

[LL 504]

AUGUST 2017

Sub.Code :5055

**M.B.B.S. DEGREE EXAMINATION
FIRST YEAR
PAPER V – BIOCHEMISTRY - I**

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. Write in detail about metabolism and regulation of ketone bodies. Add a note on diabetic ketoacidosis.

II. Write notes on:

(5 x 4 = 20)

1. Significance of hexose mono phosphate shunt.
2. Galactosemia.
3. Dietary fiber.
4. Reverse cholesterol transport.
5. Iron absorption.

III. Short answers on:

(10 x 2 = 20)

1. Uncouplers of electron transport chain.
2. Beriberi.
3. Niemann-Pick disease.
4. Any two mucopolysaccharides –location and its functions.
5. Rapoport Luebering shunt.
6. Glycated hemoglobin.
7. Essential fatty acids.
8. Reactions catalyzed by biotin.
9. Anti-oxidant vitamins and minerals.
10. Wilson's disease.

[LL 504]

NOVEMBER 2017

Sub.Code :5055

**M.B.B.S. DEGREE EXAMINATION
FIRST YEAR
PAPER V – BIOCHEMISTRY - I**

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. Write in detail the investigations required to differentiate various types of jaundice. Describe the metabolism of bilirubin.

II. Write notes on:

(5 x 4 = 20)

1. Obesity.
2. Functions of prostaglandins.
3. Galactosemia.
4. HDL metabolism.
5. Significance of citric acid cycle.

III. Short answers on:

(10 x 2 = 20)

1. Substrates for gluconeogenesis.
2. Apo-proteins and its significance.
3. Two isoenzymes and their clinical significance.
4. Significance of 2, 3 bisphosphoglycerate.
5. Importance of HMP shunt pathway.
6. Deficiency manifestation of vitamin B12.
7. Competitive inhibition.
8. Inhibitors of ETC.
9. Functions of mucopolysaccharides.
10. Liposomes.

[LN 504]

AUGUST 2018

Sub.Code :5055

**M.B.B.S. DEGREE EXAMINATION
FIRST YEAR
PAPER V – BIOCHEMISTRY - I**

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. Explain the site, steps and energetics of β oxidation of even chain fatty acids. Add a note on its regulation.

II. Write notes on:

(5 x 4 = 20)

1. Biochemical functions of Vitamin B12.
2. Functions of calcium.
3. Glucose transporters.
4. Von Gierke disease.
5. Metabolism in adipose tissue during starvation.

III. Short answers on:

(10 x 2 = 20)

1. Functions of endoplasmic reticulum.
2. Dietary fiber.
3. Physiological importance of glycogenolysis.
4. Define B.M.R. Give its value.
5. Antiatherogenic role of high density lipoprotein cholesterol.
6. IUBMB classification of enzymes.
7. Cori cycle.
8. Suicide inhibition of enzymes.
9. Importance of brown fat.
10. Importance of sphingomyelin.

[LN 504]

NOVEMBER 2018

Sub.Code :5055

**M.B.B.S. DEGREE EXAMINATION
FIRST YEAR
PAPER V – BIOCHEMISTRY - I**

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. What is the normal blood glucose level? Discuss the factors regulating blood glucose in the fasting and postprandial states. Write the diagnostic criteria for diabetes mellitus.

II. Write notes on:

(5 x 4 = 20)

1. Classify membrane transport mechanisms. Add a note on active transport.
2. Fatty liver.
3. Types of enzyme inhibition with suitable examples.
4. Functions of vitamin B6 and its deficiency manifestations.
5. Biochemical changes in Atherosclerosis.

III. Short answers on:

(10 x 2 = 20)

1. What are metalloenzymes? Give two examples.
2. What is glycemic index? Mention two examples of high glycemic index food.
3. Limiting aminoacids with examples.
4. Mechanism of action of methotrexate and dicoumarol.
5. Fluorosis.
6. Hemochromatosis.
7. Serum lipid profile.
8. Refsum's disease.
9. Essential pentosuria.
10. Lecithin sphingomyelin ratio.

[LP 504]

AUGUST 2019

Sub.Code :5055

**M.B.B.S. DEGREE EXAMINATION
FIRST YEAR
PAPER V – BIOCHEMISTRY - I**

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay: (1 x 10 = 10)

1. Explain the glycogen metabolism and its regulation. Add a note on associated disorders.

II. Write notes on: (5 x 4 = 20)

1. Lactic acidosis.
2. Explain why B12 deficiency causes macrocytic anemia.
3. How are dietary lipids distributed after digestion and absorption?
4. Phospholipids.
5. Types, functions, tissue specificity and physiological relevance of glucose transporters relevant to insulin secretion and action.

III. Short answers on: (10 x 2 = 20)

1. Importance of HbA1c testing.
2. Wernicke-Karsakoff syndrome.
3. What is the effect of non-competitive inhibition of K_m and V_{max} ?
4. Schematic representation of the electron transport chain.
5. Carnitine transport.
6. Vitamin K cycle.
7. Metabolic basis of role of aspirin as an anti-platelet agent.
8. How will you interpret following conditions?
 - a) Elevated Alkaline phosphatase.
 - b) Elevated Acid phosphatase.
9. Proteasome.
10. How do enzymes reduce the activation energy of a reaction?

[LP 504]

NOVEMBER 2019

Sub.Code :5055

**M.B.B.S. DEGREE EXAMINATION
FIRST YEAR
PAPER V – BIOCHEMISTRY - I**

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. Iron – Dietary sources, factors affecting dietary iron absorption, transport and storage, causes and clinical features of Iron deficiency anemia.

II. Write notes on:

(5 x 4 = 20)

1. Diagnostic criteria for diabetes mellitus and laboratory investigation in diabetes mellitus.
2. Functions of prostaglandins.
3. Absorption of lipids.
4. Mucopolysaccharides with examples.
5. Metabolism of LDL with clinical importance.

III. Short answers on:

(10 x 2 = 20)

1. Biochemical manifestations in protein energy malnutrition.
2. Steatorrhea.
3. Ionophores – types with example.
4. Therapeutic uses of enzymes.
5. Lactose intolerance – cause and treatment.
6. Classes of enzymes with one example each.
7. Formation of Vitamin D and the formation of its active form.
8. Lung surfactants and their significance.
9. Name two lipid storage diseases (spingolipidoses) and their enzyme defect.
10. Role of brown adipose tissue in heat generation.

[LR 504]

AUGUST 2020

Sub.Code :5055

**M.B.B.S. DEGREE EXAMINATION
FIRST YEAR
PAPER V – BIOCHEMISTRY - I**

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay: (1 x 10 = 10)

1. Write in detail about the Galactose Metabolism and its Applied aspects.

II. Write notes on: (5 x 4 = 20)

1. Fatty Liver-Causes including role of Lipotropic Factors
2. Vitamin C-Sources, RDA, Functions and Deficiency Manifestations
3. PDH
4. Dyslipidemias
5. Passive Transport Mechanisms

III. Short answers on: (10 x 2 = 20)

1. Define active site of enzymes
2. Glycosidic Bond and Clinically important Glycosides
3. Name two Functions of endo plasmic reticulum
4. Name three essential fatty acids
5. Name the enzyme require for Glucuronidation of bilirubin
6. Daily requirement of Vitamin A for an adult
7. Name the defect in Menke's disease
8. Name the enzyme defect in Von-gierke's disease
9. Name one Role of Phospholipase A
10. Name three vitamins involved in PDH complex

[LT 504]

NOVEMBER 2020
M.B.B.S. DEGREE EXAMINATION
FIRST YEAR
PAPER V – BIOCHEMISTRY - I

Sub.Code :5055

Time: Three hours

Q.P. Code: 525055

Maximum : 50 Marks

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. Explain the Regulation of Blood Glucose in Starvation and well fed state.

II. Write notes on:

(5 x 4 = 20)

1. Reverse Cholesterol Transport and Anti - Atherogenic effect of HDL.
2. Wald's Visual Cycle and Deficiency Manifestation of Vitamin A.
3. IsoEnzymes - Definition and Examples.
4. Active Transport with Examples.
5. Metabolism of Ketone Bodies.

III. Short answers on:

(10 x 2 = 20)

1. Name of difference between Coenzyme and Cofactor.
2. Insulin and its Clinical importance.
3. Name a) Vth complex of ETC .
b) One inhibitor of complex III
4. a) Chylomicrons are rich in _____
b) Apo Protein of chylomicron are _____
5. Write 2 important difference between Ricketes and Ostomalacia.
6. What is the role of gamma - Carboxylation in coagulations.
7. Name the enzyme defect in 1) Niemann Pick disease 2) Gaucher disease.
8. Name two components of metabolic syndrome.
9. Name the enzyme defect in Pentosuria.
10. Name of the defect in Refsum's Disease.

[MBBS 0821]

AUGUST 2021

Sub.Code :5055

**M.B.B.S. DEGREE EXAMINATION
FIRST YEAR
PAPER V – BIOCHEMISTRY - I**

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. Write in detail Essay on β Oxidation of Palmitic Acid including Energetics.

II. Write notes on:

(5 x 4 = 20)

1. Brief the Inhibitors and Uncouples of Electron Transport Chain and Oxidative Phosphorylation.
2. Explain Anaplerotic and Amphibolic Role of TCA Cycle.
3. Folate Trap.
4. What are Isoenzymes? Give Examples. Explain any one.
5. Vitamin – A – Sources, (RDAs), Wald's Visual Cycle and Functions.

III. Short answers on:

(10 x 2 = 20)

1. Rapoport Luebering Cycle.
2. Polyol Pathway.
3. Marasmus – Any Four Salient Features.
4. Chemi Osmotic Theory.
5. Define BMR. Give Normal Value.
6. Name any Two Phospholipids. Write their Significance.
7. Iron Overload-Explain.
8. Lipoprotein (A).
9. Nieman Pick Disease.
10. Zellweger Syndrome.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[MBBS 0222]

FEBRUARY 2022

Sub.Code :5055

M.B.B.S. DEGREE EXAMINATION

(For the candidates admitted from the Academic Year 2018-2019)

FIRST YEAR

PAPER V – BIOCHEMISTRY - I

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay: (1 x 10 = 10)

1. Write in Detail about the Fatty Acids Oxidation and add a note on Bioenergetics of Oxidation of 1 mol of Palmitic acid.

II. Write notes on: (5 x 4 = 20)

1. Significance of HMP Pathway.
2. Calcium Homeostasis.
3. Chemiosmotic Theory of Oxidative Phosphorylation.
4. Role of Folic Acid in One Carbon Metabolism.
5. Uniport, Symport, Antiport systems in Membrane Transport.

III. Short answers on: (10 x 2 = 20)

1. Name One Suitable Example for Suicidal Inhibition of Enzymes.
2. Definition of Dietary Fibres.
3. Name the Defect in I Cell Disease.
4. Normal Reference Range of A) LDL Cholesterol B) HDL Cholesterol.
5. One Non – Nutritional Cause of Pellagra like Manifestation.
6. Action of Warfarin and other Dicoumaral Derivatives.
7. Write one role of Lipoprotein (a) in causing atherosclerosis.
8. Name two functions of Peroxisomes.
9. Name the Enzyme Defect in 1) Hereditary Fructose Intolerance 2) Essential Fructosuria.
10. Name two shuttles of ETC in Mitochondria.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[MBBS 0822]

AUGUST 2022

Sub. Code :5055

M.B.B.S. DEGREE EXAMINATION

(For the candidates admitted upto the Academic Year 2018-2019)

FIRST YEAR

PAPER V – BIOCHEMISTRY – I

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. Define Gluconeogenesis. Explain the four key reactions of Gluconeogenesis.
Add a note on the role of Glucagon in the regulation of Gluconeogenesis.

II. Write notes on:

(5 x 4 = 20)

1. Fluid mosaic model of Membrane.
2. Effect of pH and temperature on Enzyme activity.
3. Regulation of Cholesterol biosynthesis.
4. Name the Protein involved in iron metabolism and How?
5. Biochemical functions of Pyridoxine .

III. Short answers on:

(10 x 2 = 20)

1. Heparin structure and function.
2. Lipoprotein Lipase
3. Glycated Hemoglobin (HbA1c).
4. Name the enzymes deficient in Galactosemia.
5. Role of carnitine in fattyacid oxidation.
6. Methylmalonic Aciduria
7. Uncouplers of Oxidative Phosphorylation
8. What are Essential Fattyacids? Name them.
9. Active site of an enzyme
10. Wilson's Disease.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[MBBS 0123]

JANUARY 2023

Sub. Code :5055

M.B.B.S. DEGREE EXAMINATION

(For the candidates admitted upto the Academic Year 2018-2019)

FIRST YEAR

PAPER V – BIOCHEMISTRY – I

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. What are the different types of Enzyme inhibition? Explain with suitable examples.

II. Write notes on:

(5 x 4 = 20)

1. Biochemical functions of Riboflavin.
2. Absorption of Iron.
3. How is Glycogen broken down in our body?
4. Ketogenesis and its consequences.
5. Explain the Complex V of Electron transport chain.

III. Short answers on:

(10 x 2 = 20)

1. Name two reactions which need thiamine as Coenzyme.
2. What is BMI (Body Mass Index)? How is it calculated?
3. Deficiency manifestations of Vitamin D.
4. Name the factors affecting enzyme action.
5. 2, 3-Bisphosphoglycerate (2, 3-BPG).
6. Lactose Intolerance.
7. Energetics of TCA Cycle.
8. Cardiolipin.
9. Write the reference range in serum for i) Sodium ii) Creatinine.
10. What is Active transport? Give an example.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[MBBS 0323]

MARCH 2023

Sub. Code :5055

M.B.B.S. DEGREE EXAMINATION

(For the candidates admitted upto the Academic Year 2018-2019)

FIRST YEAR

PAPER V – BIOCHEMISTRY – I

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay: (1 x 10 = 10)

1. Draw the structure of Lipoproteins. How will you classify Lipoproteins? Explain in detail about Reverse Cholesterol transport.

II. Write notes on: (5 x 4 = 20)

1. Pyruvate Dehydrogenase Complex.
2. Biochemical functions and deficiency manifestations of Vitamin B12.
3. Role of Cytochromes in Electron transport chain.
4. Explain in detail the active transport mechanism with suitable example.
5. Functions of Zinc and deficiency manifestations.

III. Short answers on: (10 x 2 = 20)

1. What are Coenzymes? Give an Example.
2. Name the bile salts and mention their significance.
3. Fates of Pyruvate.
4. Fluorosis.
5. Define Epimerism. Give an example.
6. Glucose-6-Phosphate Dehydrogenase deficiency (G-6-PD).
7. What is Deoxy sugars? Give an Example.
8. Name the key Gluconeogenic enzymes.
9. Apolipoproteins and its function.
10. Cori cycle.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[MBBS 0824]

AUGUST 2024

Sub. Code :5055

M.B.B.S. DEGREE EXAMINATION

(For the candidates admitted upto the Academic Year 2018-2019)

FIRST YEAR

PAPER V – BIOCHEMISTRY – I

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay: (1 x 10 = 10)

1. Vitamin – D synthesis in the body, biochemistry functions, sources of Vitamin D and deficiency manifestations.

II. Write notes on: (5 x 4 = 20)

1. Glycolysis in red blood cells and its significance.
2. Isoenzymes with suitable examples.
3. High levels of LDL (Low Density Lipoprotein) is associated with Atherosclerosis. Explain.
4. Phospholipids – types, functions with examples.
5. Glycogen storage disorders.

III. Short answers on: (10 x 2 = 20)

1. Folate antagonists.
2. Factors influencing dietary iron absorption.
3. Tetany.
4. Body mass index.
5. Importance of dietary fiber.
6. Marker enzymes for Mitochondria, Lysosomes, Golgi apparatus and Microsomes.
7. Name the classes of enzymes with one example each.
8. Metabolism in adipose tissue in well fed state.
9. Non-shivering thermogenesis.
10. Therapeutic uses of Prostaglandins.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[MBBS 0924]

SEPTEMBER 2024

Sub. Code :5055

M.B.B.S. DEGREE EXAMINATION

For the candidates admitted upto the Academic Year 2018-2019)

FIRST YEAR - SUPPLEMENTARY

PAPER V – BIOCHEMISTRY – I

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay: (1 x 10 = 10)

1. Describe the metabolism of Glucose through the Embden-Meyerhof Pathway.
Add a note on its Energetics and Regulation.

II. Write notes on: (5 x 4 = 20)

1. Write the source, RDA, Functions and Deficiency manifestations of Vitamin B1.
2. Write about the risk factors of Atherosclerosis and its prevention.
3. Brief the diagnostic and therapeutic applications of Enzymes.
4. What are the causes of Hyperbilirubinemias and brief the laboratory investigation done?
5. Describe the various Lipid storage disorders.

III. Short answers on: (10 x 2 = 20)

1. Receptor mediated Endocytosis.
2. Give two examples for each of zinc and iron containing Enzymes.
3. Name the panel of enzymes estimated in liver diseases.
4. Write four differences between Glycogen and Starch.
5. Liposomes and its functions.
6. Cori's cycle.
7. Indications for Oral Glucose Tolerance Test.
8. Write four factors affecting oxygen dissociation curve.
9. Factors affecting Basal Metabolic Rate.
10. Chronic complications of Diabetes Mellitus.

THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY

[MBBS 0825]

AUGUST 2025

Sub. Code :5055

M.B.B.S. DEGREE EXAMINATION

For the candidates admitted upto the Academic Year 2018-2019)

FIRST YEAR

PAPER V – BIOCHEMISTRY – I

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay: **(1 x 10 = 10)**

1. Write in detail on synthesis and utilization of Ketone Bodies. Write a note on its clinical significance.

II. Write notes on: **(5 x 4 = 20)**

1. Glucose transporters.
2. Competitive inhibition of enzymes.
3. Dietary Fibres.
4. Hetero polysaccharides.
5. One carbon metabolism.

III. Short answers on: **(10 x 2 = 20)**

1. Substrate level Phosphorylation.
2. Kwashiorkor – any four salient features.
3. Wald's Visual Cycle.
4. Deficiency manifestations of Vitamin D.
5. Prostacyclin.
6. α oxidation.
7. Markers of Subcellular organelles.
8. Role of Vitamin K.
9. Tay-Sach's Disease.
10. Refsum Disease.

THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY

[MBBS 1025]

OCTOBER 2025

Sub. Code :5055

M.B.B.S. DEGREE EXAMINATION

For the candidates admitted upto the Academic Year 2018-2019)

FIRST YEAR - SUPPLEMENTARY

PAPER V – BIOCHEMISTRY – I

Q.P. Code: 525055

Time: Three hours

Maximum : 50 Marks

Answer All Questions

I. Essay: **(1 x 10 = 10)**

1. What is Gluconeogenesis? Write in detail about the Key enzymes, substrates.

II. Write notes on: **(5 x 4 = 20)**

1. Competitive inhibition.
2. Ketone Bodies – Synthesis and Utilization.
3. Biochemical role of Vitamin B6.
4. IUBMB – Classification of Enzymes.
5. Endocytosis.

III. Short answers on: **(10 x 2 = 20)**

1. Cori cycle.
2. Glucose 6 Phosphate Dehydrogenase deficiency.
3. Name any four antioxidants.
4. Isoenzymes of creatinine kinase. Clinical Significance.
5. Define Km value. Write its significance.
6. Pompe's disease.
7. Define Phospholipids. Give two examples.
8. Omega Oxidation
9. Essential Pentosuria.
10. What is HbA1c? Write its clinical significance.
