2013

M.Sc.

1st Semester Examination

BIOCHEMISTRY

PAPER—BIC-102

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any *five* from the following questions :   5×2

   (a) Define 'chromophore' and 'auxochrome'.

   (b) What is standard free energy change ?

   (c) What is Phosphoryl Group Transfer Potential ?

   (d) What do you mean by coupling reaction ?

   (e) Distinguish between radioactive reaction and chemical reaction.

   (f) What are meant by C^{14} and N^{15} nuclei ?

   (g) How does atomic orbital differ from molecular orbital.

   (h) Show the relationship between density and viscosity of a liquid.

   Answer any *two* from the following questions :   5×2

2. State the law of radioactive disintegration. Derive the mathematical expression of 'Half life Period' of a radioactive element.

   1+4

3. Which type of nucleus will show NMR spectrum? Briefly discuss the shielding and deshielding effects in NMR spectra.

2+3

4. Explain redox potential. State the role of Mg^{2+} during ATP hydrolysis.

$2\frac{1}{2}+2\frac{1}{2}$

5. Briefly discuss the working principle of mass spectroscopy.

5

Answer any *two* from the following questions :   2×10

6. Define molar extinction co-efficient. How does Lambert–Beer's law is used in spectrophotometer. State the limitation of Lambert–Beer's law.

2+5+3

7. Define limit of resolution of a microscope. Why does electron microscope show greater limit of resolution? Write down the principle of Phase Contrast microscopy.

2+3+5

8. Write short notes on : (any *two*)   5+5

   (i)   Analytical ultracentrifugation.

   (ii) Flame photometer;

   (iii) HPLC;

   (iv) Fluorescence & Phosphorescence.

9. What is surfactant? Name one biological surfactant and mention its function. On which factors, does the viscosity of a protein solution depend?

3+3+4

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