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2 SEM TDC BIOTCH G 1

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(May)

BIOTECHNOLOGY

(General)

Course : 201

(Biophysics and Analytical Technique)

Full Marks : 48

Pass Marks : 19

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

1. Choose the correct answer : 1×4=4

(a) Atomic structure of a macromolecule in solution can be determined by

(i) electrophoresis

(ii) X-ray crystallography

(iii) IR-spectroscopy

(iv) gel filtration

P13—200/1037

(Turn Over)

(3)

- (b) In photosynthesis, photolysis of water take place at
- (i) photosystem I
 - (ii) photosystem II
 - (iii) thylakoid membrane
 - (iv) None of the above
- (c) The basic principle of NMR is the
- (i) nuclear spin giving rise to nuclear spin resonance
 - (ii) electronic spin giving rise to electronic spin resonance
 - (iii) electronic spin giving rise to nuclear spin resonance
 - (iv) nuclear spin giving rise to electronic spin resonance
- (d) Cation exchange resin in ion exchange chromatography bears
- (i) negative charge
 - (ii) positive charge
 - (iii) both the charge
 - (iv) no charge

2. Write on the following :

- (a) Gel filtration 2
- (b) Lambert-Beer law 3
- (c) Redox potential 3
- (d) Photoreceptors 3

3. Describe gel electrophoresis and mention the application of this technique. 7+4

Or

What is the principle of partition chromatography? Describe a method using this principle of chromatography for separation of compounds. 4+7

4. Discuss Calvin cycle mentioning the involvement of intermediates. How many ATP and NADPH are consumed in converting CO_2 to the level of a hexose? 7+4

Or

Rhodopsin is the photoreceptor protein present in eyes. How light stimulate this photoreceptor? Explain. 11

5. Define and explain the enthalpy, entropy and free energy of a system. The change in free energy (ΔG) of a reaction is an important criterion of whether the reaction can occur spontaneously. Explain.

Or

Describe the basic components of a UV-Vis spectrophotometer and mention the application of this instrument.
