

PC – 493 CV-19
M.Sc. (Fourth Semester)
Examination June 2020
CHEMISTRY
Compulsory Group A,B and C (Paper-II)
Bio-Physical & Environmental Chemistry

Time : Three Hours]

[Maximum Marks : 80

[Minimum Pass Marks : 29

नोट : दोनों खण्डों से निर्देशानुसार उत्तर दीजिए। प्रश्नों के अंक उनके दाहिनी ओर अंकित हैं।

Note : Answer from both the Sections as directed. The figures in the right-hand margin indicate marks.

Section-A

1. Answer **all** the questions:-

[1x10=10]

- (a) Write the name of energy rich molecule in biological systems?
- (b) What is oxidation state of iron in Haemoglobin and myoglobin?
- (c) Write the name of symbiotic bacteria which is capable of fixing N_2 ?
- (d) Write name of metal present in chlorophyll?
- (e) Which type of bonding occur in α -helix configuration?
- (f) What is catalytic activity of Isomerases enzyme?
- (g) Write the names which affect climatic factor?
- (h) In which date and month World Environment day is celebrated in a year?
- (i) Write the names of gases which is responsible for green house effect?
- (j) Which types of gases responsible for Acid Rain?

2. Answer the following questions:-

[2x5=10]

- (a) Name the two metalloproteins which comprises Nitrogenase?
- (b) Write the functions of cell membranes?
- (c) What is electrophoresis?
- (d) How are human activities likely to change the global climate?
- (e) Which diseases occurs for arsenic pollution?

Section-B

Answer the following questions:-

[12x5=60]

Unit-I

3. Explain the structure of RNA and its functions in the biological system?

Or

Write a note on determination of chain configuration of macromolecules?

Unit-II

4. Describe thermodynamics of biopolymer solution and membrane equilibrium?

Or

Write the name of some biopolymers? Discuss the forces in-volved in biopolymer interactions?

Unit-III

5. Describe two methods of molecular weight determination of biopolymers?

Or

Write short notes on the following:-

- (i) x-ray diffraction (ii) photo.correlation spectroscopy

Unit-IV

6. Explain the role of humic substances in aquatic environment. Suggest the structure of humic acid. What are its degradation products?

Or

Discuss the following:-

- (i) Heat budget of the earth. (ii) Oil spills and oil pollutants.

Unit-V

7. Explain standard analytical methods for the determination of phosphate, Nitrate and total hardness with special reference to analysis of water?

Or

Discuss how Cement and Thermal Power Plants are responsible for degradation of today's environment with special reference to Chhattisgarh State?