

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Biochemistry

BCH 5D 02—LIFE STYLE DISEASES

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

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

1. What is stroke ?
2. Distinguish between systolic and diastolic pressure.
3. What is meant by gestational diabetes ?
4. Name the enzymes which are elevated after acute MI.
5. Give one example for transaminase.
6. What is the main cause for type I diabetes ?
7. Name two cancer drugs.
8. Which clearance test is carried out to diagnose kidney disease ?
9. Name two liver diseases.

(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. Write notes on : i) SGPT ; ii) SGOT.
11. What is A/G ratio and its significance ?
12. Write down the difference between Bleeding time and Clotting time.

Turn over

13. What are the causative factors of obesity ?
14. Write about any four methods employed for the diagnosis of cancer?
15. Explain Stress test.
16. What are the Characteristics of hypertension ?
17. Write a short note on nephritis.

(6 × 3 = 18 marks)

Section C (Paragraph Questions)

Answer at least three questions.

Each question carries 7 marks.

All questions can be attended.

Overall Ceiling 21.

18. Significance of GFR.
19. Chemotherapy.
20. Essential fatty acids.
21. Ischemic stroke.
22. Peritoneal dialysis.

(3 × 7 = 21 marks)

Section D

Answer any one question.

The question carries 12 marks.

23. Write an essay on symptoms, causes and diagnosis of liver disease.
24. Discuss diagnosis and management of cancer.

(1 × 12 = 12 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Biochemistry

BCH 5D 01—ELEMENTARY BIOCHEMISTRY

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

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

1. What is the building block of a protein ?
2. What is a Buffer ?
3. Define the term enzyme.
4. What is a Nucleoside ?
5. Give an example of lipid.
6. Mention a function of endoplasmic reticulum.
7. Define free energy.
8. Give an example of a diagnostic enzyme.
9. What is a Toxin ?

(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 are the components of a living cell ?
11. Discuss on the properties of water which makes it the solvent of life.

Turn over

12. What is Isomerism ?
13. Define protein denaturation.
14. Discuss on micro minerals which play an important role in nutrition.
15. What are the functions of plasma membrane ?
16. Explain the coupling of reactions.
17. Mention any *two* applications of Biochemistry in food industry.

(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 on the physiological buffer systems.
19. What are the features of a peptide bond ?
20. What are the components of a nucleic acid ?
21. Explain the properties of lipids.
22. Write short notes on energy rich compounds.

(3 × 7 = 21 marks)

Section D

*Answer any **one** question.*

The question carries 12 marks.

23. Write an essay on the classification and functions of Vitamins
24. Discuss on the medicinal and Industrial Applications of Biochemistry.

(1 × 12 = 12 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Biochemistry

BCH 5B 12—CLINICAL AND NUTRITIONAL ASPECTS OF BIOCHEMISTRY

(2019 Admissions)

Time : Two Hours and a Half

Maximum : 80 Marks

Section A

*Answer at least ten questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 30.*

1. What are food additives ? Give two examples.
2. Define glycemic index (GI). Give two examples of low GI foods.
3. What is glycated hemoglobin ? Mention its significance.
4. Define clotting time. Give its normal value and significance in diagnosis of diseases.
5. Write any *four* functions of liver.
6. Mention the different methods of preservation of urine ?
7. What is Lesch Nyhan syndrome ? Give its symptoms.
8. Define ESR. List the infections that cause high ESR.
9. Why is the ratio of LDL/HDL important ?
10. Mention the use of any *two* radioisotopes in diagnosis.
11. Write note on maple syrup urine disease.
12. What are the abnormal constituents of urine ? List the diseases indicated when they are present in urine ?
13. Write the nutritional significance of dietary fiber.
14. What is Hepatitis ? Mention its causes.
15. Define BMR. Give any *four* factors affecting BMR.

(10 × 3 = 30 marks)

Turn over

Section B

Answer at least five questions.

Each question carries 6 marks.

All questions can be attended.

Overall Ceiling 30.

16. Give an account of lipid profile.
17. State the main cause and symptoms of atherosclerosis.
18. Detail in brief protein energy malnutrition.
19. Write about renal tubular disorders.
20. State in detail the clinical significance of sodium and potassium ions.
21. Give a detailed account of thyroid function tests.
22. Briefly explain food borne diseases and responsible agents.
23. Comment on safe laboratory practices and procedures.

(5 × 6 = 30 marks)

Section C

Answer any two questions.

Each question carries 10 marks.

24. Explain diseases of liver.
25. Write in detail on diabetes mellitus and methods to diagnose the disease.
26. Describe the functions, food sources and daily requirement of any *five* macro minerals.
27. Explain routine blood tests.

(2 × 10 = 20 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Biochemistry

BCH 5B 11—IMMUNOLOGY AND MICROBIOLOGY

(2019 Admissions)

Time : Two Hours and a Half

Maximum : 80 Marks

Section A

*Answer at least ten questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 30.*

1. What are Haptens ?
2. Give examples of primary lymphoid organs.
3. Define the term immunogenicity.
4. What are Complements ?
5. What are Cytokines ?
6. What is Pasteurization ?
7. What are Heterotrophs ? Give examples.
8. Give examples of differential media.
9. Name any *two* coliforms present in water.
10. Comment on BCR.
11. Name any *two* systemic autoimmune diseases.
12. What is BOD ?
13. Give an example of toxoid vaccine.
14. What is humoral immune response ?
15. Mention the principle of phase contrast microscopy

(10 × 3 = 30 marks)

Turn over

Section B

Answer at least five questions.

Each question carries 6 marks.

All questions can be attended.

Overall Ceiling 30.

16. Write note on primary lymphoid organs.
17. Write down the applications of monoclonal antibodies.
18. Describe Immunodiffusion.
19. What is DTH ?
20. TCR.
21. Write note on cell mediated immune response.
22. Classify media based on function.
23. Bacteriological technique to detect quality of water.

(5 × 6 = 30 marks)

Section C

Answer any two questions.

Each question carries 10 marks.

24. What is Immunity ? Explain its types.
25. With the help of a neat diagram explain the structure of immunoglobulin.
26. Describe the pathways of complement activation.
27. Explain the physical agents of sterilization.

(2 × 10 = 20 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Biochemistry

BCH 5B 10—HUMAN PHYSIOLOGY

(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. State the significance of antioxidants citing two examples.
2. Give the function of bile.
3. List out two muscle proteins and their function.
4. Define Homeostasis. Give two examples.
5. Mention the role of creatine kinase in muscle contraction.
6. Write down the different types of hemoglobin.
7. Brief on the process of glomerular filtration.
8. State the physiological functions of lipids.
9. State the role of chloride in oxygen transport.
10. Compare pulmonary volume and pulmonary capacity.
11. Briefly discuss the absorption of Vitamin A.
12. Give two examples for anticoagulants and their mechanism of action.

(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. Write short notes on plasma proteins and their functions.
14. Briefly discuss the visual cycle.
15. Write short notes on neurotransmitters.
16. Schematically represent the intrinsic pathway of blood coagulation.
17. Give a brief description of digestion of carbohydrates.
18. Describe the transport of carbon dioxide by hemoglobin.
19. Brief on the constituents of intracellular fluid.

(5 × 5 = 25 marks)

Section C

*Answer any **one** question.*

The question carries 11 marks.

20. Describe the mechanism of muscle contraction.
21. Detail on the composition of blood.

(1 × 11 = 11 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Biochemistry

BCH 5B 09—PLANT BIOCHEMISTRY

(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. State the significance of alkaloids citing two examples.
2. Write down any two functions of abscisic acid.
3. How is sulphate assimilated in plants ?
4. What are vacuoles ?
5. Give two examples for growth inhibitors.
6. What are microtubules ?
7. What are Nod genes ?
8. Write note on role of zinc in plants.
9. What are xenobiotics ?
10. Define symbiotic bacteria.
11. List out the deficiency symptoms of molybdenum in plants.
12. What are the functions of endoplasmic reticulum ?

(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. Briefly explain allelopathy and its significance.
14. Explain biological nitrogen fixation.
15. What are secondary metabolites ? Explain any *two* classes of secondary metabolites with suitable examples.
16. Draw and explain the structure of a plant cell.
17. Write the source, physiological role and deficiency symptoms of Iron.
18. Briefly explain the structural composition of plant cell wall ?
19. Briefly explain the biochemistry of senescence.

(5 × 5 = 25 marks)

Section C

Answer any one question.

The question carries 11 marks.

20. Explain Nitrogen cycle.
21. Give an account of physiological roles and applications of auxins and gibberellins.

(1 × 11 = 11 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Biochemistry

BCH 5B 12—IMMUNOLOGY

Time : Three Hours

Maximum : 80 Marks

Section A

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

1. Which of the following is not an innate immunity component ?
 - a) Salivary enzyme.
 - b) Nasal mucosa.
 - c) Stomach pH.
 - d) Antibodies.
2. Name a phagocytic cell of innate immunity _____.
3. Antibodies are produced by _____ cells.
4. Identify an antigen processing and presenting cell among the following :
 - a) B-lymphocyte.
 - b) Macrophage.
 - c) T-Lymphocyte.
 - d) Erythrocyte.
5. Define 'Stem Cell'.
6. List the primary lymphoid organs.
7. Define 'Immunogenicity'.
8. What is a Hapten ?
9. Expand ELISA and RIA.
10. What is the name of the zone between 'zone of Ab excess' and 'zone of Ag excess' in immunodiffusion ?
11. The antibody class associated with allergy reactions is _____.
12. T-helper cells are identified by the presence of _____.

Turn over

13. A mature B-cell will express _____ antibodies on their surface.
14. A cytokine released and recognized by the same cell is called _____ activation.
15. HIV infection is characterized by decline in _____ cell population.
16. Placental transfer of maternal antibodies to foetus is example of _____ immunization.

(16 × 1 = 16 marks)

Section B

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

17. Define humoral immunity. Identify its primary purpose.
18. What is Inflammation ?
19. Briefly explain the role of surface receptors in B-cell activation.
20. What are Adjuvants ? How do they aid in immune response ?
21. What are Abzymes ?
22. What are Cytokines ? Give two examples.
23. What are immunodeficiency disorders ? Give two examples.
24. Explain the principle of western blotting.
25. What is Autoimmunity ? Give two examples of autoimmune disorders.
26. What are recombinant vaccines ? Give two examples of recombinant DNA vaccines.

(8 × 3 = 24 marks)

Section C

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

27. What is innate immunity ? Discuss the components and types of barriers.
28. Give an account of the process of haematopoiesis and its role in immunity.
29. Distinguish between primary and secondary lymphoid organs based on their function.
30. Write a short essay on the methodology of monoclonal antibody generation and their importance.
31. What are the two pathways of complement activation ? Explain the process.
32. Explain the principle and different mechanisms of immunization by vaccines.

(4 × 5 = 20 marks)

Section D

Answer any two questions.

Each question carries 10 marks.

33. Write an essay on the importance and events involved in MHC associated antigen presentation.
34. Discuss in detail the different classes of antibodies and their structural features.
35. Explain in detail the different types of hypersensitivity reactions and their mechanism of onset.

(2 × 10 = 20 marks)

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FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Biochemistry

BCH 5B 11—CLINICAL AND NUTRITIONAL BIOCHEMISTRY

Time : Three Hours

Maximum : 80 Marks

Section A

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

1. Give the normal range of ESR in men and women.
2. _____ is the normal range of serum cholesterol level.
3. How many isoenzyme forms do lactate dehydrogenase have ?
 - a) 3.
 - b) 4.
 - c) 5.
 - d) 6.
4. Name two enzymes measured during LFT.
5. Phenyl ketonuria is caused due to the defect in _____ enzyme.
6. Identify the abnormal constituent in urine.
 - a) Albumin.
 - b) Glucose.
 - c) Ketone body.
 - d) All the above.
7. Write the normal level of Albumin and A/G ratio.
8. The renal threshold for glucose is _____.
9. Which among the following is an example for a complete protein ?
 - a) Egg.
 - b) Zein.
 - c) Gelatin.
 - d) None of the above.
10. The RQ value of carbohydrate is _____.
11. Name two factors that cause an increase in BMR.
12. Give the name of any two flavoring agents.
13. Name any two food preservatives.
14. Botulism is caused by _____.

Turn over

15. The RDA of folic acid in pregnant women is _____.
16. Name any disorder associated with nucleotide metabolism.

(16 × 1 = 16 marks)

Section B

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

17. What is meant by laboratory automation ?
18. Write about total and differential blood count.
19. Why is HDL generally considered to be good ?
20. Write the significance of glycated hemoglobin levels.
21. Define urea and creatinine clearance.
22. Write about the composition and functions of synovial fluid.
23. Briefly explain the cause of galactosemia.
24. Write a short note on atherosclerosis.
25. What is meant by a balanced diet ?
26. What do you mean by positive and negative nitrogen balance ?

(8 × 3 = 24 marks)

Section C

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

27. Write about the lipid profile determination and its significance.
28. Explain the safety measures to be adopted in a clinical laboratory.
29. Discuss about the clinical significance of isoenzymes.
30. Brief on renal function tests.
31. Write about the disorders of purine and pyrimidine metabolism.
32. Explain the factors influencing BMR.

(4 × 5 = 20 marks)

Section D

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

33. Elaborate on Liver function tests.
34. Discuss about the different glycogen storage disorders.
35. Explain the chemistry, composition, and functions of lymph, ascitic fluid and pleural fluid.

(2 × 10 = 20 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Biochemistry

BCH 5B 10—PHYSIOLOGICAL ASPECTS OF BIOCHEMISTRY

Time : Three Hours

Maximum : 80 Marks

Section A

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

1. Name the primary bile acids.
2. Give any *two* examples for plasma proteins.
3. Which among the following blood groups is a universal donor ?
 - a) A ^{+ve}.
 - b) B ^{-ve}.
 - c) O ^{-ve}.
 - d) AB ^{+ve}.
4. Identify the glucocorticoid hormone among the following :
 - a) Cortisol.
 - b) Epinephrine.
 - c) Thyroxine.
 - d) Insulin.
5. Name two anticoagulants.
6. Name two hormones involved in maintaining the blood glucose level.
7. Scurvy is associated with the deficiency of _____.
 - a) Vitamin A.
 - b) Vitamin C
 - c) Vitamin D.
 - d) Vitamin K.
8. The cells responsible for color vision is _____.
9. Which is the most important buffer that regulates blood pH ?
10. Diabetes insipidus is caused due to the deficiency of _____.
11. Write the active form of Vitamin D.

Turn over

12. Give the normal blood pressure value.
13. Name the vitamin that can serve as an antioxidant.
14. The site of biosynthesis of epinephrine and nor-epinephrine is _____.
15. The blood clotting Factor I is also known as _____.
16. The specific gravity of urine is _____.

(16 × 1 = 16 marks)

Section B

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

17. Define Homeostasis.
18. List out the hormones involved in protein digestion.
19. Explain the structure and function of hemoglobin.
20. Brief on oxygen dissociation curve and Bohr effect.
21. Explain the structure of a nephron.
22. Discuss about the different types of muscle proteins.
23. What are Neurotransmitters ? Give two examples.
24. Explain visual cycle.
25. What are mineralocorticoids and their functions ?
26. What are vasoconstrictors and vasodilators ?

(8 × 3 = 24 marks)

Section C

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

27. Discuss about the types and functions of plasma proteins.
28. Brief on the classification of hormones.
29. Explain the transport of oxygen and carbondioxide through blood.
30. Brief on the different types of hemoglobin.

31. Write about the mechanism of nerve impulse transmission.
32. Explain the renal regulation of pH.

(4 × 5 = 20 marks)

Section D

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

33. Describe in detail the mechanism of muscle contraction.
34. Elaborate on the digestion and absorption of carbohydrates.
35. Discuss in detail the mechanism of blood clotting.

(2 × 10 = 20 marks)

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FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Biochemistry

BCH 5B 09—PLANT BIOCHEMISTRY

Time : Three Hours

Maximum : 80 Marks

Section A

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

1. Cell wall of all land plants are composed of the following, except _____.
 - a) Cellulose.
 - b) Chitin.
 - c) Hemicellulose.
 - d) Pectin.
2. _____ is the major form of carbon transport molecule in plants.
3. Internal water homeostasis of a plant cell is maintained by which organelle ?
4. Carotenoids belong to _____ class of compounds
 - a) Tetraterpenoids.
 - b) Polysaccharides.
 - c) Steroids.
 - d) Triglycerides.
5. Crassulacean acid metabolism is an adaptation for which of the following conditions ?
 - a) Arid environment.
 - b) Rain forest.
 - c) Epiphytic.
 - d) Low CO₂ level.
6. _____ is the central element in chlorophyll.
7. Conversion of nitrate to nitrite is performed by _____ enzyme.
8. The phytohormone associated with phototropism is _____.
9. _____ phytohormone is associated with stress tolerance.
10. Phytohormone associated with node elongation : _____.
11. An example of a sulphur containing amino acid : _____.
12. Identify the nitrogen fixing bacteria in root nodules : _____.
13. Seed dormancy is regulated by _____ hormone.
14. Give an example of a non-protein amino acid in plants : _____.

Turn over

15. Quinine, the famous anti-malarial drug belongs to _____ class of compound.
16. Give an example of a steroid secondary metabolite : _____.

(16 × 1 = 16 marks)

Section B

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

17. Briefly describe the structure and organization of cell wall
18. Give a short account on the structure and function of microbodies.
19. What are Cryptochromes ? What role do they perform ?
20. List some of the functions of zinc in plants.
21. What are the symptoms associated with copper deficiency ?
22. What is apical dominance ? Identify the hormone associated with it.
23. What is the chemical nature of abscisic acid ?
24. Comment on the phytohormone involved in inducing fruit ripening.
25. What are phytotoxins ?
26. What are xenobiotics ?

(8 × 3 = 24 marks)

Section C

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

27. Write a short essay on the structure, organization and function of chloroplast.
28. What is photorespiration ? Why is it a major metabolic hurdle in plants ?
29. How does sulphur reduction and assimilation take place in plants ?
30. Write a short essay on cytokinins and their functions.
31. What are flavonoids ? What role do they play in a plant system ?
32. Write a short essay on gums and mucilage.

(4 × 5 = 20 marks)

Section D

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

33. Explain the process and stages of photosynthetic fixation of carbon dioxide.
34. What is nitrogen fixation ? Explain the biochemistry behind the process.
35. Explain in detail in the role of secondary plant metabolites as precursors in pharmaceutical industry.

(2 × 10 = 20 marks)

**FIFTH SEMESTER U.G. (CUCBCSS-UG) DEGREE EXAMINATION
NOVEMBER 2021**

Biochemistry

BCH 5B 08—INTERMEDIARY METABOLISM – II

Time : Three Hours

Maximum : 80 Marks

Section A

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

1. Give an example of a multienzyme complex.
2. _____ is the key regulatory enzyme in cholesterol biosynthesis.
3. The site of fatty acid oxidation is :
 - (a) Nucleus.
 - (b) Mitochondria.
 - (c) Golgi body.
 - (d) Lysosomes.
4. Name two ketogenic amino acids.
5. The co-enzyme involved in transamination reaction is _____.
 - (a) TPP.
 - (b) Biocytin.
 - (c) PLP.
 - (d) NAD.
6. The newly formed amino acid in all transamination reaction is _____.
7. Name an inborn error in amino acid metabolism.
8. Identify which among the following is not a source of carbon atom in purine ring ?
 - (a) Aspartate.
 - (b) Glycine.
 - (c) CO₂.
 - (d) Acetyl CoA
9. The key enzyme involved in fatty acid biosynthesis is _____.
10. In oxidative deamination of amino acids, amino group is removed in the form of _____.
11. Name two ketone bodies.
12. Histidine undergoes decarboxylation to produce _____.
13. Name the coenzyme involved in oxidative deamination of L-amino acids.
14. Write the expansion for HGPRT.

Turn over

15. The product of purine metabolism in human is _____.
16. The source of nitrogen atom in the purine ring is _____

(16 × 1 = 16 marks)

Section B

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

17. Write about fatty acid synthase complex.
18. Write about the role of carnitine in fatty acid oxidation.
19. Liver cannot utilize ketone body for energy. Give reason.
20. Write the role of acyl carrier protein.
21. List out the steps involved in beta oxidation and the enzymes involved.
22. What causes phenylketonuria ?
23. Explain transamination reaction.
24. What is meant by salvage pathway ?
25. How are fatty acids activated for oxidation ?
26. Differentiate between oxidative and non-oxidative deamination.

(8 × 3 = 24 marks)

Section C

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

27. Calculate the energetics of palmitic acid oxidation with detailed steps.
28. Explain the synthesis of any one of the steroid hormones.
29. Differentiate between fatty acid oxidation and biosynthesis.
30. Brief on glycine biosynthetic pathway.
31. Write about the end products of purine and pyrimidine metabolism.
32. Explain the source of individual atoms in a purine ring.

(4 × 5 = 20 marks)

Section D

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

33. Elaborate on the biosynthesis of cholesterol.
34. Describe in detail urea cycle and its significance.
35. Explain the steps involved in the biosynthesis of inosine monophosphate.

(2 × 10 = 20 marks)

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Biochemistry

BCH 5B 07—INTERMEDIARY METABOLISM—I

Time : Three Hours

Maximum : 80 Marks

Section A

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

1. Number of high energy bonds in ATP is _____.
2. Gain of electrons is called _____.
3. Name a radioactive isotope used in studying metabolism.
4. State an example for compartmentalization of metabolic pathways in cell.
5. Total number of NADH produced in anaerobic glycolysis is _____.
6. Name the enzyme involved in synthesis of cellulose.
7. Glyoxylate cycle occurs in _____.
8. Active donor of glucose in glycogenesis is _____.
9. _____ is called energy currency of the cell.
10. Give an example for anabolic pathway.
11. Name a low energy compound
12. Chemiosmotic theory was put forward by _____.
13. Which complex does succinate dehydrogenase belong to ?
14. Name the rate limiting enzyme in HMP.
15. Electrons from FADH₂ enters ETC via _____.
16. _____ is a mobile electron carrier in ETC.

(16 × 1 = 16 marks)

Turn over

Section B

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

17. Give two characteristics of high energy compounds.
18. State the significance of HMP.
19. Why is phosphofructokinase, and not hexokinase the rate limiting enzyme in glycolysis ?
20. Compare catabolism and anabolism.
21. Define redox potential. How is correlated to electron transfer ?
22. Calculate the number NADH and FADH₂ produced from two molecules of pyruvate in TCA.
23. Draw a neatly labelled diagram of mitochondria.
24. What do you mean by anaplerosis ? State one example.
25. Why is number ATPs produced from FADH₂ lesser than that from NADH via ETC ?
26. How are inhibitors different from uncouplers ?

(8 × 3 = 24 marks)

Section C

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

27. Discuss any four experimental approaches to study metabolism.
28. How does galactose enter glycolysis ?
29. Detail on Cori's cycle and its significance.
30. Represent diagrammatically the inhibitors of ETC and their site of inhibition.
31. How are reducing potentials transported to mitochondria ?
32. Discuss the hormonal regulation of glycogen metabolism.

(4 × 5 = 20 marks)

Section D

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

33. Detail the sequence of reactions in citric acid cycle.
34. Explain the role of ETC in ATP generation.
35. Describe how glucose is synthesized from non-carbohydrate precursors.

(2 × 10 = 20 marks)