(Pages : 3)

9868

Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, January 2016

First Degree Programme under CBCSS

Complementary Course for Botany and Zoology

BC1131 : BIOPHYSICAL CHEMISTRY

(2014 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – I

Very short answer type – Maximum **two** sentences. Answer **all** questions.

(10×1=10 Marks)

1. Broasted's theory of acids.
2. If pH of a solution is 5, what will be the value of pOH ?
3. Which is the emulsifying agent in milk ?
4. What you mean by physiological saline ?
5. How covalent bond is formed ?
6. Write example for optical isomerism.
7. Name the thin layer materials used in TLC.
8. Write the principle of isoelectric focussing.
9. Use of light filters in calorimeter.
10. Use of P^{32} in biology.

P.T.O.

SECTION – II

Short answer questions – **not** to exceed **one** paragraph. Answer **any eight** questions. **(8×2=16 Marks)**

11. What are buffers, give examples.
12. The importance of pKa value of weak acids.
13. Differentiate lyophilic and lyophobic colloids.
14. How will you prepare IM solution of a solute ?
15. Common functions of CHO and CO groups.
16. Describe peptide bond.
17. What are anomers ?
18. What type of ion exchangers are used for Amino acid separation ?
19. Name different types of rotors used in centrifugation.
20. Write the application of density gradient centrifugation.
21. Differentiate calorimeter and spectrophotometer.
22. Describe Beer'- Lambert's law.

SECTION – III

Short essay – **not** more than **120** words. Answer **any six** questions. **(6×4=24 Marks)**

23. Explain buffer capacity.
24. Calculate the pH of a buffer containing 1 molar sodium acetate and 1 M. acetic acid.
25. Explain the mechanism of osmatic pressure.
26. Differentiate simple diffusion and osmosis with example.
27. Detailed note on hydrogen bond.

28. Short note on disulphide linkage and its importance.

29. Note on isoelectric focusing.

30. Note on ultra centrifugation.

31. Write note on biological applications of isotopes.

SECTION – IV

Long Essay

Answer **any two** questions. **(2×15=30 Marks)**

32. Derive Henderson-Hasselbalch equation and the conditions at which a buffer shows maximum buffering capacity.

33. Explain different electrophoretic techniques.

34. Donnan membrane equilibrium equation and membrane hydrolysis.

35. Essay on isomerism, classification with examples.

(Pages : 2) **B – 3089**

Reg. No. : 245161320003

Name : Akshaya K.

First Semester B.Sc. Degree Examination, December 2016
First Degree Programme under CBCSS
BIOCHEMISTRY (For BOTANY & ZOOLOGY)
Complementary Course – I : BC 1131
Biophysical Chemistry
(2014 Adm. Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

Very short answer type maximum **two** sentences (answer **all** questions). **(10×1=10 Marks)**

1. Define isoelectric pH of a solution. Mention its significance.
2. What are the main factors affecting the osmotic pressure ?
3. Define Tyndall effect.
4. Distinguish between an ionic bond and a covalent bond.
5. Define the terms
   a) Normality
   b) Molarity.
6. Write the basic principle of thin layer chromatography.
7. How a buffer system is formed ?
8. Define optical isomerism.
9. Distinguish between colorimetry and spectrophotometry.
10. Define half life period of a radio active substance. How the radioactivity is expressed ?

SECTION – II

(Short answer questions **not** to exceed **one** paragraph. Answer **any eight** questions). **(8×2=16 Marks)**

11. Water is an excellent solvent. why ?
12. Distinguish between a slycosidic bond and a phosphodiester bond.
13. What are the Vant Hoff's laws of osmotic pressure ?

P.T.O.

14. Write any two characteristic reactions of the NH_2 group.
15. Write the Henderson Hasselbalch equation. Mention the significance.
16. How emulsions are formed ? What is the action of an emulsifying agent ?
17. What is isoelectric focusing ? Mention its significance.
18. What are the application of gas liquid chromatography ?
19. Write short note on bicarbonate buffer system of plasma.
20. What are the hazards of radioactivity ?
21. If the pH of blood is 7.1 and the HCO_3^- concentration is 8 mm, what is concentration of CO_2 in blood (PK' for $HCO_3^-/CO_2 = 6.1$) ?
22. At 75°C, the KW of water is 16.9×10^{-14}. Find the pH.

SECTION – III

Short essay **not** to exceed **120** words. (Answer **any six** questions). **(6×4=24 Marks)**

23. What are the types of radioactive decay ?
24. What are the components of a photometer ?
25. Write the significance of OH, SH, CHO and COOH groups in biomolecules.
26. Write an account on Donnan membrane equilibrium.
27. Write a note on viscosity and its measurement.
28. Summarize the principle and application of Gel filtration chromatography.
29. Write an account on hydrophobic interactions.
30. What are the properties of a colloidal systems ?
31. Describe the components of the HPLC system.

SECTION – IV
(Long Essay)

Answer **any two** questions. **(15×2=30 Marks)**

32. Discuss the principle, procedure and applications of ion exchange chromatography.
33. Write an essay on polyacrylamide gel electrophoresis.
34. Summarize the biological applications of radioactive isotopes.
35. Give an account of classification of isomerism with examples.

(1)

(Pages : 2) **D – 5038**

Reg. No. : 25017132008

Name : Ahalya.u.v

First Semester B.Sc. Degree Examination, February 2018
First Degree Programme under CBCSS
(For Botany and Zoology)
COMPLEMENTARY COURSE – I
BC 1131 : BIOPHYSICAL CHEMISTRY
(2014 Adn. Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very short answer type – maximum two sentences)

Answer **all** questions : **(10×1=10 Marks)**

1. pH of a solution is 6. Find out the pOH of the solution.
2. Write down Henderson – Hasselbalch equation.
3. Define osmosis.
4. What is an isotonic solution ?
5. What is Tyndall effect ?
6. What are emulsifying agents ? Give one example.
7. Define :
   a) Transmittance
   b) Absorbance.
8. What is Svedberg constant ?
9. Define electrophoresis.
10. Name two radioactive isotopes used in biochemical research.

SECTION – II

(Short answer questions – not to exceed **one** paragraph)

Answer **any eight** questions : **(8×2=16 Marks)**

11. What is a weak electrolyte ? Give one example.
12. What is a buffer ? What is its significance ?
13. Calculate the normality of a Na_2CO_3 solution obtained by dissolving 0.53 g anhydrous Na_2CO_3 in 100 ml water.

0.1N

P.T.O.

14. State Van't Hoff's law for dilute solutions and mention its application.
15. Distinguish between a true solution and a colloidal solution.
16. Make a note on emulsions.
17. What is Beer Lambert law ?
18. What is a monochromator ? Name two monochromators.
19. Distinguish between a peptide bond and a glycosidic bond.
20. What are the applications of affinity chromatography ?
21. Name the functional groups in glyceraldehyde.
22. Make a note on alpha rays.

SECTION – III

(Short essay – **not** to exceed **120** words)
Answer **any six** questions : **(6×4=24 Marks)**

23. Properties of colloids.
24. Effect of ionisation and molecular size on osmotic pressure.
25. Any four parameters used to express concentration of a solution.
26. Radio immune assay.
27. SDS-PAGE.
28. Colorimetry.
29. Principle and application of density gradient centrifugation.
30. Technique of isoelectric focussing.
31. Non-covalent interactions in biological systems.

SECTION – IV

(Long essay)
Answer **any two** questions : **(2×15=30 Marks)**

32. Discuss the principle, procedure and applications of TLC.
33. Explain the biological applications of radioactive isotopes.
34. Give an account of common functional groups and their significance in biomolecules.
35. Explain the principle, procedure and applications of affinity chromatography.

(Pages : 2) **F – 1870**

Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, November 2018
First Degree Programme under CBCSS
BIOCHEMISTRY (For Botany and Zoology)
Complementary Course – I : BC 1131
Biophysical Chemistry
(2014 Adm. Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

Very short answer type – maximum **two** sentences.
(Answer **all** questions) : **(10×1=10 Marks)**

1. What is meant by isotonic solution ?
2. Define Rf value.
3. What is the principle of gel filtration ?
4. How will you prepare percentage solution ?
5. State Vant Hoff's law.
6. What is molar extension co-efficient ?
7. How are covalent bonds formed ?
8. What are optical isomers ?
9. Define diffusion.
10. What is meant by buffer capacity ?

SECTION – II

Short answer questions - **not** to exceed **one** paragraph.
(Answer **any eight** questions) : **(8×2=16 Marks)**

11. Differentiate between strong and weak electrolyte.
12. What is meant by hyper and hypotonic solution ?
13. Define half life of a radio active element.
14. List out any two applications of radio active element.

P.T.O.

15. What is Tyndall effect ?
16. Define molarity and molality.
17. What is Keto-enol tautomerism ?
18. Write the principle of PAGE.
19. What is sved berg unit ?
20. Write the applications of ultra centrifuge.
21. Define surface tension.
22. What is the principle of ion exchange chromatography ?

SECTION – III

Short essay - **not** to exceed **120** words,
(Answer **any six** questions) : **(6×4=24 Marks)**

23. What is the significance of peptide linkage ?
24. Explain briefly biological buffer system.
25. What are emulsions and emulsifying agents ?
26. Differentiate between lyophobic and lyophilic colloid.
27. What is osmosis and reverse osmosis ?
28. Explain the technique of isoelectric focussing.
29. Describe the instrumentation of colorimeter.
30. Define an acid and a base according to Lewis concept.
31. Explain two dimensional gel electrophoresis.

SECTION – IV

Long essay (Answer **any two** questions) : **(15×2=30 Marks)**

32. Give an account of the biological applications of radio active isotopes.
33. Discuss high performance liquid chromatography as a technique for the separation of macro molecules.
34. Explain the classification of isomerism with examples.
35. Define colloids and discuss the types and properties of colloids.

(Pages : 3) **H-2077**

Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, November 2019

First Degree Programme under CBCSS

(For Botany and Zoology)

Complementary Course I

BC 1131 : BIOPHYSICAL CHEMISTRY

(2014 Admission onwards)

Time : 3 Hours Max. Marks : 80

SECTION - I

Very Short answer type Maximum two sentences.

(Answer **all** questions)

1. Define P ka value.
2. What is meant by hypertonic solution?
3. Define buffer with example.
4. What is Geometriceo isomerism?
5. State Van't Hoff's law.
6. What are the principle of Chromatography?
7. What is normality?

P.T.O.

8. What is Tyndall effect?

9. Define half life of a radio active compound.

10. How are peptide bonds formed?

(10 × 1 = 10 Marks)

SECTION - II

(Short answer questions not to exceed one paragraph)

(Answer any **eight** questions)

11. Define diffusion and osmosis.

12. Distinguish between true and colloidal solution.

13. What is osmosis and reverse osmosis?

14. Illustrate the significance of glycosidic bond.

15. Define : Viscosity and give the example.

16. How are disulphide bond formed?

17. What are optical isomers?

18. What is Iso electric focussing?

19. What is the significance of colorimeter?

20. Write the principle of HPLC.

21. List out the applications of density gradient centrifugation.

22. What is the significance of radio isotopes?

(8 × 2 = 16 Marks)

SECTION - III

(Short essay not to exceed 120 words)

(Answer any **six** questions)

23. List out the properties and functions of colloids.
24. What is the significance of phospho diester linkage? Explain with examples.
25. Write the types of emulsion.
26. Derive the Henderson Hassel balch equation.
27. Give an account of classification of isomers.
28. State Beer-Lambert's law and its applications.
29. Define an acid and a base according to Arrhenius concept.
30. Write the principle and applications of TLC.
31. Differentiate between colloids and crystalloids.

(6 × 4 = 24 Marks)

SECTION - IV

(Long Essay)

(Answer any **two** questions)

32. Explain Donnan membrane equilibrium and its biological significance.
33. Discuss SDS - PAGE as a suitable technique for the separation of proteins.
34. Explain the parts of a spectrophotometer with a help of neat diagram.
35. Give an account of the biological applications or radio active isotopes.

(2 × 15 = 30 Marks)

(Pages : 4) **L – 3811**

Reg. No. : 247201320 43

Name : Sujitha Baby

First Semester B.Sc. Degree Examination, August 2021

Career Related First Degree Programme under CBCSS

Group 2 (a) – Botany and Biotechnology

Complementary Course I

BB 1131 : PHYSICAL ASPECTS OF BIOCHEMISTRY

(2020 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. Short answer type. **Each** question carries **1** mark.

1. What is pH?
2. Name two biological buffers.
3. What is molarity?
4. Define osmotic pressure.
5. What is Tyndall effect?
6. State Beer-Lambert law.
7. Name an adsorbent used in TLC.
8. What is electrophoresis?

P.T.O.

9. Which type of macromolecules have peptide bonds?

10. Give two examples for non-covalent bonds.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions not to exceeding in a paragraph. **Each** question carries **2** marks.

11. How do buffers resist change in pH?

12. Show that ionic product of water is a constant.

13. Write the Hederson Hasselbalch equation and give one use of this equation.

14. Spell out any four unique properties of water

15. One liter of a public water supply contains 3mg chlorine; calculate the ppm of chlorine in the sample.

16. What is the basic principle of diffusion?

17. How can a colloidal solution and true solution of the same colour be distinguished from each other?

18. What is the difference between oil in water emulsion and water in oil emulsion?

19. What are monochromators? Name the monochromators used in spectrophotometers.

20. What is a Svedberg unit? What is the value of one Svedberg?

21. What is a glass electrode?

22. What is the principle of affinity chromatography?

23. What are ion exchange resins?

24. What is electroendosmosis?

25. Name the functional groups in Cysteine.

26. Distinguish between peptide bond and glycosidic bond.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** question carries **4** marks.

27. What property makes water a universal solvent? Explain.

28. Discuss the different biological buffer systems.

29. How does diffusion differ from osmosis? Explain.

30. Discuss Vant-Hoff's law of osmotic pressure and its application.

31. Distinguish between emulsions and emulsifying agents with suitable examples.

32. With the help of a net diagram describe the parts of a single beam spectrophotometer.

33. Discuss the principle and application of density gradient centrifugation.

34. Explain the principle and applications of TLC.

35. What is native PACE? What is it used for?

36. What are non covalent bonds? Discuss the different types non-covalent bonds.

37. Explain the significance of functional groups in biomolecules.

38. Discuss the most suitable method for separating and detecting amino acids in a given sample of protein hydrolysate.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Long essay type **each** question carries **15** marks.

39. Discuss the principle and applications of buffers.

40. Write the principle, procedure and applications of gelfiltration.

41. Discuss the principle, procedure and applications of differential centrifugation.

42. Explain the principle, procedure and applications of SDS-PAGE

43. Give an account of inter and intramolecular interactions in biological systems.

44. Describe the parts of a pH meter. How is it used for measuring the pH of a solution.

(2 × 15 = 30 Marks)

(Pages : 3) **A – 5191**

Reg. No. : 25014132027

Name : Kasthuri Dev

Second Semester B.Sc. Degree Examination, July 2016
First Degree Programme under CBCSS
Complementary Course for Botany & Zoology
BC 1231 : BIOMOLECULES
(2014 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

Very short answer type – maximum **two** sentences. Answer **all** questions. **(10×1=10 Marks)**

1. What are anomers ?
2. Give an examples of aldohexose sugars.
3. Define Saponification number.
4. Short note on essential fatty acids.
5. Draw the structure of Glycine.
6. Give some examples of aromatic aminoacids.
7. What are nucleotides ?
8. Mention three types of RNA.
9. Write any two steroid hormones.
10. Give the functions of oxytocin.

SECTION – II

Short answer questions – **not** to exceed **one** paragraph. Answer **any eight** questions. **(8×2=16 Marks)**

11. Write short notes on structure, properties and functions of glucose.
12. Differentiate between starch and cellulose.

P.T.O.

13. What is mutarotation ? Give its mechanism.

14. Short note on cerebroside.

15. Define neutral fat.

16. Give any two functions of bile acids.

17. Write the ninhydrin test of aminoacid.

18. Give any four hydroxy aminoacid.

19. Draw the peptide bond of primary protein.

20. Write any four high energy compounds.

21. Define Chargaff's rule.

22. What is function of Gastrin ?

SECTION – III

Short essay – **not** to exceed **120** words. Answer **any six** questions. **(6×4=24 Marks)**

23. Describe the structure, properties and functions of chitin.

24. Differentiate the starch and cellulose.

25. Discuss the various methods used in determination of N-terminal aminoacid.

26. Explain the tertiary structure of DNA.

27. Illustrate about denaturation of proteins.

28. Briefly explain the Watson and Crick model DNA.

29. What is acid number ? Mention its importances.

30. Short notes on prostaglandins.

31. What is T_3 and T_4 ? Give the roles of them.

SECTION – IV

Long essay. Answer **any two** questions. **(2×15=30 Marks)**

32. Write the principles on which the following tests are based.
    i) Molisch's
    ii) Seliwenoff's
    iii) Ptollen's and
    iv) Bial's test in the identification of simple sugars.

33. Write down the structure of a triacylglycerol and brings out its similarities and differences with lecithin and cephalin.

34. i) Point out the relevance of the specific basepairing rule of DNA in the spatial structure.
    ii) Explain the experimental evidence supporting the Watson and Crick model DNA.

35. i) Explain why proteins are ampholytes.
    ii) Illustrate the mechanism of action of hormones.

(Pages : 3) **C – 4212**

Reg. No. : 24514203 245161320 49

Name : Sruthy.S.L

Second Semester B.Sc. Degree Examination, July 2017
First Degree Programme under CBCSS
Complementary Course for Botany & Zoology
BC 1231 Biomolecules
(2014 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very short answer type maximum **two** sentences) (Answer **all** questions).

(10×1=10 Marks)

1. What are invert sugars ?
2. Draw the structure of α-D-glucose.
3. What are fattyacids ?
4. Give an examples of unsaturated fattyacids.
5. Mention any two properties of aminoacids.
6. Name any two sulphur containing aminoacids.
7. What are RNA ?
8. Give any two biological importances of DNA.
9. Where is synthesis TSH ?
10. Name some second messengers.

P.T.O.

SECTION – II

(Short answer questions – **not** to exceed **one** paragraph) (Answer **any eight** questions). **(8×2=16 Marks)**

11. Describe the mutarotation.
12. What is anomers ? Mention which carbon atom is anomeric in glucose ?
13. Give any one test to identify monosaccharide.
14. What is terpenes ?
15. Define amphipathic lipids.
16. Give any two names of lipoproteins.
17. Short note on isoelectric point.
18. Write the importances of proteins.
19. Mention any one color reaction of aminoacid.
20. Draw the structure of adenine.
21. Write the functions of tRNA.
22. What are hormones ?

SECTION – III

(Short Essay – **not** to exceed **120** words) (Answer **any six** questions). **(6×4=24 Marks)**

23. Explain the strong and weak oxidising agents on monosaccharides.
24. Short notes on Glycosaminoglycans.
25. Write the structure and biological functions of cholesterol.
26. Differentiate the simple fat from wax.
27. How do you classify aminoacids ?
28. Explain the secondary structure of proteins.

29. Compare the RNA and DNA.

30. Discuss the structure and biological importances of ATP.

31. Illustrate the synthesis and structure of testosterone.

SECTION – IV

(Long essay) (Answer **any two** questions). **(2×15=30 Marks)**

32. Write schematically the structure of heteropolysaccharides and bacterial cell wall polysaccharides.

33. Describe the structure of ceramide, cerebroside and ganglioside.

34. i) How will you identify the presence of arginine and tryptophan in a given biological sample ?

    ii) What happens when a protein solution is heated ?

35. Discuss elaborately about chemistry and classification of hormones.

(Pages : 3) **G – 2453**

Reg. No. : .....

Name : .....

SECOND SEMESTER B.Sc. Degree Examination, May 2019

FIRST DEGREE PROGRAMME UNDER CBCSS

Complementary Course II

BC 1231: BIOMOLECULES

(For Botany, Zoology)

(2014 admn onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very short Answer Type – Maximum two sentences)

Answer **all** questions :

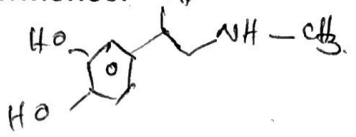
1. What do you mean by levorotatory?
2. Define racemic mixture.
3. What are anomers?
4. Define acid value.
5. Draw the structure of phosphatidyl choline.
6. Define isoelectric point.
7. Give the structure of guanine.

P.T.O.

8. Differentiate between oligonucleotide and polynucleotide.

9. Name any two peptide hormones.

10. Write about adrenaline.



(10 × 1 = 10 Marks)

SECTION – II

(Short Answer questions – not to exceed one paragraph)

Answer **any eight** questions.

11. What are sugar acids?

12. Write about Barfoed's test and Benedict's test.

13. Write about the classification of carbohydrates.

14. What is acrolein test?

15. Distinguish between sphingolipid and phospholipid.

16. Give a brief note on gangliosides.

17. What are unsaturated fatty acids? Give any two examples.

18. What is the significance of phosphodiester linkage?

19. What is the difference between α-helix and β-pleated sheet?

20. Write about the types of DNA.

21. Give the structure of the following hormones: estrogen and progesterone.

22. Differentiate between insulin and glucagon.

(8 × 2 = 16 Marks)

SECTION – III

(Short essay – not to exceed 120 words)

Answer **any six** questions.

23. Write about the structure and properties of cellobiose and trehalose.

24. Write about cellulose and glycogen.

25. Give an account on essential and non-essential fatty acids.

26. Write about triglycerides.

27. Bring out the difference between α-keratin and collagen.

28. Write about the color reactions of proteins.

29. Explain in detail about mRNA.

30. Write about the site of biosynthetic and chemical structure of testostrone, glucagon, T_3 and oxytocin.

31. Elaborate on the female sex hormones.

(6 × 4 = 24 Marks)

SECTION – IV

(Long Essay)

Answer **any two** questions.

32. What are mucopolysaccharides? Explain them in detail.

33. Write about the primary and secondary structure of DNA.

34. Write about the tertiary and quaternary structure of proteins.

35. Give a brief note on the general classification of hormones.

(2 × 15 = 30 Marks)

(Pages : 4) **J – 2685**

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2020

First Degree Programme Under CBCSS

Complementary Course II

BC 1231 : BIOMOLECULES (FOR BOTANY, ZOOLOGY)

(2014 Admn. onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very short answer type-maximum two sentences)

Answer **all** questions :

1. Give an example of a pair of aldose-ketose isomers.
2. What are homopolysaccharides?
3. Define acid value of oils.
4. Draw the structure of phosphatidyl choline.
5. Name two basic amino acids and denote their one letter symbols.
6. Give the principle of Biuret test for proteins.
7. Why cAMP is called a second messenger?

8. State Chargaffs rule.

9. What is the function of vasopressin?

10. Which is the site of biosynthesis of thyroid stimulating hormone?

(10 × 1 = 10 Marks)

SECTION – II

(Short answer questions-not to exceed one paragraph)

Answer any **eight** questions :

11. How will you designate two enantiomers as D and L forms.

12. Why glucose and fructose give the same osazone?

13. Give an account of the Acrolein test for fats.

14. What do you mean by PUFA? Give examples and mention their sources.

15. How amino acids are classified based on their polarity?

16. What are the methods used for the determination of N terminal amino acid in a polypeptide chain?

17. What are plasma proteins? Describe their functions.

18. What are the different types of RNAs?

19. Differentiate between nucleotides and nucleosides with examples.

20. What are the variants of DNA?

21. How hormones act as first messengers?

22. What are the functions of oxytocin?

(8 × 2 = 16 Marks)

SECTION – III

(Short Essay-not to exceed 120 words)

Answer any **six** questions :

23. Do non reducing sugars exhibit mutarotation? Justify your answer.

24. What are glycosamino glycans? Give two examples with structures and major functions.

25. Give an account of the structure and properties of lactose and sucrose.

26. Write a note on the major reactions of fatty acids.

27. Give an account of the structure and functions of any two sphingolipids.

28. Describe acid-base properties of amino acids.

29. Write a note on the secondary structure of DNA.

30. Give an account of the structure and functions of ATP and GTP.

31. Describe the site of biosynthesis and functions of any two peptide hormones.

(6 × 4 = 24 Marks)

SECTION – IV

(Long Essay)

Answer any **two** questions :

32. Elaborate the structure and functions of any three homopolysaccharides present in nature.

33. What are steroids? Give an account of the structure, and important reactions of cholesterol and ergosterol.

34. Write a note on the levels of structural organisation of proteins using haemoglobin as example.

35. Explain the site of biosynthesis, structure and functions of the following hormones.

    (a) Adrenalin

    (b) T3 and T4

    (c) Aldosterone.

(2 × 15 = 30 Marks)

(Pages : 3) **D – 3120**

Reg. No. : 25016132018

Name : Anantha A.S.

Third Semester B.Sc. Degree Examination, December 2017
First Degree Programme under CBCSS
Complementary Course for Botany & Zoology
BC 1331 : ENZYMES AND BIOENERGETICS
(2014 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very short answer type – Maximum **two** sentences.)

(Answer **all** questions). **(10×1 = 10 Marks)**

1. What is Km (Michaelis constant) ?
2. Give full form of TPP as coenzyme.
3. What is oxidative phosphorylation ?
4. Mention the different photosynthetic pigments.
5. What are non-competitive inhibitors ?
6. What is the biological active form of Vitamin D ?
7. Name different coenzymes (any two) involved in biological oxidation.
8. Give any example of substrate level phosphorylation.
9. What happens to the carbohydrates formed in photosynthesis of green plants at a later stage ?
10. What are isoenzymes ? Give any two examples.

P.T.O.

SECTION – II

(Short answer questions – **not** to exceed **one** paragraph.)

(Answer **any eight** questions). **(8×2 = 16 Marks)**

11. What are enzyme inhibitors ?
12. What is the role of Vitamin D ?
13. Give the examples of substrate level phosphorylation.
14. Name the essential elements present in nitrogenase enzyme. What type of essential elements are they ?
15. Give the example of competitive inhibitors.
16. What is the biochemical role of biotin ?
17. Name few reactions where P/O ratio is 2.
18. Name an anaerobic, free lining, photo-hetrotrophic nitrogen fixing bacterium.
19. What are activators ?
20. What is the "biological active" form of Thiamine ?
21. What are uncouplers ?
22. Write the balanced equation of nitrogen fixation.

SECTION – III

(Short essay – **not** to exceed **120** words.)

(Answer **any six** questions). **(6×4 = 24 Marks)**

23. What are enzymes ? How are they classified ?
24. What are the physiological roles of Folic acid ?
25. Define Electron Transport Chain (ETC) or respiratory chain.
26. Give comparison between cyclic and non-cyclic photo-phosphorylation.

27. What is meant by active site ? Explain with examples.

28. What are the general functions of ascorbic acid ?

29. Explain photosynthesis.

30. What is coenzyme Q ? What are its role in ETC ?

31. How the reducing equivalents are passed in ETC ?

SECTION – IV

(Long essay).

(Answer **any two** questions). **(15×2 = 30 Marks)**

32. State the salient differentiating points of competitive and non-competitive inhibitions.

33. Discuss any three important metabolic role of Vitamin C.

34. Show schematically the exact sites of ATP production in the ETC.

35. Discuss the photosystem – I and photosystem – II in photosynthesis.

(Pages : 3) **F – 4054**

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, January 2019
First Degree Programme Under CBCSS
Complementary Course – III : For Botany and Zoology
BC 1331 : ENZYMES AND BIOENERGETICS
(2014 Adm. Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

Very Short Answer Type- Maximum two sentences. Answer **all** questions.

(10×1=10 Marks)

1. What are Ligases ?
2. Define Km value.
3. Example for non-competitive enzyme inhibition.
4. What are Prosthetic groups ?
5. Co enzyme form of flavins.
6. What are Ubiquinones ?
7. Inhibitors of ETC.
8. Role of hydrogen sulphide in ETC.
9. Thin filaments.
10. Meaning of photosynthetic electron transport.

P.T.O.

SECTION – B

Short Answer Questions. **Not** to exceed one paragraph) Answer **any eight.** **(8×2=16 Marks)**

11. How enzymes are classified ?
12. Advantage of Lineweaver Burk plot.
13. Non-competitive enzyme inhibition.
14. Isoenzymes.
15. Functions of vitamin A.
16. Role of thiamine in metabolism.
17. Write two reactions of NADP.
18. Why the name ETC ?
19. Meaning of P/O ratio.
20. Inhibition of ETC.
21. Energy sources of muscle contraction.
22. Nitrogen fixing enzymes.

SECTION – C

(Short essays **not** to exceed **120** words). Answer **any six.** **(6×4=24 Marks)**

23. Explain how temperature affect velocity of enzyme catalysed reaction.
24. Uncouplers of ETC.
25. Note on enzyme purification.
26. Differentiate Photosystem I and II.
27. Clinical importance of LDH.
28. Physiological functions of Vitamin C.

29. Note on Unit sarcomere.

30. Role of calcium in muscle contraction.

31. Retoenzymes.

SECTION – D

Long essay. Answer **any two**. **(15×2=30 Marks)**

32. Essay on enzyme inhibition.

33. Details of ETC.

34. Explain the sliding filament theory of n.

35. Details of Calvin cyclic.

(Pages : 3) **H – 1520**

Reg. No. : 25018132010

Name : Ashna. M.

Third Semester B.Sc Degree Examination, October 2019

First Degree Programme under CBCSS

(For Botany and Zoology)

Complementary Course – III

BC 1331 : ENZYMES AND BIOENERGETICS

(2014 Admission onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

I. Answer **all** questions. Very short answer type – Maximum **2** sentences :

1. Meaning of specific activity.

2. What you mean by broadly specific enzymes?

3. Differentiate pepsinogen and pepsin.

4. Precursor of Vitamin D.

5. Meaning of redox potential.

6. Role of Iron sulphur proteins in ETC.

7. Number of ATP produced from NADH in ETC.

8. What are Myosins? (Out of Syllabus)

P.T.O.

9. Thick filaments. (Out of Syllabus)

10. Meaning of light reactions.

(10 × 1 = 10 Marks)

SECTION – B

Short Answer Questions – Not to exceed one paragraph. Answer any **eight**.

11. How enzymes are classified?

12. Advantages of Lineweaver Burk plot.

13. Non-Competitive enzyme inhibition.

14. Isoenzymes.

15. Functions of vitamin A.

16. Role of thiamine in metabolism.

17. Write two reactions of NADP.

18. Why the name ETC?

19. Meaning of P/O ratio.

20. Inhibition of ETC.

21. Energy sources of muscle contraction. (Out of Syllabus)

22. Nitrogen fixing enzymes.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six**. Short essays – Not to exceed **120** words.

23. Cyclic photophosphorylation.

24. Chemiosmotic theory.

25. Major electro carrying complexes in ETC.

26. Note on competitive enzyme inhibition.

27. Describe co enzymes of flavins?

28. What are high energy compounds?

29. Note on muscle proteins. (out of Syllabus)

30. Differentiate C3 and C4 plants.

31. Nitrogen cycle.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two**. Long essay. Each carries **15** marks.

32. Essay on B complex vitamins.

33. Mechanisms of Oxidative phosphorylation.

34. Explain non-cyclic photo phosphorylation.

35. Details of enzyme regulation.

(2 × 15 = 30 Marks)

(Pages : 4) **K – 2434**

Reg. No. : 2501913200 9

Name : Hema Sunil

Third Semester B.Sc. Degree Examination, March 2021

First Degree Programme Under CBCSS

Biochemistry

Complementary Course III : For Botany and Zoology

BC 1331 : ENZYMES AND BIOENERGETICS

(2019 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very short Answer Type — maximum two sentence)

Answer **all** questions :

1. Name two uncouplers of oxidative phosphorylation.
2. What is the role of PEP Carboxylase in the C4 pathway?
3. What is denaturation?
4. Define nitrogen assimilation.
5. Draw MM plot.
6. Mention the role of antenna complex in photosynthesis.
7. Which are the coenzyme forms of nicotinic acid?

P.T.O.

8. Give two examples of C4 plants.

9. Define prosthetic group.

10. Why is Calvin cycle known as the dark reaction?

(10 × 1 = 10 Marks)

SECTION – II

(Short Answer Questions not to exceed one paragraph)

Answer **any eight** questions.

11. What is the effect of enzyme concentrations on enzyme catalyzed reactions?

12. Why is ATP known as a high energy compound?

13. What is positive co-operativity?

14. Write a note on coenzyme form of vitamins.

15. What important enzymes are involved in nitrogen fixation?

16. What is meant by feedback inhibition?

17. Difference between light and dark reaction.

18. What is meant by optimum temperature and optimum pH?

19. What are zymogens? Give two examples.

20. Differentiate symbiotic and non-symbiotic nitrogen fixation.

21. Draw the structure of mitochondria and label the parts.

22. List any four functions of Vitamin C.

23. Write a note on nitrogenase complex.

24. What are properties of allosteric enzymes?

25. Write a note on role of high energy phosphates.

26. Differentiate between C_3 and C_4 plants.

(8 × 2 = 16 Marks)

SECTION – III

(Short essay not to exceed 120 words)

Answer **any six** questions.

27. Differentiate between, oxidative phosphorylation and substrate level phosphorylation.

28. What are isoenzymes and mention the clinical significance with example.

29. Give an account of sites of ATP production in ETC?

30. Write a short note on chemiosmotic theory.

31. Comment on C_4 pathway.

32. Write a short note on physiological functions of vitamin A and K?

33. Draw LB plot for competitive. non-competitive and uncompetitive inhibition.

34. Explain in detail the P/O ratio and Redox potential.

35. Comment on creatine phosphate and PEP with structure.

36. Explain allosteric regulation of enzymes.

37. Write a short note on formation of a root nodule in leguminous plants.

38. Differentiate between cyclic and noncyclic photophosphorylation.

(6 × 4 = 24 Marks)

SECTION – IV

(Long Essay)

Answer **any two** questions.

39. Explain dark reaction in photosynthesis.

40. Write an essay on Electron transport chain and its inhibition.

41. Describe in detail about biological nitrogen fixation.

42. Give a detailed account of the different types of enzyme inhibition.

43. Write an essay on oxidative phosphorylation with reference to its uncouplers.

44. How are enzymes classified? Explain with suitable examples.

(2 × 15 = 30 Marks)

(Pages : 3) **N – 2582**

Reg. No. : 250 20 132 050

Name : Shiva priya. J

Third Semester B.Sc. Degree Examination, March 2022

First Degree Programme under CBCSS

Biochemistry

Complementary Course III for Botany and Zoology

BC 1331 : ENZYMES AND BIOENERGETICS

(2020 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Very short Answer Type – (One sentence to maximum of **two** sentences).

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

1. Define nitrogen assimilation.
2. Mention the significance of Km value.
3. Draw MM plot.
4. What is the role of cytochromes in the electron transport chain?
5. Mention the role of ATP synthase in Oxidative phosphorylation.
6. Mention the role of antenna complex in photosynthesis.
7. Define active site.
8. What is apoenzyme?
9. Define prosthetic group.
10. Mention any two physiological functions of folic acid.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

(Short answer questions not to exceed **one** paragraph)

Answer any **eight** questions. Each carries **2** marks.

11. Comment on positive co-operativity.
12. Write a short note on coenzyme form of vitamins.
13. Write brief notes on the important enzymes involved in nitrogen fixation.
14. Comment on feedback inhibition.
15. Difference between light and dark reaction.
16. What is meant by optimum temperature and optimum pH *of* enzymes?
17. Differentiate symbiotic and non-symbiotic nitrogen fixation.
18. What is a redox reaction? Explain.
19. Draw the structure of mitochondria.
20. Write a brief note on nitrogen assimilation.
21. Discuss about the inhibitors of oxidative phosphorylation.
22. Differentiate between nitrification and denitrification.
23. Define double reciprocal plots.
24. What is the significance of P/O ratio?
25. Write a note on high energy compounds.
26. What is the effect of substrate concentrations on enzyme catalyzed reactions?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay not to exceed **120** words)

Answer any **six** questions. Each carries **4** marks.

27. Differentiate between oxidative phosphorylation and substrate level phosphorylation.
28. Define isoenzymes. Mention its clinical significance with example.

29. Explain the physiological functions of water soluble vitamins.

30. Write a short note on chemiosmotic theory.

31. Describe in detail the C_4 pathway.

32. Write a short note on physiological functions of vitamin E and K.

33. Draw the LB plot with reference to competitive, non-competitive and uncompetitive inhibition.

34. Explain the enzyme specificity with examples.

35. Explain the structure of Creatine Phosphate and ADP.

36. Explain the allosteric regulation of enzymes.

37. Write a short note on the formation of a root nodule in leguminous plants.

38. What is Calvin cycle, explain in detail?

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

Answer any **two** questions. **Each** carries **15** marks.

39. Explain in detail the enzymes classification with suitable examples.

40. What are the factors affecting the velocity of enzyme-catalysed reactions? Explain in detail with respective plot.

41. Explain in detail about the cyclic and noncyclic photophosphorylation.

42. Describe in detail about biological nitrogen fixation.

43. Give a detailed account of the different types of enzyme inhibition with examples.

44. Write an essay on electron transport chain with reference to its inhibition.

(2 × 15 = 30 Marks)

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(3)

(Pages : 3) **A – 3352**

Reg. No. : 245141322026

Name : Hasik Das

Fourth Semester B.Sc. Degree Examination, June 2016
First Degree Programme under CBCSS
Complementary Course for Botany and Zoology
BC 1431 : INTERMEDIARY METABOLISM
(2014 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – I
(Very short answer type – maximum two sentences)

Answer **all** questions.

1. How many ATP molecules are expended in glycolysis ?
2. What is glycogenin ?
3. Name any two essential fatty acids.
4. How are fatty acids transported to mitochondria ?
5. Name a tripeptide involved in the absorption of amino acids.
6. Name the coenzyme for succinate dehydrogenase.
7. How is ammonia transported in blood ?
8. What are biogenic amines ? Give one example.
9. Name the site of translation process.
10. Where is anticodon found ?

(10×1=10 Marks)

P.T.O.

SECTION – II

(Short answer questions-not to exceed one paragraph)

Answer **any eight** questions.

11. Write a brief note on Cori cycle.
12. What is the effect of glucagon on glycogenolysis ?
13. How does bile salts help lipid digestion ?
14. Name two phospholipids. What is the major function of phospholipids ?
15. Why is DNA replication semiconservative ?
16. How does trypsin differ from chymotrypsin in proteolytic activity ?
17. What are the functions of DNA polymerase ?
18. What is Wobble hypothesis ?
19. What are ketone bodies ? When are they formed ?
20. What is the biological significance of Pentose phosphate pathway ?
21. What is splicing ?
22. What are nucleosomes ?

(8×2=16 Marks)

SECTION – III

Short Essay-**not** to exceed **120** words. Answer **any six** questions.

23. Explain digestion and absorption of carbohydrates.
24. Describe the sequence of reactions in glycolysis.
25. Outline the reactions of pentose phosphate pathway.
26. How is palmitic acid synthesised ? Explain.
27. How are lipids digested and absorbed ?

28. Explain digestion of proteins and absorption of amino acids.

29. Where and how urea is synthesised in our body ?

30. Explain the structure of DNA.

31. Describe prokaryotic DNA replication. **(6×4=24 Marks)**

SECTION – IV
(Long Essay)

Answer **any two** questions :

32. Discuss glycogen metabolism and its regulation.

33. Explain the β-oxidation pathway of palmitate and work out its energetics.

34. Describe the general reactions involved in the metabolism of amino acids and mention the coenzymes involved in these reactions.

35. Describe the various steps in protein synthesis in prokaryotes. **(15×2=30 Marks)**

(Pages : 2) **C – 3819**

Reg. No. : 24515132024

Name : Anjana Vikraman

Fourth Semester B.Sc. Degree Examination, July 2017
First Degree Programme under CBCSS
(Complementary Course for Botany & Zoology)
BC 1431 : INTERMEDIARY METABOLISM
(2014 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very Short Answer Type – maximum two sentences)

Answer **all** questions.

1. How many ATP molecules are produced in glycolysis ?
2. Name the protein which acts as a primer and also as an enzyme in glycogenesis.
3. Name the precursor of cholesterol biosynthesis.
4. What are essential fatty acids ? Give one example.
5. What is the role of HCl in stomach ?
6. How is Trypsinogen activated ?
7. Write down the reaction catalysed by ALT.
8. How is histamine formed ?
9. What is a leading strand ?
10. Name the codon for selenocysteine. **(10×1=10 Marks)**

SECTION – II

(Short answer questions not to exceed one paragraph)

Answer **any eight** questions.

11. Write down the reaction catalysed by Phosphofructokinase. What is the effect of ATP on the activity of this enzyme ?
12. What is the effect of insulin on glycogenesis ?

P.T.O.

13. Distinguish between primary and secondary bile acids.
14. Make a brief note on lipids present in cell membrane.
15. What is glutathione ? What is its role in amino acid absorption ?
16. What are zymogens ? How are they activated ?
17. Make a brief note on RNA polymerase.
18. What is post-translational modification ?
19. Name the ketone bodies and explain how they are catabolised ?
20. Write down the functions of different types of RNA.
21. Write a short note on HMG CoA reductase.
22. What is α-oxidation ? **(8×2=16 Marks)**

SECTION – III

(Short Essay not to exceed 120 words)

Answer **any six** questions.

23. Explain gluconeogenesis.
24. How is glycogen biosynthesised ?
25. Outline the reactions of pentose phosphate pathway and explain the significance of the pathway.
26. Discuss β-oxidation of fatty acids.
27. How triglyceride biosynthesised ? Explain.
28. Explain the role of proteolytic enzymes in the digestion of proteins in our body.
29. Describe the general reactions involved in the metabolism of amino acids.
30. Explain the structure of tRNA.
31. Describe the steps in prokaryotic transcription process. **(6×4=24 Marks)**

SECTION – IV

(Long Essay)

Answer **any two** questions.

32. Describe TCA cycle and its regulation.
33. Discuss the cytoplasmic system of fatty acid biosynthesis and regulation of the pathway.
34. Explain how ammonia is formed from amino acids and how this ammonia transported to liver and converted to urea.
35. Discuss the events in translation process in prokaryotes. **(15×2=30 Marks)**

(Pages : 3) **E – 3395**

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, July 2018
First Degree Programme under CBCSS
Complementary Course IV
BC 1431 – INTERMEDIARY METABOLISM (For Botany, Zoology)
(2014 Admn. Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very Short Type – Maximum two Sentences)

Answer **all** questions. **(10×1=10 Marks)**

1. How many ATP molecules are expended in glycolysis ?
2. Where does TCA cycle operate ?
3. Name the protein which acts as a primer in glycogenesis.
4. Where in our body ketone bodies are formed ?
5. Name two essential fatty acids.
6. What is the precursor for bile acid synthesis ?
7. Name the coenzyme for transaminases.
8. Which vitamin is required for acetyl coenzyme A carboxylase ?
9. Name the major bonding in DNA double helix.
10. Name two nonsense codons.

P.T.O.

SECTION – II

(Short Answer Questions – not to exceed one paragraph)

Answer **any eight** questions. **(8×2=16 Marks)**

11. Represent Cori cycle using a diagram.
12. Write down the most important rate limiting step in glycolysis.
13. What are the enzyme components in pyruvate dehydrogenase complex ?
14. What is ACP/What is its function ?
15. What are the functions of bile acids ?
16. Name the hormones formed from cholesterol.
17. How is pepsinogen activated ?
18. How is ammonia transported to liver ?
19. What is glutathione ? What is its function ?
20. What are nucleosomes ?
21. How are amino acids activated ?
22. What is P site ?

SECTION – III

(Short Essay – not to exceed 120 words)

Answer **any six** questions. **(6×4=24 Marks)**

23. Describe the steps in gluconeogenesis.
24. Explain pentose phosphate pathway and its significance.
25. Explain the functions of phospholipids.
26. Describe the reactions of de novo synthesis of fatty acids.

27. Discuss digestion and absorption of lipids.

28. Explain digestion of proteins and absorption of amino acids.

29. Outline the steps in urea cycle.

30. Explain the salient features of DNA double helix.

31. Describe the process of transcription in prokaryotes.

SECTION – IV

(Long Essay)

Answer **any two** questions. **(15×2=30 Marks)**

32. Describe glycolysis and its regulation.

33. Discuss the pathway for the oxidation of stearic acid.

34. Comment on glycogen metabolism and its regulation.

35. Describe the events in prokaryotic translation process.

(Pages : 3) **G – 4079**

Reg. No : 24517132003

Name : Amrita S.R

Fourth Semester B.Sc. Degree Examination, July 2019

First Degree Programme under CBCSS

Complementary Course IV

BC 1431 INTERMEDIARY METABOLISM (FOR BOTANY, ZOOLOGY)

(2014 Adm. Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very short Type – maximum two sentences)

(Answer **all** questions)

1. What is glycolysis?
2. Write down the substrate level phosphorylation step in TCA cycle.
3. Name two tissues where glycogen is stored.
4. Name two ketone bodies?
5. Name two phospholipids.
6. Name two primary bile acids.
7. What are essential amino acids?
8. Which are transaminases?

P.T.O.

9. How are the two strands held together in a DNA double helix?

10. Which are the start codons?

(10 × 1 = 10 Marks)

SECTION – II

(Short Answer Questions – not to exceed one paragraph)

(Answer any **eight** questions)

11. Write a brief note on glucose absorption from Gastro Intestinal tract

12. Why is phosphofructokinase an allosteric enzyme?

13. How is UDP glucose formed?

14. What is carnitine? What is its function?

15. What are the functions of phospholipids?

16. What is alpha oxidation?

17. What is glutathione? What is its function?

18. How is ammonia formed from glutamate?

19. Write down a decarboxylation reaction.

20. What are DNA polymerases?

21. Why is genetic code degenerate?

22. What is meant by amino acid activation?

(8 × 2 = 16 Marks)

SECTION – III

(Short Essay – not to exceed 120 words)

Answer any **six** questions

23. Write down the irreversible steps in glycolysisand explain how they are reversed in gluconeogenesis?
24. How is glycogen synthesized in our body?
25. Explain the significance of pentose phosphate pathway.
26. Describe the steps in B-oxidation.
27. How are bile acids synthesized?
28. Explain the zymogen activation of proteolytic enzymes of GI tract.
29. Describe the reactions involved in the metabolism of amino acids.
30. Explain the salient features of genetic code.
31. Describe the transcription process in prokaryotes.

(6 × 4 = 24 Marks)

SECTION – IV

(Long Essay)

Answer any **two** question

32. Discuss the cytoplasmic system of fatty acid biosynthesis and its regulation.
33. Give a detailed account of prokaryotic DNA replication.
34. Explain the reciprocal regulation of glycolysis and gluconeogenesis.
35. Discuss the digestion of proteins and absorption of amino acids.

(2 × 15 = 30 Marks)

(Pages : 3) **J – 1194**

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, March 2020

First Degree Programme under CBCSS

Complementary Course IV

BC 1431 : INTERMEDIARY METABOLISM (For Botany, Zoology)

(2014 Admn, Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very Short Answer Type-maximum two sentences)

(Answer **all** questions)

1. What is meant by oxidative deamination'?
2. What is the speciality of fmet tRNA?
3. What is 'Shine Dalgarno sequence?
4. Write down the reaction catalysed by hexokinase.
5. What is the role of NAD(P)H in metabolism?
6. Mention the site of Urea cycle.
7. What are topoisomerase?

P.T.O.

8. What is the function of ptyalin?

9. Name two bile acids.

10. What are the components of DNA?

(10 × 1 = 10 Marks)

SECTION – II

(Short answer questions not to exceed **one** paragraph)

Answer **any eight** questions

11. Explain the reaction carried out by pyruvate dehydrogenase complex.

12. List out any four carbohydrate digesting enzymes and mention their specific action.

13. Explain Wobble hypothesis.

14. Write a note on the features of 'radial loops' in the structure of DNA.

15. Point out the rate-limiting step in TCA cycle.

16. List out the features of genetic code.

17. Distinguish between glucogenic and ketogenic amino acids.

18. Give an account on phospholipids.

19. What is the importance of glutathione cycle?

20. Explain nucleosome structure.

21. Describe the significance of Cori cycle.

22. Explain the reaction catalysed by lactate dehydrogenase.

(8 × 2 = 16 Marks)

SECTION – III

(Short Essay-not to exceed 120 words)

Answer **any six** questions

23. Outline the reactions in cholesterol biosynthesis.
24. Write a note on different types of RNA.
25. How does glycogen metabolism regulated in our body?
26. Write a note on transcription factors.
27. Outline the reactions of Pentose Phosphate Pathway and mention their importance.
28. Point out the irreversible steps in gluconeogenesis.
29. Explain the importance of ketone bodies. How are they formed?
30. Give a brief idea of different stages of translation.
31. How many molecules of ATPs are produced upon complete oxidation of glucose in aerobic and anaerobic conditions?

(6 × 4 = 24 Marks)

SECTION – IV

(Long Essay)

Answer **any two** questions

32. Explain the digestion and absorption of carbohydrates.
33. Give a detailed account on fatty acid synthesis and degradation.
34. Explain the zymogen activation of the proteolytic enzyme in the GI tract. Discuss the digestion of protein.
35. Detail the process of replication in prokaryotes.

(2 × 15 = 30 Marks)

(Pages : 4) **L – 2515**

Reg. No. : 24191320 19

Name : Pradeep

Fourth Semester B.Sc. Degree Examination, May 2021

First Degree Programme under CBCSS

Bio Chemistry

Complementary Course IV for Botany & Zoology

BC 1431 : INTERMEDIARY METABOLISM

(2019 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – I

(Very Short Answer Type - Maximum **two** sentences)

(Answer **all** questions)

1. What enzyme catalyzes oxidative deamination?
2. Define Shine-Dalgarno sequence.
3. Differentiate primary and secondary bile acids.
4. Write the name of regulatory enzyme in the urea cycle.
5. What is replication fork?
6. Which is the rate limiting step in pentose phosphate pathway?
7. What is activated form of glucose?

P.T.O.

8. Where does the Kreb cycle take place in a cell?

9. What is the significance okazaki fragments?

10. What is alpha oxidation of fatty acids?

(10 × 1 = 10 Marks)

SECTION – II

(Short Answer Question-not to exceed one paragraph)

Answer any **eight** questions

11. What is decarboxylation reaction of amino acids?

12. What are ketone bodies? Liver cannot utilize ketone bodies, Why?

13. Draw the structure of tRNA.

14. What is the significance of pentose phosphate pathway?

15. What are the two major functions of DNA polymerases?

16. What is the role of peptidyl transferase in protein synthesis?

17. What are essential fatty acids? Why are they essential?

18. What are the features of mRNA?

19. Define genetic code.

20. What are nucleosomes?

21. What are topoisomerases?

22. Define Deamination.

23. Mention any two importance of ketone bodies.

24. Name the important hormones in glycogen metabolism.

25. Mention the energetics of TCA cycle.

26. What are the features of rRNA?

10 M

(8 × 2 = 16 Marks)

SECTION – III

(Short Essay - not to exceed **120** words)

Answer any **six** questions.

27. Describe Cori cycle.

28. Enlist the properties of genetic code.

29. What are the physiological functions of phospholipids?

30. How are triglycerides synthesized?

31. Explain the fate of pyruvate after glycolysis.

32. Describe the regulation and energetics of glycolysis.

33. Give an account of reactions involved in pentose phosphate pathway.

34. Give an account of digestion and absorption of lipids.

35. Explain the role of allosteric regulation in metabolism.

36. Describe the role of coenzymes involved in the metabolism of amino acids.

37. Give an account of the regulation of the fatty acids biosynthesis pathway.

38. Give an account of DNA polymerases.

(6 × 4 = 24 Marks)

SECTION – IV

(Long Essay)

Answer any **two** questions.

39. Give an account of betaoxidation.

40. Give an account of digestion and absorption of proteins.

41. Explain the urea cycle with the help of diagram.

42. Explain in detail the pentose phosphate pathway.

43. Explain in detail the gluconeogenesis pathway.

44. Explain in detail the process of prokaryotic transcription process.

(2 × 15 = 30 Marks)
