Roll No : .....

Total No. of Questions : **11**] [Total No. of Printed Pages : **3**

SP–676

M.Sc. (Final) Examination, 2021

CHEMISTRY

Paper - VI (CH-502)

(Modern Techniques and Scope of Chemical Biology)

Time : 1½ Hours] [*Maximum Marks : 75*

Section–A **(Marks : 2 × 10 = 20)**

Note :– Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

(खण्ड–अ) **(अंक : 2 × 10 = 20)**

नोट :– सभी **दस** प्रश्नों के उत्तर दीजिए (उत्तर-सीमा **50** शब्द)। प्रत्येक प्रश्न **2** अंक का है।

Section–B **(Marks : 5 × 5 = 25)**

Note :– Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **5** marks.

(खण्ड–ब) **(अंक : 5 × 5 = 25)**

नोट :– सभी **पाँच** प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न में विकल्प का चयन कीजिए (उत्तर-सीमा **200** शब्द)। प्रत्येक प्रश्न **5** अंक का है।

Section–C **(Marks : 10 × 3 = 30)**

Note :– Answer any *three* questions out of five (Answer limit **500** words). Each question carries **10** marks.

(खण्ड–स) **(अंक : 10 × 3 = 30)**

नोट :– पाँच में से किन्हीं **तीन** प्रश्नों के उत्तर दीजिए (उत्तर-सीमा **500** शब्द)। प्रत्येक प्रश्न **10** अंक का है।

Section–A

2 each

1. Attempt all questions. Answers should not exceed **50** words in each question.

   (i) What are the macro and micro-nutrients which are involved in the Chemistry of life ?

   (ii) What do you understand by Bio-energy ?

   (iii) How does enzyme catalysis differ from chemical catalysis ?

   (iv) How does pH affect the activity of enzymes ?

   (v) What are crown ethers ?

   (vi) What are synthetic enzymes or synzymes ? Give *one* example.

   (vii) What is hydrophobic effect ?

   (viii) What do you understand by van der Waals Interactions ?

   (ix) Write Flory-Huggins equation for the vapour pressure of a biopolymer solution.

   (x) What do you understand by Donnan membrane equilibrium ?

Section–B

5 each

Note :– Attempt all questions. Answer should not exceed **200** words in each question.

2. What important physiological functions do sodium and potassium perform in biological systems ?

Or

What are the functions of hemoglobin and myoglobin ? What are the principal similarities in their structure ?

3. What are Cytochromes ? Give their significance.

Or

What is Covalent Catalysis ? Give *one* example.

4. Write a note on enzyme catalysed carboxylation and decarboxylation.

Or

What factors are responsible for immobilization of enzymes ? Give one example of enzyme immboilization.

5. Discuss double helical structure of DNA.

Or

Discuss the structure of a polypeptide.

6. How will you determine the size of biopolymers ? Mention any *two* methods.

Or

Explain the theory of Optical Rotatory Dispersion (ORD).

Section–C 10 each

Note :– Attempt any *three* questions out of five. Answer should not exceed **500** words in each question.

7. Describe flow of electrons and electron transport chain during functions of Photosystem I and Photosystem II.

8. Discuss Michaelis-Menten plot and its importance.

9. Explain the mechanism of reactions catalysed by $NADP^+$.

10. Discuss the role of ATP in biological systems and explain hydrolysis of ATP.

11. Write a detailed note on ion transport through cell membranes.