BCHEM300 **Student's Copy**

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(NEP—2020)

(5th Semester)

BIOCHEMISTRY (MAJOR1)

(Biochemical Techniques)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(*Marks* : 10)

Tick (✓) the correct answer in the brackets provided : 1×10=10

1. Three unknown solutions are given with pH values of 6, 8 and 9·5 respectively. Which solution will contain the highest concentration of hydroxyl ion?

(a) Solution of pH 6·0 ( )

(b) Solution of pH 8·0 ( )

(c) Solution of pH 9·5 ( )

(d) Cannot be predicted ( )

2. What kind of change is taking place when UV and visible rays interact with matter?

(a) Change of nuclear configuration ( )

(b) Change of electron distribution ( )

(c) Change of configuration ( )

(d) Change in orientation ( )

3. The basic components of colorimeter are

(a) radiation source-flame-monochromator-detector-readout device ( )

(b) flame-monochromator-detector-readout device ( )

(c) radiation source-monochromator-sample holder-detector-readout device ( )

(d) radiation source-sample holder-monochromator-detector-readout device ( )

4. Chromatography is a physical method that is used to separate and analyze

(a) simple mixtures ( )

(b) complex mixtures ( )

(c) viscous mixtures ( )

(d) metals ( )

5. In which of the following types of chromatography, the mobile phase moves through the stationary phase by the influence of capillary action?

(a) Column chromatography ( )

(b) High pressure liquid chromatography ( )

(c) Gas chromatography ( )

(d) Paper chromatography ( )

6. Which of the following techniques is used to analyze molecular weight of protein?

(a) Agarose gel electrophoresis ( )

(b) SDS-PAGE ( )

(c) Capillary electrophoresis ( )

(d) Pulsed-field gel electrophoresis ( )

7. In agarose gel electrophoresis, higher agarose concentration leads to

(a) slower migration of DNA fragments ( )

(b) faster migration of DNA fragments ( )

(c) No effect on migration ( )

(d) Unpredictable migration ( )

8. The type of ELISA normally used for hapten detection is

(a) sandwich ELISA ( )

(b) indirect ELISA ( )

(c) competitive ELISA ( )

(d) capture ELISA ( )

9. Total magnification is obtained by

(a) magnifying power of both the objective lens and eyepiece ( )

(b) magnifying power of both the objective lenses ( )

(c) magnifying power of eyepiece ( )

(d) magnifying power of condenser lens ( )

10. Which type of microscope would be the best choice for viewing surface structure of a cell?

(a) Transmission electron microscope ( )

(b) Scanning electron microscope ( )

(c) Brightfield microscope ( )

(d) Phase-contrast microscope ( )

(SECTION : B—SHORT ANSWERS)

(*Marks* : 25)

Write short notes on *five* of the following, taking at least *one* from each Unit : 5×5=25

UNIT—I

1. Principle of pH meter

2. Components of UV-visible spectrophotometer

UNIT—II

3. Two-dimensional chromatography

4. Relative centrifugal field

UNIT—III

5. At least three factors affecting electrophoresis

6. Principle of radioimmunoassay (RIA)

UNIT—IV

7. Phase-shift microscopy

8. Difference between darkfield microscopy and brightfield microscopy

(SECTION : C—DESCRIPTIVE)

(*Marks* : 40)

Answer *four* questions, taking *one* from each Unit : 10×4=40

UNIT—I

1. Write the principle and instrumentation of colorimeter. 10

2. Why is some electromagnetic radiation called ionizing radiation? List the different types of ionizing radiation. Write their properties. 2+8=10

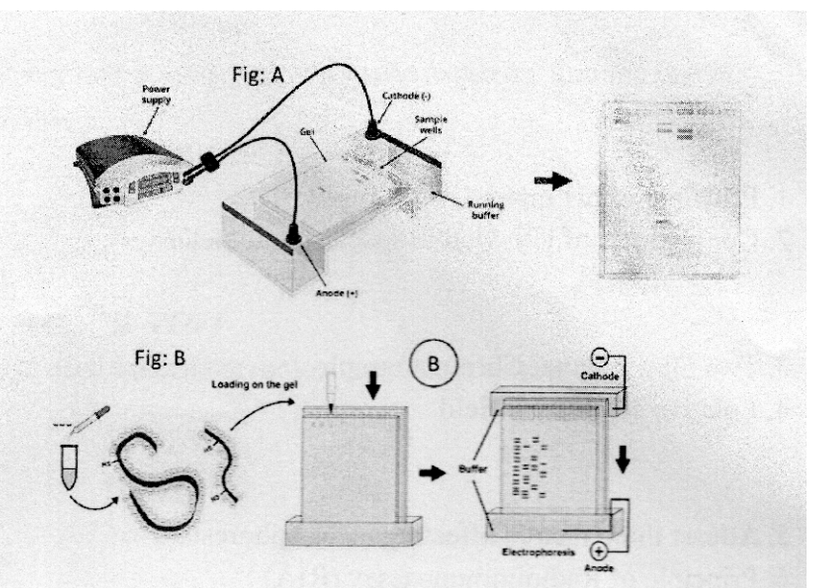
UNIT—II

3. Differentiate between eluent and eluate. Write a note on the principle and applications of thin-layer chromatography. 2+6+2=10

4. Write the principle of density gradient centrifugation. Explain the two types of density gradient centrifugation. 4+3+3=10

UNIT—III

5. Write the concept about figures *A* and *B*. 5+5=10



6. What type of ELISA will you employ to quantify the antigen content of the sample? Write the procedure. 2+8=10

UNIT—IV

7. Describe the principle, parts and working of fluorescent microscope. 10

8. Describe in detail about the SEM with its principle, methods and uses. 10

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