

M.B.B.S. DEGREE EXAMINATION

(For the candidates admitted from the Academic Year 2024-2025)

FIRST PROFESSIONAL – (CBME)

PAPER I – BIOCHEMISTRY

Q.P. Code: 527055

Time: Three hours

Maximum : 100 Marks (80 Theory + 20 MCQs)

Answer All Questions

I. Essay: (1 x 10 = 10)

1. A 8-year-old boy presented with pallor, fatigue and generalized weakness. H/o having taken sulfa drugs for a bacterial infection present. On examination child was anemic, mild jaundice present.
 - a) Which enzyme is deficient in this hemolytic disorder. (1)
 - b) Brief the steps of the metabolic pathway involved. (4)
 - c) Discuss the significance of this pathway. (5)

II. Reasoning out short notes : (2 x 5 = 10)

1. Streptokinase is used in thrombolysis in Acute Myocardial Infarction (AMI).
 - a) How does it act? (2)
 - b) Mention three cardiac biomarkers and their time of onset, peak and fall in blood levels. (3)
2. Discuss the statement: Carbohydrates are absolutely required for the oxidation of fats.

III. Write short notes on: (10 x 6 = 60)

1. Enumerate the functions of Copper and brief the disorders associated with copper.
2. Regulation of Citric acid cycle.
3. Explain Uncoupling of oxidative phosphorylation. Give four examples of uncouplers. (4+2)
4. A 2 year old child presented with liver enlargement, fasting hypoglycemia, increased uric acid and lactate levels.
Glucose: 50mg%, Urine positive for ketone bodies.
 - a) What is the possible diagnosis? Name the enzyme deficient (1+1)
 - b) Reason out the biochemical basis of these findings. (4)
5. Congenital Hyperbilirubinemia.
6.
 - a) List any four causes of Nonalcoholic Fatty liver. (2)
 - b) Discuss the Metabolism of HDL. (4)

7. Several people attending a family gathering suspected to have consumed illicit liquor, was brought to emergency in seriously ill condition.
 - a) What poisoning will you suspect in these patients? (1)
 - b) Discuss how alcohol is metabolized by our body. (4)
 - c) Name the laboratory findings in Chronic Alcoholism. (1)
8. A vitamin deficiency that can cause methylmalonic aciduria.
Name the vitamin and discuss the role of the vitamin in this condition. (1+5)
9. Define Basal Metabolic Rate. Brief the factors affecting and the measurement of BMR. (1+3+2)
10. Discuss how the commitment to lifelong learning forms part of the physician growth.

[MBBS 0825]

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

[MBBS 1025]

OCTOBER 2025

Sub. Code: 7055

M.B.B.S. DEGREE EXAMINATION

(For the candidates admitted from the Academic Year 2024-2025)

FIRST PROFESSIONAL – SUPPLEMENTARY (CBME)

PAPER I – BIOCHEMISTRY

Q.P. Code: 527055

Time: Three hours

Maximum : 100 Marks (80 Theory + 20 MCQs)

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. a) What is Carnitine? Explain its role in oxidation of fatty acids. (1+2)
- b) Discuss the pathway of beta oxidation of fatty acids. Mention the biochemical basis for the clinical features in defective beta oxidation. (4+3)

II. Reasoning out short notes :

(2 x 5 = 10)

1. a) Ascorbic acid is essential in human beings. Why? (3)
- b) Deficiency of Ascorbic acid causes bleeding gums. Why? (2)
2. Competitive Inhibition is reversible. Justify the statement with an example.

III. Write short notes on:

(10 x 6 = 60)

1. A one day old neonate born after 28 weeks of gestation presents with apnoea, cyanosis, respiratory grunting, inspiratory stridor, poor feeding and tachypnea. The doctor explained the condition is associated with prematurity.
 - a) What could be the possible diagnosis? (1)
 - b) Discuss the biochemical basis behind the diagnosis. (5)
2. Brief about the Inhibitors and Uncouplers of Oxidative phosphorylation.
3. a) Energetics of complete oxidation of one molecule of Glucose. (3)
- b) Explain the significance of 2,3 Bisphosphoglycerate shunt (2,3-BPG). (3)
4. Elaborate the structure, synthesis, secretion and metabolic effects of Insulin.
5. Discuss the sources, coenzyme forms, daily requirement, biochemical functions and deficiency manifestations of Vitamin – Niacin.
6. A healthy young male during routine health checkup was found to have elevated serum cholesterol levels.
 - a) Write the reference range in serum for total cholesterol, HDL, LDL and Triglycerides. (4)
 - b) Name the drug used to lower cholesterol level and its mechanism of action. (2)
7. A national leader of a political party was on hunger strike for a noble cause. After 3 days he became weak and was forcibly hospitalized. What are the metabolic changes that happen after 12 hours of fasting?

8. Comment on the lab report of a patient and give your provisional diagnosis. What urine results you will expect if bile salts, bile pigments and urobilinogen are done. (4+2)
Serum Total Bilirubin : 15mg % (0.6-1.6mg%)
Serum Direct Bilirubin: 14mg% (0-0.4 mg %)
AST: 80 IU/L (<45 IU/L) ALT: 90 IU/L (<45 IU/L)
ALP: 500 IU/L (30-150 IU/L)
9. A 21 year old female college student consumes beer for the first time. After consuming it, she began to experience worsening abdominal pain that was nonspecific, not relieved at any position and cramping. Upon arrival at ER her BP is fluctuating and she had psychiatric manifestations. Her urine while examination under UV light shows red fluorescence. Her Urine Aminolevulinic acid (ALA) and Porphobilinogen (PBG) were found to be elevated.
a) What is the most probable diagnosis and mention the defective enzyme. (2)
b) Draw the metabolic pathway which is defective in this condition. (4)
10. Enumerate the professional qualities of a doctor.

[MBBS 1025]

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

[MBBS 0726]

JULY 2026

Sub. Code: 7055

M.B.B.S. DEGREE EXAMINATION

(For the candidates admitted from the Academic Year 2024-2025 & 2025-2026)

FIRST PROFESSIONAL – (CBME)

PAPER I – BIOCHEMISTRY

Q.P. Code: 527055

Time: Three hours

Maximum : 100 Marks (80 Theory + 20 MCQs)

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. A 45 years old man with no apparent previous illness comes with features of polyuria, polyphagia and polydipsia. He also complains of weight loss lethargy and easy fatiguability.
 - a) What is the most probable diagnosis? (1)
 - b) Explain in detail the regulation of blood glucose level during fasting and well fed state and the metabolic pathways involved. (4)
 - c) What are the laboratory investigations required to confirm the diagnosis and its normal reference values and the diagnostic criteria? (3)
 - d) What is the HbA1c and its significance? (2)

II. Reasoning out short notes :

(2 x 5 = 10)

1. Antifolate drugs are used for cancer treatment.
 - a) Explain the biochemical basis of using antifolate drugs. (3)
 - b) What is folinic acid and its use? (2)
2. Urine doesn't contain bilirubin in case of pre-hepatic jaundice
 - a) Give reason. (2)
 - b) Explain the biochemical findings in pre-hepatic jaundice. (3)

III. Write short notes on:

(10 x 6 = 60)

1. Discuss why lifelong learning is important for a doctor.
2. Competitive enzyme inhibition with examples and diagram.
3. Sub-cellular organelle separation and marker enzymes.
4. Explain the structural organization of Electron Transport chain and how ATP generated.
5. Fatty acid synthase complex and its role.
6. Amphibolic and anaplerotic role of citric acid cycle.
7. Vitamin C – functions and deficiency manifestations.
8. Explain the pathway of Heme synthesis and its regulation. Add a note on classification of Porphyrias.
9. Methemoglobinemia and its Biochemical function.
10. Functions and metabolism of cholesterol and its normal blood values.
