PG EVEN SEMESTER EXAMINATION, 2023

LIFE SCIENCE & BIOINFORMATICS

2nd Semester (NEP)

Course No. : LS - 553

(Techniques in Biology)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

(Answer all questions)

1. Outline the instrumentation and working principles of fluorescent microscope. Add a note on the applications of fluorescence microscope. [5+9=14]

OR

2. Compare and contrast between SEM and TEM. Briefly describe the freeze-fracture technique. [8+6=14]

3. Define the term chromatography. Explain the difference between gas and liquid chromatography. Discuss the principle, instrumentation and applications of HPLC. [2+2+10=14]

OR

4. Write descriptive notes on the following: [2x7=14]

   (a) FT-IR spectroscopy

   (b) Nuclear magnetic resonance (NMR)

5. Answer the following questions: [2x7=14]

   (a) Describe the principles and applications of Western blotting

   (b) Write note on SDS-PAGE

OR

6. Write notes on the following: [2x7=14]

   (a) PCR

   (b) RFLP

7. Write an assay on the sandwich model of ELISA. Discuss the major advantages and disadvantages of different forms of ELISA. [12+2=14]

OR

8. Answer the following: [8+6=14]

   (a) Describe the principle of RIA and mention the methods of radio-labeling of bio-molecules.

   (b) Single radial immuno-diffusion [SRID]

9. Answer the following: [10+4=14]

   (a) What do you mean by sample and sampling? Differentiate between probability and non-probability sampling. Describe different types

of non-probability sampling methods with examples.

   (b) Snowball sampling

OR

10. Using a frequency distribution table, calculate the mean, median, mode, variance, standard deviation and co-efficient of variation of the following data set. [4+2+2+1+2+2+1=14]

38	51	53	51	38	51	53	52	40
52	54	42	52	44	53	56	48	45
46	48	46	44	53	48	48	48	40
52	56	50	42	44	42	50	54	44

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