D 93903   (Pages : 3)   Name......................................

Reg. No...............................

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2020

Biochemistry

BCH 1C 01—BIOCHEMISTRY—I

(2019 Admissions)

Time : Two Hours   Maximum : 60 Marks

Section A

*Answer **all** questions.*
Each question carries 1 mark.

1. The 4-epimer of glucose is ————.

   (a) Fructose.   (b) Mannose.

   (c) Galactose.   (d) Xylose.

2. Denaturation of protein will not affect the ———— level of its structural organization.

3. Name Sangers reagent.

4. The mucopolysaccharide which is present in synovial fluid is ————.

5. Name two essential fatty acids.

6. A steroid that is seen in fungi is ————.

7. Which among the following is used to check rancidity of fat and oils :

   (a) Iodine value.   (b) Saponification value.

   (c) RM value.   (d) Acid value.

8. The base equivalence in DNA was proposed by ————.

9. Name the nitrogenous base present in the phospholipid Cephalin.

(9 × 1 = 9 marks)

Turn over

Section B

Answer at least **six** *questions.*

Each question carries 3 *marks.*

All questions can be attended.

Overall Ceiling 18.

10. Explain mutarotation.

11. List out the acidic and basic amino acids.

12. Draw the structure of sucrose, lactose and maltose.

13. Illustrate the formation of a tripeptide bond.

14. Write the chemistry behind Biuret reaction.

15. Write about any three colour reactions of amino acids.

16. Define iodine value and saponification value. Mention their significance.

17. Differentiate between a nucleoside and nucleotide with a suitable example using diagram.

$(6 \times 3 = 18 \text{ marks})$

Section C

Answer at least **three** *questions.*

Each question carries 7 *marks.*

All questions can be attended.

Overall Ceiling 21.

18. Discuss about the different bonds responsible for maintaining the structure of a protein.

19. Write about the different types of RNA.

20. What are the different types of sugar acids and how are they formed ?

21. Explain how Edman's reagent is used for protein sequencing.

22. Write about protein precipitation reactions.

$(3 \times 7 = 21 \text{ marks})$

Section D

Answer any **one** *question.*
The question carries 12 *marks.*

23. Give a detailed account of different types or polysaccharides.

24. Discuss in detail the Watson and Crick model of DNA.

$(1 \times 12 = 12$ marks)

D 93902   (Pages : 2)   Name..

Reg. No...................................

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2020

Biochemistry

BCH 1B 01—INTRODUCTION TO BIOCHEMISTRY AND CELL BIOLOGY

(2019 Admissions)

Time : Two Hours   Maximum : 60 Marks

Section A

Answer at least **eight** *questions.*
Each question carries 3 marks.
All questions can be attended.
Overall Ceiling 24.

1. What happens to a cell when put in isotonic, hypotonic and hypertonic solution ? Why ?

2. List out the biological buffers and write their significance.

3. Only lyophobic colloids can exhibit Tyndall effect. Give reason.

4. How will you prepare a 0.2 M solution of NaOH ?

5. Calculate the osmotic pressure of a 10 % solution of glucose at 20°C.

6. What are Emulsions ? Give examples.

7. Differentiate eukaryotic and prokaryotic ribosomes.

8. Write the marker enzyme of nucleus, mitochondria, Golgi body and plasma membrane.

9. What are Ionophores ? Give two examples.

10. Define molarity and mole traction.

11. Write about the different factors affecting osmotic pressure.

12. List out the components of extracellular matrix.

(8 × 3 = 24 marks)

Turn over

Section B

Answer at least **five** *questions.*
Each question carries 5 marks.
All questions can be attended.
Overall Ceiling 25.

13. Explain the safety measure to be taken while handling radioactive materials in laboratory.

14. Write about the different types of non-covalent interactions in biological system.

15. Explain Donnan-Membrane equilibrium and its biological significance.

16. What are gap junctions ? What is its significance ?

17. Write a short note on the structure and functions of nucleus and chloroplast.

18. Differentiate necrosis and apoptosis.

19. Derive Henderson-Hasselbalch equation.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
The question carries 11 *marks.*

20. Give a detailed account on transport across membrane.

21. Discuss in detail the different stages of meiosis.

(1 × 11 = 11 marks)

D 93801 (Pages : 2) Name...

Reg. No.................................

FIRST SEMESTER B.A./B.Sc. DEGREE EXAMINATION
NOVEMBER 2020

(CUCBCSS)

Biochemistry

BCH 1C 01—BIOCHEMISTRY—I

Time : Three Hours Maximum : 64 Marks

Section A

*Answer **all** questions.*
Each question carries 1 mark.

1. Name the indicator used in strong acid-strong base titration.

2. Who introduced the term pH ?

3. Write the general equation for osmotic pressure of dilute solutions and mention the terms in it.

4. Name the type of reaction involved in peptide bond formation.

5. Name a strong and a weak electrolyte.

6. Name a colloidal system in which both dispersed medium and dispersed phase are liquids.

7. The pH of gastric juice is ————————.

8. Name a blood buffer.

9. Name the law on which the technique of Colorimetry is based.

10. Write the expansion of SDS-PAGE.

$(10 \times 1 = 10 \text{ marks})$

Section B

*Answer any **seven** questions.*
Each question carries 2 marks.

11. Define pH.

12. What are Electrolytes ? Give two examples.

13. Define Molarity.

Turn over

14.   Define acids according to Bronsted-Lowry concept.

15.   What are Buffers ?

16.   Define Osmosis.

17.   What is Tyndall effect ?

18.   How will you prepare 250 mL of a 2 N solution of NaOH ?

19.   Write Henderson-Hasselbalch equation for acidic buffer.

20.   Write the principle behind chromatographic techniques.

(7 × 2 = 14 marks)

Section C

Answer any **four** *questions.*
Each question carries 5 *marks.*

21.   Write short note on Radioimmunoassay.

22.   What is Albumin and what are its functions ?

23.   Explain Donnan-Membrane Equilibrium.

24.   Differentiate between true solutions, suspensions and colloids.

25.   With a suitable example explain elimination, condensation and decarboxylation reactions.

26.   Write Henderson-Hasselbalch equation for a basic buffer. Calculate the pH of a buffer solution containing 0.20M ammonium hydroxide and 0.50M ammonium chloride. K_b of ammonium hydroxide is 1.8×10^{-5}.

(4 × 5 = 20 marks)

Section D

Answer any **two** *questions.*
Each question carries 10 *marks.*

27.   Write an essay on the functions of any *five* body fluids.

28.   Discuss about the types and functions of plasma proteins.

29.   Explain the classification of isomerism.

30.   Write an essay on properties and applications of colloids.

(2 × 10 = 20 marks)

FIRST SEMESTER B.A./B.Sc. DEGREE EXAMINATION NOVEMBER 2020

(CUCBCSS)

Bio Chemistry

BCH 1B 01—INTRODUCTION AND PHYSICAL ASPECTS OF BIOCHEMISTRY

Time : Three Hours   Maximum : 80 Marks

Section A

*Answer **all** questions.*
Each question carries 1 mark.

1. Name a colloidal system in which dispersed phase is gas and dispersion medium is a liquid.

2. What is particle size in colloids ?

3. Tyndall effect is exhibited only by ————— colloids.

4. Write the half-life of P^{32} and Co^{60}.

5. Write the equation that represents enthalpy of a system.

6. Exchange of gases in our body during respiration is based on —————.

7. Name two Bronsted bases.

8. Write an example for autocatalysis.

9. Name an electrical and optical property of colloids.

10. Name the two types of emulsions.

11. Name two biological buffers.

12. Colloids are ————— systems.

13. Write the expression for pH.

14. In acidic solutions phenolphthalein is ————— and basic solutions it gives ————— colour.

15. Write an example of a conjugate acid-base pair.

16. What is the pH of blood ?

$(16 \times 1 = 16 \text{ marks})$

Section B

*Answer any **eight** questions.*
Each question carries 3 marks.

17. Define an acid according to Bronsted concept.

18. What are buffers ? Give an example.

Turn over

19. Define Molarity.

20. State vant Hoff's law of osmotic pressure.

21. What are titration curves ?

22. Define half-life. Write the half-life of Cobalt-60.

23. What is Tyndall effect ?

24. Write the Henderson-Hasselbalch equation for an acidic buffer.

25. Define enthalpy and entropy.

26. Define catalysis.

(8 × 3 = 24 marks)

Section C

Answer any **four** *questions.*
Each question carries 5 marks.

27. Write a short note on safe handling and disposal of chemicals.

28. Differentiate between true solutions, suspensions and colloidal solutions.

29. What are the characteristics of a catalytic reaction?

30. Explain the factors influencing osmotic pressure.

31. Write down the differences between lyophobic and lyophilic colloids.

32. Discuss about the preparation of colloidal solutions.

(4 × 5 = 20 marks)

Section D

Answer any **two** *questions.*
Each question carries 10 marks.

33. Write an essay on different types and applications of colloids.

34. Give an account of Donnan-Membrane equilibrium and its biological significance.

35. Discuss in detail the applications of radioactive isotopes.

(2 × 10 = 20 marks)

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION, NOVEMBER 2021

Biochemistry

BCH 1C 01—BIOCHEMISTRY—I

(2020 Admissions)

Time : Two Hours   Maximum : 60 Marks

Section A

Answer all questions.
Each question carries 1 mark.

1. Which of the following is a phospholipid ?

    a) Cholesterol.   b) Triglyceride.

    c) Wax.   d) Lecithin.

2. Which of the following is not a pyrimidine ?

    a) Guanine.   b) Cytosine.

    c) Thymine.   d) Uracil.

3. The backbone of DNA is made up of :

    a) Covalent bond.   b) Peptide bond.

    c) Phosphodiester bond.   d) Hydrogen bond.

4. The amino acid with no optical activity is —————.

5. Proteins containing carbohydrates as prosthetic group are known as —————.

6. The organelle involved in synthesising proteins is —————.

7. The test used to distinguish between monosaccharides and disaccharides is —————.

8. Name the amino acid that contains imidazole as functional group.

9. Write the name of an essential fatty acid.

(9 × 1 = 9 marks)

Section B

Answer any seven questions.
Each question carries 3 marks.

10. (a) What are derived lipids ?

    (b) Draw the structure of Cholesterol.

Turn over

11. Explain any three reactions of amino acids.

12. Write the structures of : (a) α -D-Glucopyranose (b) Lactose.

13. Comment on the structure of mRNA and tRNA.

14. (a) Name the two components of Starch.

    (b) Write the structure of Heparin.

15. (a) Define rancidity

    (b) Write any four physiological functions of lipids

16. Write on precipitation of proteins by ammonium sulphate and heavy metals

17. Briefly describe the significance of Miller and Urey experiment in the study of biochemical evolution.

                                                                      (7 × 3 = 21 marks)

Section C

Answer any **four** *questions.*
Each question carries 5 marks.

18. Write briefly on the isomerism exhibited by carbohydrates.

19. (a) Bring out the features of phospholipids.

    (b) Write the structure of Lecithin and Sphingomyelin.

20. Describe the various tests used for analysis of fats.

21. Mention the salient features of the Watson and Crick model of DNA.

22. Write on the different levels of organisation of protein structure.

                                                                      (4 × 5 = 20 marks)

Section D

Answer any **one** *question.*
The question carries 10 *marks.*

23. With a neatly labelled diagram, describe the ultrastructure of a cell.

24. Describe the classification of fatty acids.

                                                                      (1 × 10 = 10 marks)

D 13570

Name...

Reg. No....................................

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2021

Biochemistry

BCH 1B 01—INTRODUCTION TO BIOCHEMISTRY AND CELL BIOLOGY

(2020 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A

Answer any **ten** *questions.*
Each question carries 2 marks.

1. Enumerate the functions of smooth endoplasmic reticulum.

2. How do antiport differ from uniport ?

3. What are Cadherins ? Mention their function.

4. Write note on different phases of cell cycle.

5. Give an account of the cellular foundation of biochemistry.

6. Calculate the pH of 0.1M NaOH.

7. Draw and label a prokaryotic cell.

8. Calculate the mass percent concentration of saline solution with a mass of 365g having 36.5g of NaCl dissolved in it.

9. Give two examples of facilitated transport.

10. How cell-matrix interaction occur ?

11. Distinguish between necrosis and apoptosis.

12. How laboratory accidents and injuries can be prevented ?

(Celling 20 marks)

Turn over

Section B

Answer any **six** *questions.*
Each question carries 5 marks.

13. Define osmotic pressure. Mention its biological applications.

14. Discuss the structure of chloroplast and its function.

15. Give an account of different types of ion channels.

16. Briefly explain cell signaling, its stages and importance.

17. Elucidate different phases of meiosis.

18. How radioactive materials can be handled safely ?

19. Detail the different methods for determining the pH of a solution.

(Ceiling 30 marks)

Section C

Answer any **one** *question.*
The question carries 10 marks.

20. Explain different types of transport mechanisms across membranes.

21. Describe the pathways leading to apoptosis.

(Ceiling 10 marks)

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION, NOVEMBER 2021

Biochemistry

BCH 1C 01—BIOCHEMISTRY—I

(2021 Admissions)

Time : Two Hours
Maximum : 60 Marks

Section A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. Hemoglobin has ——————— structure.

    (a) Primary.
    (b) Secondary.

    (c) Tertiary.
    (d) Quaternary.

2. Which of the following is a purine ?

    (a) Thymine.
    (b) Adenine.

    (c) Cytosine.
    (d) Uracil.

3. Beta oxidation occurs in ————————.

    (a) Fats.
    (b) Steroids.

    (c) Fatty acids.
    (d) Phospholipids.

4. Starch will give ——————— colour with iodine.

5. Length of one turn of helix in B-form of DNA is approximately ———————.

6. The most common secondary structure of protein is ———————.

7. The amino acid that contains thiol group is ———————.

8. Name a poly unsaturated fatty acid.

9. Which is the test used to distinguish a carbohydrate from an amino acid ?

(9 × 1 = 9 marks)

Turn over

Section B

Answer atleast **six** *questions.*
Each question carries 3 marks.
All questions can be attended.
Overall ceiling 18.

10. Discuss the structure of tRNA with a diagram.

11. Define Zwitter ion and isoelectric pH.

12. Briefly explain the Miller and Urey experiment.

13. (a) Differentiate between epimers and anomers.

    (b) Explain mutarotation.

14. Write the structures of : (a) Maltose ; and (b) Sucrose.

15. (a) What are sphingolipids ? Write the structure of sphingomyelin.

    (b) Define rancidity.

16. (a) Draw the ultrastructure of a cell.

    (b) Name the organelle involved in protein synthesis.

17. Briefly describe the steps involved in sequencing of proteins.

(6 × 3 = 18 marks)

Section C

Answer atleast **three** *questions.*
Each question carries 7 marks.
All questions can be attended.
Overall ceiling 21.

18. Define saponification number and iodine number. Also give their significance.

19. (a) What do you mean by reducing sugars ?

    (b) Differentiate between reducing and non-reducing sugars.

20. (a) Define a nucleotide.

    (b) Differentiate between nucleotide and nucleoside.

    (c) Draw the structure of cAMP.

21. (a) Name the bond stabilising the primary structure of proteins.

    (b) Write any two reactions of proteins.

    (c) Briefly describe denaturation of proteins.

22. (a) Write briefly on mucopolsaccharides, indicating the structure of anyone.

    (b) Give the two components of starch. Differentiate between them.

(3 × 7 = 21 marks)

Section D

Answer any **one** *question.*
Each question carries 12 *marks.*

23. Elaborate on the classification of lipids.

24. Discuss the double helical structure of DNA.

(1 × 12 = 12 marks)

D 12749

Name...

Reg. No...................................

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION, NOVEMBER 2021

Bio Chemistry

BCH 1B 01—INTRODUCTION TO BIOCHEMISTRY AND CELL BIOLOGY

(2021 Admissions)

Time : Two Hours   Maximum : 60 Marks

Section A

Answer atleast **eight** *questions.*
Each question carries 3 marks.
All questions can be attended.
Overall ceiling 24.

1. Define buffer. Give one example.

2. How is a 0.1N solution of NaOH prepared ?

3. Write down the functions of Iysosomes.

4. Differentiate between simple diffusion and facilitated diffusion.

5. Write note on the structure and functions of nucleus.

6. Give an account of necrosis.

7. What do you mean by safe handing of chemicals in laboratory ?

8. Calculate the pH and pOH of 0.0025M HCl.

9. Write short note on emulsifying agents with examples.

10. What are marker enzymes ? Give examples.

11. Define ionosphores. Mentions its importance.

12. What is tight junction and its function.

$(8 \times 3 = 24 \text{ marks})$

Section B

Answer atleast **five** *questions.*
Each question carries 5 marks.
All questions can be attended.
Overall ceiling 25.

13. Distinguish between mitosis and meiosis.

14. Give an account of general laboratory safety rules.

Turn over

15. Briefly explain different types of molecular interactions.

16. What is osmosis ? Give its biological importance.

17. State the differences between prokaryotic and eukaryotic cell.

18. Discuss active transport across membrance with one example.

19. Elucidate cell-matrix interactions and its importance.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
Each question carries 11 *marks.*

20. Describe the structure and function of a eukaryotic cell and its organelles with the help of a neatly labelled diagram.

21. Elaborate on the pathways leading to apoptosis.

(1 × 11 = 11 marks)

D 12611

(Pages : 2)

Name...

Reg. No...................................

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2021

Biochemistry

BCH 1C 01—BIOCHEMISTRY—I

(2021 Admissions)

Time : Two Hours   Maximum : 60 Marks

Section A

Answer **all** *questions.*
Each question carries 1 mark.

1. The sugar residue seen in DNA is —————————.

2. Name the 2-epimer of glucose.

3. The alcoholic component present in sphingolipid is —————————.

4. Name Edmans reagent.

5. The non-protein part present in a conjugated protein is called —————————.

6. Name the nitrogenous base present in the phospholipid lecithin.

7. The mucopolysaccharide which serves asan anticoagulant is —————————.

8. A protein is biologically active only at the ————————— level of its structural organization.

9. Which RNA has got the clover-leaf structure ?

(9 × 1 = 9 marks)

Section B

Answer at least **six** *questions.*
Each question carries 3 marks.
All questions can be attended.
Overall Ceiling 18.

10. What is the chemistry of Ninhydrin reaction ?

11. Draw the structures of purines.

12. What are Anomers ? Represent the anomeric forms of glucose.

Turn over

13. Draw the structure of cholesterol.

14. What are zwitter ions ? Represent the zwitter ion form of alanine.

15. Write the chemistry behind Benedicts test.

16. What is salting out of proteins ?

17. Define acid value and its significance.

(6 × 3 = 18 marks)

Section C

Answer at least **three** *questions.*
Each question carries 7 marks.
All questions can be attended.
Overall Ceiling 21.

18. Discuss about the physiological functions of lipids.

19. Explain Miller-Urey experiment.

20. Explain the structure and components of starch.

21. Explain how Sanger's reagent is used for protein sequencing.

22. Write about heteropolysaccharides.

(3 × 7 = 21 marks)

Section D

Answer any **one** *question.*
The question carries 12 marks.

23. Give a detailed account of different levels of structural organization of proteins

24. Discuss in detail the classification of lipids.

(1 × 12 = 12 marks)

(Pages : 2)

Name...

Reg. No....................................

FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION, NOVEMBER 2021

Biochemistry

BCH 1B 01—INTRODUCTION TO BIOCHEMISTRY AND CELL BIOLOGY

(2021 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A

Answer atleast **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall ceiling 24.

1. Differentiate diffusion and osmosis.

2. State vant Hoff's law of osmotic pressure.

3. Differentiate true solution, colloidal and coarse suspension based on particle size.

4. Calculate the hydrogen ion concentration of a solution having pH 5.21.

5. How is an acidic and basic buffer prepared ?

6. Define zeta potential.

7. What are marker enzymes ? Name the marker enzyme of plasma membrane and mitochondria ?

8. Define normality and molality.

9. How does an emulsifying agent work ?

10. Differentiate uniport and antiport.

11. Illustrate the structure of chloroplast.

12. Differentiate eukaryotic and prokaryotic ribosomes.

(8 × 3 = 24 marks)

Turn over

Section B

Answer atleast **five** *questions.*
Each question carries 5 marks.
All questions can be attended.
Overall ceiling 25.

13. Explain the different lab safety measures.

14. Write about the different types of non-covalent interactions in biological system.

15. Differentiate between lyophilic and lyophobic colloids.

16. What are tight junctions ? What is its significance ?

17. Write a short note on the structure and functions of Golgi complex and mitochondria.

18. Differentiate mitosis and meiosis.

19. Explain Donnan Membrane equilibrium and its biological significance.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
Each question carries 11 marks.

20. Derive Henderson-Hasselbalch equation. Calculate the pH of a buffer solution containing 0.20 M sodium acetate and 0.10 M acetic acid. Ka for acetic acid is 1.8×10.

21. Give a detailed account of different pathways of apoptosis.

(1 × 11 = 11 marks)

D 12477

Name...

Reg. No....................................

FIRST SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2021

Biochemistry

BCH 1C 01—BIOCHEMISTRY—I

(2016—2018 Admissions)

Time : Three Hours

Maximum : 64 Marks

Section A

Answer **all** *questions.*
Each question carries 1 mark.

1. The size of colloidal particles ranges between ——————— and ———————.

2. Which molecule is eliminated during peptide bond formation ?

3. Write an example each for Oil/Water and Water/Oil type of emulsion.

4. Name a technique used for the assay of hormones.

5. What colour is shown by Phenolphthalein in acid and basic solution ?

6. Name the soluble glycoprotein component of plasma involved in blood clotting.

7. The value of ionic product of water K_w is ———————.

8. Name two carrier gas used in Gas Liquid Chromatography.

9. Name the mobile phase and stationary phase in Paper chromatography.

10. Name two primary bile acids.

$(10 \times 1 = 10 \text{ marks})$

Section B

Answer any **seven** *questions.*
Each question carries 2 marks.

11. Define Normality.

12. What is elimination reaction ?

13. Calculate the molarity of a solution prepared by dissolving 80g of NaOH per litre of the solution ?

Turn over

14. Calculate the pOH and pH of a 0.01M solution of NaOH.

15. Calculate the osmotic pressure of a 5 % solution of urea (Mw-60) at 25°C ?

16. What is meant by equivalence point in acid-base titration ?

17. What are the functions and composition of lymph ?

18. Write Henderson-Hasselbalch Equation for acidic and basic buffer.

19. Draw the titration curve of a strong acid-strong base titration.

20. What is Brownian movement ?

<div align="right">(7 × 2 = 14 marks)</div>

Section C

Answer any **four** *questions.*
Each question carries 5 marks.

21. Explain the working of a pH meter.

22. Explain Immunoelectrophoresis.

23. Differentiate between lyophilic and lyophobic colloids.

24. Write short note on hydrogen bonding.

25. Differentiate between hypotonic, hypertonic and isotonic solutions.

26. Write short note on stereo isomerism.

<div align="right">(4 × 5 = 20 marks)</div>

Section D

Answer any **two** *questions.*
Each question carries 10 marks.

27. Write an essay on principle, technique and applications of Thin Layer Chromatography.

28. Discuss in detail the nature and scope of biochemistry in various fields.

29. Give a detailed account of properties and applications of colloids.

30. How is acid-base balance maintained in blood ?

<div align="right">(2 × 10 = 20 marks)</div>