

PE – 493

(534) M.Sc. CHEMISTRY (Fourth Semester)

Examination June 2022 Compulsory/Optional

Group - 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

Q 1. Answer all the question :-

1x10=10

- Name the two metalloprotein which comprises nitrogenase?
- Write the name of metal present in CHLOROPHYLL?
- Write the name of symbiotic bacteria which is capable of fixing nitrogen?
- What are the forces involved in biopolymer interactions?
- Which type of bonding occur in α -helix configurations?
- Where does iron get stored in human body?
- Find the Secondary pollutant among these:-
 - PAN
 - N_2O
 - SO_2
 - CO_2
- The coldest region of the atmosphere:-
 - TROPOSPHERE
 - THERMOSPHERE
 - STRATOSPHERE
 - MESOSPHERE
- Blue baby disease found in infants is due to excessive.....in drinking water:-
 - Phosphates
 - Sulphates
 - Carbonates
 - Nitrates.
- The Total dissolved Solids (TDS) can be reduced by the following method:-
 - Distillation
 - Reverse Osmosis
 - Ion Exchange
 - All the above.

Q 2. Answer the following question :-

2x5 = 10

- Write the functions of globular proteins?
- Write two applications of denatured proteins.
- Describe Various types of polarised light with Special Reference to Optical Rotatory Dispersion?
- Discuss Ozone Hole and its effect on human health?
- What are the main causes of industrial pollution?

Section - B

Answer the following question :-

12x5 = 60

UNIT - I

Q 3. What are proteins? Describe the classification and functions of protein?

OR

Discuss Fischer - Koshland hypothesis of enzyme action and derive Michaelis-Menten equation for enzyme Kinetics?

UNIT - II

Q 4. Through light on thermodynamics of :

- Biopolymer Solution
- Rotational Motion
- Hydration of biopolymer.

OR

What is Chain configuration of macromolecules? Calculate the average dimension for various Chain Structure?

UNIT - III

Q 5. What do you understand by Binding processes in biological system? Determine the molecular weight of biopolymers by any one method?

OR

What do you understand by optical Rotatory Dispersion (ORD) ? What is Cotton effect? How ORD is helpful in determining the isomerism?

P.T.O.

UNIT - IV

Q 6. Describe the Compositions of atmosphere? Discuss heat budget of the earth atmosphere Systems?
OR

Write Short notes on the following:-

- (i) Oil spills and Oil pollutants.
- (ii) Domestic Sewage treatment.
- (iii) Industrial Sewage treatment.
- (iv) Hydrological Cycle.

UNIT - V

Q 7. Describe in detail the principle and method of estimation of the following parameters in water
Samples:

- (i) BOD
- (ii) Phosphate.
- (iii) Fluoride.

OR

Explain how cement and Sugar Plants are Responsible for degradation of today's environment with
Special reference to Chhattisgarh State.

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