Reg. No. : | | | | | | | | | | | | |

# Question Paper Code : 27075

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Second Semester

Biotechnology

BT 6201 — BIOCHEMISTRY

(Common to Pharmaceutical Technology)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the roles of the rough and smooth endoplasmic reticulum in the cell?
2. Mention the significance of uncouplers.
3. List the essential and non-essential amino acids.
4. Write a note on ketone bodies.
5. Write a note on codon degeneracy.
6. Define electronegativity and its significance in biology.
7. Differentiate between endocrine, paracrine and autocrine secretions.
8. Explain the relationship between collagen arid Vitamin 'C'.
9. Write a note on marker enzymes associated with diagnosis.
10. Briefly mention the biochemical events associated with fatty liver.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Differentiate simple diffusion from facilitated diffusion. (4)

(ii) Explain the different types of transport systems with appropriate examples. (12)

Or

(b) Describe in detail the components and the events of the oxidative Phosphorylation with a clear diagram and its importance. (16)

12. (a) (i) Clearly mention the steps involved in the conversion of glycogen to glucose. (10)

(ii) Explain the role of cholesterol on membrane fluidity. (6)

Or

(b) (i) Explain the mechanism of influence of ionic strength, G:C content and hydration on melting temperature ($T_m$) of a DNA. (12)

(ii) Clearly explain why phospholipids are predominant in biomembranes. (4)

13. (a) (i) Clearly explain the entry of fatty acids and its oxidation in mitochondria. (10)

(ii) Explain the salvage pathway of nucleotide biosynthesis and its importance. (6)

Or

(b) (i) Calculate the ATP yield by glucose under aerobic and anaerobic conditions. (6)

(ii) Draw the structure of Phosphocreatine, Phosphoenol pyruvate ATP, 1,3-bis Phosphoglycerate and indicate the high energy bond within the structure. (10)

14. (a) (i) What are immunoglobulins and write briefly on the roles of the different classes of immunoglobulins. (8)

(ii) Write a brief note on the deficiency manifestations of fat-soluble vitamins. (8)

Or

(b) (i) Derive the Michaelis-Menten equation and mention its significance. (8)

(ii) Write a note on the various types of enzyme inhibition with examples. (8)

15. (a) Describe in detail the Pathophysoiogy and causes of (i) Diabetes mellitus and (ii) Atherosclerosis. (16)

Or

(b) (i) What are inborn errors in metabolism? Write a brief note on Lesch-Nyhan syndrome and phenyketonuria. (8)

(ii) Describe in detail kidney function tests. (8)

Reg. No. | | | | | | | | | | | | |

**Question Paper Code : 57116**

**B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016**

**Second Semester**

**Pharmaceutical Technology**

**BT 6201 – BIO CHEMISTRY**

**(Common to Bio-Technology)**

**(Regulations 2013)**

**Time : Three Hours** **Maximum : 100 Marks**

**Answer ALL questions.**

**PART – A (10 × 2 = 20 Marks)**

1. Define the terms enthalpy and entropy.
2. State the principle of redox reactions in biological systems.
3. Write a short note on the biosynthesis of porphyrin.
4. Classify sphingolipids.
5. Differentiate exergonic and endergonic reactions.
6. Give a brief note on energy currency.
7. State the essential role of fat soluble vitamins in metabolism.
8. Categorize the types of hormones with examples.
9. Enlighten the biochemistry of hormones involved in the regulation of body mass.
10. List out any four inborn errors of metabolism.

**PART – B (5 × 16 = 80 Marks)**

11. (a) Describe the composition of cellular membranes and their molecular structure with an illustration and its significance that underlie various biochemical functions.

**OR**

(b) Clarify the steps involved in the generation of ATP by oxidative phosphorylation and elaborate in detail about the role of various components involved in the electron transport chain.

12. (a) With a neat illustration give an overview about the catabolism of proteins, carbohydrates and lipids.

**OR**

(b) Discuss in detail about biosynthetic pathways of purine and pyrimidine nucleotides and their regulation in the formation of deoxynucleotides.

13. (a) Explain in detail about the components involved in respiratory chain. Add a note on its biochemical and biomedical significance.

**OR**

(b) Energy transformations are necessary and essential to sustain living systems - Justify the statement.

14. (a) State the mechanism of enzyme catalysis in detail. List and explain the factors that influences enzyme catalyzed reactions.

**OR**

(b) Explain the structure and functions of Hemoglobin and Immunoglobulin.

15. (a) Establish the role of biochemistry in clinical management of diabetes. Add a brief note on insulin and its role in diabetes.

**OR**

(b) Explain in detail about the biochemistry of lipids. Explain the biochemical manifestation that leads to atherosclerosis.

**Reg. No. :** | | | | | | | | | | | | |

# Question Paper Code : 71484

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Second Semester

Bio Technology

BT 6201 — BIOCHEMISTRY

(Common to Pharmaceutical Technology)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write short note on Rough Endoplasmic Reticulum.

2. What are uncouplers? Give an example.

3. Mention the three major reactions under amino acid metabolism.

4. Gluconeogenesis is not reversal of glycolysis. Justify the statement.

5. Define redox potential.

6. Give the Thermodynamic laws (First and Second Laws).

7. Distinguish apo-enzyme and holoenzyme.

8. Enumerate the major functions of IgM.

9. What is atherosclerosis? What are the conditions for atherosclerosis to occur?

10. Give the significance of Hartnups disease.

PART B — (5 × 16 = 80 marks)

11. (a) Give detailed account on the processes involved in Electron transport chain and oxidative phosphorylation in eukaryotic cells.

Or

(b) Explain the major sub cellular organelles of eukaryotic cell with a neat sketch.

12. (a) Discuss the steps of $\beta$ oxidation for odd number carbon containing fatty acid. How many ATP equivalents are generated during one cycle of $\beta$ oxidation? How many ATP equivalents are generated during complete oxidation of C16 fatty acid?

Or

(b) Outline the steps for synthesis of cholesterol and discuss on the rate limiting step and its regulation.

13. (a) Summarize the flow of electrons and protons through the four complexes of the Respiratory chain.

Or

(b) Give an account on high-energy compounds with the necessary structures.

14. (a) Elaborate on the different classes and functions of immunoglobulins with a clear diagram representing each of them.

Or

(b) Derive Michaelis-Menten equation and discuss on type of inhibitors with graphical representation.

15. (a) Explain in detail the functions and disorder of thyroid hormones associated with it.

Or

(b) Write short notes on the following :

(i) Regulation of circulatory LDL (6)

(ii) Metabolism of fructose and associated inherited disorders. (10)

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**Reg. No.** | | | | | | | | | | | | |

# Question Paper Code : 77039

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Second Semester

Biotechnology

BT 6201 – BIOCHEMISTRY

(Common to Pharmaceutical Technology)

(Regulation 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are lysosomes? What are their functions?
2. What is oxidative phosphorylation?
3. Write down the biological significance of gluconeogenesis.
4. What are ketone bodies? Give examples.
5. What are uncouplers of oxidative phosphorylation?
6. Differentiate between oxidation and reduction reaction giving suitable examples.
7. What are cofactors? Give an example.
8. What are hormones? Give two examples.
9. What is obesity?
10. List out any two liver function tests.

PART B — (5 × 16 = 80 marks)

11. (a) Draw the structure of a eukaryotic cell and label the various organelles and explain the functions of different cellular organelles?

Or

(b) Explain the electron transport chain indicating the sites of ATP synthesis and the inhibitors of Electron Transport Chain.

12. (a) List four classes of macromolecules and explain the relationship between monomers and polymers of these biomolecules.

Or

(b) Explain the following :

TCA cycle and its biological significance and regulation.

13. (a) (i) Draw the structure of any four high energy compounds?

(ii) How many turns of the fatty acid oxidation cycle are required for complete oxidation of palmitic acid to acetyl-CoA? How many ATP molecules generated in the oxidation of palmitic acid? Give the balanced equation.

Or

(b) Explain the glycolytic pathway. How many ATP molecules are generated in the oxidation of glucose to pyruvate via glycolysis. Give the balanced equation.

14. (a) What are the different classes of immunoglobulins? Explain their functions?

Or

(b) (i) Explain the factors that influence rate of an enzymatic reaction.

(ii) What is enzyme inhibition? Differentiate between competitive and non competitive inhibition with suitable examples.

15. (a) What is atherosclerosis? Explain in detail about the various causatives of atherosclerosis.

Or

(b) What are inborn errors of metabolism? Explain in detail any two inherited metabolic disorders.

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Reg. No. : | | | | | | | | | | | | |

# Question Paper Code : 80158

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Second Semester

Pharmaceutical Technology

BT 6201 – BIO CHEMISTRY

(Common to Bio-Technology)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What do you meant by free energy change?
2. Define oxidative phosphorylation.
3. Write a brief note on Glycolipids.
4. What is a transamination reaction? Give an example.
5. How does ATP serve as high energy compound?
6. Draw the structures of any four high-energy phosphate compounds.
7. Which is the important precursor molecule for vitamin D synthesis?
8. Give the clinical / diagnostic importance of elevated Alanine Transaminase (ALT) levels.
9. Distinguish between athero and arteriosclerosis.
10. Mention the significance of cretinism.

PART B — (5 × 16 = 80 marks)

11. (a) Discuss in detail about oxidative phosphorylation and enumerate its inhibitors.

Or

(b) Describe the components of election transport chain. Write a note on uncouplers and inhibitors.

12. (a) Write down the reactions in metabolism or serine.

Or

(b) Give a detailed note on Watson and Crick model of DNA and types of DNA.

13. (a) What are high energy compounds? How they play a central role in energy capture and transfer?

Or

(b) Explain in detail about ATP cycle in mammalian system and calculate the number of ATP molecules produced during the oxidation of fatty acid.

14. (a) Detail on the role of coenzymes in enzymatic catalysis with necessary examples.

Or

(b) What are Vitamins? Give an account on classification of vitamins and their deficiency diseases.

15. (a) Explain in detail about symptoms, diagnosis, treatment and preventive measures for obesity.

Or

(b) Explain about liver function test and their biochemical significance.

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**Reg. No. :** | | | | | | | | | | | | |

# Question Paper Code : 97213

B.E/B.Tech. DEGREE EXAMINATION, DECEMBER 2015/JANUARY 2016.

Second Semester

Biotechnology

BT 6201 — BIOCHEMISTRY

(Common to Pharmaceutical Technology)

(Regulation 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write a short note on plasma membrane.
2. What is oxidative phosphorylation?
3. Classify carbohydrates with suitable example?
4. Give a short note on sphingolipids.
5. What are high energy compounds?
6. What is the net ATP produced during glycolysis.
7. What are hormones?
8. List out the factors that affect the enzyme activity.
9. What is fatty liver?
10. Write a short note on PKU.

PART B — (5 × 16 = 80 marks)

11. (a) Write a detail account on electron transport chain with suitable diagram.

Or

(b) Explain in detail about the active transport with suitable example.

12. (a) Discuss the following with suitable examples

(i) Protein classification (8)

(ii) Structure of DNA. (8)

Or

(b) Explain the following metabolism with structures

(i) $\beta$ – Oxidation of fatty acids (8)

(ii) Pentose phosphate pathway. (8)

13. (a) Explain the following with suitable examples.

(i) Phospholipids (8)

(ii) ATP cycle. (8)

Or

(b) Explain Krebs cycle with suitable structure and calculate the amount of ATP produced by it.

14. (a) Give a detail account on the structure of antibodies with a suitable example.

Or

(b) Explain the nomenclature of enzymes with suitable examples.

15. (a) Discuss the following with suitable examples

(i) Fatty liver disease (8)

(ii) Atherosclerosis. (8)

Or

(b) Write a detailed account on Type-1 and Type-2 Diabetes mellitus.

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