and B are events with $P(A) = \frac{1}{3}$,P (B) $= \frac{1}{4}$ and $P(A \cup B) = \frac{1}{2}$

    find
    (i) $P(A/B)$,
    (ii) $P(B/A)$,
    (iii) $P(A \cap B')$,
    (iv) $P(A/B/)$

3. (a) Distinguish between positive, negative and zero correlation.   4+6=10

    (b) Following table depicts the results that were worked out from scores
    in statistics and mathematics in a certain examination.

	Scores in statistics(X)	Scores in mathematics(Y)
Mean	39.5	47.5
SD	10.8	17.8

    Karl Pearson's correlation coefficient between X and Y is 0.42.
    Find the regression lines X on Y and Y on X.

4. (A)Prove that $P(A \cup B) = P(A) + P (B) - P (A \cap B)$ 5+5=10
    (B) A number is selected at random from the numbers 1 to 30. What is
    the probability that it is divisible by either 3 or 7.

5. Write short notes on the following: 2×5=10
     i.   Instruments,
     ii. Lens of microscope,
     iii. Isotope,
     iv. Autoclave,
     v.   Colorimeter.

6. What is microscope? Give a brief historical background on the discovery   3+7=10
   of microscope and its role in the biologicalstudies.

7. What is gel electrophoresis technology? Explain the principle on which   4+6=10
   this technology is established, along with its instrumentation.

8. Define autoradiography. Give a brief account of autoradiography with   3+7=10
   its theoretical basis.

==***==

B. Sc. Biotechnology (Repeat)

SECOND SEMESTER

BIOSTATISTICS &BIOINSTRUMENTATION

BBT -204

[PART-A : Objective]

Choose the correct answer from the following: 1X20=20

1. Algebraic sum of deviations of a set of values taken from their mean is always
    a) zero
    b) one
    c) average
    d) median

2. Different methods give different average which are known as the
    a)   Measures of central tendency
    b)   Statistics
    c)   Measures of dispersion
    d)   None of the above

3. Calculated ^nC_r if n=10 and r=2
    a) 45
    b) 46
    c) 40
    d) 42

4. If A and B are two mutually exclusive event then $P(A \cap B)$ is
    a) 1
    b) φ
    c) 0
    d) -1

5. Which of the following is non-probability sampling?
    a) Purposive sampling
    b) Random sampling
    c) Cluster sampling
    d) Stratified sampling

6. Coefficient of quartile deviation is calculated by the formula
    a) $\frac{(Q_3 + Q_1)}{4}$
    b) $\frac{(Q_3 + Q_1)}{2}$
    c) $\frac{(Q_3 - Q_1)}{(Q_3 + Q_1)}$
    d) None of the above

7. Which of the following term best describes data what were originally collected at an earlier time by a different person for a different purpose?
    a) primary
    b) Secondary
    c) Experimental
    d) Field notes

8. What is the chance that a leap year selected at random will contain 53 Sundays?
    a. 1/7
    b. 2/7
    c. 3/7
    d. 4/7

9. When one regression coefficient is negative then the other would be
    a. Negative
    b. Positive
    c. Zero
    d. None of the above

10. If the values of the variables are arranged in ascending order of magnitude the middle term is
    a. Mean
    b. Median
    c. Mode
    d. Quartile

11. The pore size of HEPA filter used in the Laminar Air Flowis 2.22 μ.
    a. True
    b. False

12. A pH meter is an instrument measuring the electrochemical characteristics of a solution, i.e. H^+ ion or OH^- ion concentration of the solution.
    a. True
    b. False

13. In Fixed-angle Rotors, the tubes are placed in the holes on a fixed angle may be between 14º – 40º to the rotational axis.

☐ a. True
    b. False

14. PCR is an instrument, which is used for DNA amplification.

☐ a. True
    b. False

15. The electron and neutron constitute the nucleus of a radioisotope.

☐ a. True
    b. False

16. Glass lenses are being used in electron microscope successfully.

☐ a. True
    b. False

17. Visible light spectrum ranges from 400 – 1200 millmicron (mμ).

☐ a. True
    b. False

18. The source of solar energy is the Radioactive Helium decay and emission of alpha (α) radiation.

☐ a. True
    b. False

19. Centrifugation technology is based on the behavior of particles of different densities under application of centrifugal field.

☐ a. True
    b. False

20. Autoclaves are used for sterilization of the explant materials in aseptic tissue culture studies.

☐ a. True
    b. False

==***==

UNIVERSITY OF SCIENCE & TECHNOLOGY, MEGHALAYA

Question Paper CUM Answer Sheet

[PART (A) : OBJECTIVE]

Serial no. of the main Answer sheet

Course : ....

Semester : .... Roll No : ....

Enrollment No : .... Course code : ....

Course Title : ....

Session : .... 2016-17 Date : ....

****

Instructions / Guidelines

➢ The paper contains twenty (20) / ten (10) questions.

➢ The student shall write the answer in the box where it is provided.

➢ The student shall not overwrite / erase any answer and no mark shall be given for such act.

➢ Hand over the question paper cum answer sheet (Objective) within the allotted time (20 minutes / 10 minutes) to the invigilator.

Full Marks	Marks Obtained	Remarks
20		

----------------------------- ----------------------------- -----------------------------
Scrutinizer's Signature   Examiner's Signature   Invigilator's Signature