

(6 pages)

Reg. No. :

Code No. : 20622 E Sub. Code : EECH 22/
EECH 42/FECH 22

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2025.

Second/Fourth Semester

Chemistry

Elective — CHEMISTRY FOR BIOLOGICAL
SCIENCES — II

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

- The non-protein part in hemoglobin is
(a) Globin (b) Heme
(c) Both (a) and (b) (d) Chlorophyll
- The amount of oxygen consumed by microorganisms during the decomposition of organic matter in a water sample is known as
(a) EDTA (b) EAN Rule
(c) Zeolite method (d) COD
- Which is insoluble in water but soluble in Schweizer's reagent?
(a) Starch (b) Cellulose
(c) Fructose (d) Glucose
- It is soluble in water and ethanol
(a) Starch (b) Fructose
(c) Cellulose (d) DNA
- Alanine is a
(a) Non-essential amino acid
(b) Essential amino acid
(c) Neutral amino acid
(d) Both (a) and (c)
- Which helps regulate blood pressure?
(a) Carbon (b) Calcium
(c) Sodium (d) Potassium

7. It is a measure of the potential difference between an electrode and a standard hydrogen electrode
- (a) Calomel electrode (b) E°
 (c) Electroplating (d) Fuel cell
8. Buffer solution is a mixture of a
- (a) Weak acid and its conjugate base
 (b) Weak base and its conjugate acid
 (c) Strong acid and its conjugate base
 (d) Both (a) and (b)
9. It is a process where a molecule or substance absorbs light energy and transfers it to another molecule
- (a) Photo sensitization
 (b) Photo sensitizers
 (c) Chemi luminescence
 (d) Phosphorescence
10. This is an application of fluorescence process
- (a) Biological imaging
 (b) Medical diagnostics
 (c) Environmental monitoring
 (d) All the above

Page 3 Code No. : 20622 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
 Each answer should not exceed 250 words.

11. (a) How will you apply Pauling's theory to $[\text{Ni}(\text{CO})_4]$?
- Or
- (b) Explain : Zeolite Method.
12. (a) Explain : Preparation and properties of Starch.
- Or
- (b) Explain : Preparation and properties of Cellulose.
13. (a) Write the classification of proteins.
- Or
- (b) Write a note on DNA.
14. (a) Discuss on strong and weak electrolytes.
- Or
- (b) Demonstrate on fuel cells.

Page 4 Code No. : 20622 E
 [P.T.O.]

15. (a) Explain : Quantum Yield.

Or

(b) Define : Photosensitization with examples.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Demonstrate the biological role of Hemoglobin and Chlorophyll.

Or

(b) Define : Hardness of water. How will you determine the hardness of water by EDTA method?

17. (a) (i) Write the classification of Carbohydrates. (4)

(ii) Explain : Preparation and properties of fructose. (4)

Or

(b) (i) Explain : Preparation and properties of Sucrose. (4)

(ii) How will you interconnect the glucose into fructose? (4)

Page 5 Code No. : 20622 E

18. (a) Demonstrate the preparation of dipeptides using Bergmann method.

Or

(b) Describe on the essential features of Fe and Mg in biological systems.

19. (a) Account on pH determination by colorimetric method.

Or

(b) Explain : Nickel and Chrome plating.

20. (a) Explain :

(i) Stark Einstein's law of photo-chemical equivalence.

(ii) Quantum yield.

Or

(b) Explain :

(i) Fluorescence (4)

(ii) Phosphorescence. (4)

Page 6 Code No. : 20622 E