

DURATION -2 hrs. 30 mins

MARKS- 75

1. All questions are compulsory.
2. Figures at the right indicate marks.
3. Draw diagrams wherever necessary.

Q. I Answer the following. (Any 2)

20 marks

1. Describe chemical and physical hazards in laboratory.
2. Describe good laboratory practices and personal hygiene in laboratory.
3. Explain mean, median, and mode each with an example; how do you find the median of the data and state the significance of median.
4. Calculate the arithmetic mean of following data by direct and shortcut method.

Class intervals (Length in cm)	10-20	20-30	30-40	40-50	50-60
Frequency (No. of fish)	10	16	35	18	5

Q. II Answer the following. (Any 2)

20 marks

1. What are green genes? State one application of it and give an application of recombinant DNA in medicine.
2. Describe SCID and its treatment with suitable diagram.
3. Explain technique of DNA fingerprinting.
4. Give a schematic representation of ex vivo and in vivo gene therapy.

Q. III Answer the following. (Any 2)

20 marks

1. Describe the components of a compound microscope giving function.
2. What is PH? Give the principle and application of PH meter.
3. Explain the principle and application of Polyacrylamide gel electrophoresis.
4. Describe principle and uses of colorimeter.

Q. IV Write a note on – (Any 3)

15 marks

1. Waste disposal.
2. Random sampling and its significance.
3. Ethical issue of transgenesis.
4. Application of biotechnology in the field of medicine/ fishery/ animal husbandry/industry.
5. Principle and application of colorimeter and centrifuge.
6. Enlist five applications of DNA fingerprinting.