

M.B.B.S. DEGREE EXAMINATION

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

FIRST PROFESSIONAL – (CBME)

PAPER II – BIOCHEMISTRY

Q.P. Code: 527056

Time: Three hours

Maximum: 100 Marks (80 Theory + 20MCQs)

Answer All Questions

I. Essay: (1 x 10 = 10)

1. Explain the different levels of structural organization of protein with hemoglobin as an example.

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

1. Orotic aciduria can occur in Ornithine Transcarbamylase deficiency. Explain.
2. a) Phenylalanine has sparing action on Tyrosine. Discuss the statement.
b) Explain the reason for mousy body odour in phenylketonuria.

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

1. A 4 day old newborn presented with vomiting, lethargy and irritability. Investigation revealed hyperammonemia and respiratory alkalosis. The treating physician managed the acute episode well and advised low protein supplements.
a) What is the reference range for Urea and BUN in serum? (1)
b) Tabulate the disorders of urea cycle with the enzyme defect. (5)
2. Brief the synthesis and Physiological actions of Nitric Oxide.
3. a) Discuss any two biomarkers of sepsis. (3)
b) Explain the mode of inheritance of Hemophilia? (3)
4. Describe the metabolic reactions that need tetrahydrobiopterin as a cofactor.
5. a) A 39 year old antenatal mother on 12th week of gestation goes for check-up. Her doctor advises Quadruple Screening test. Discuss the significance of Quadruple screening test in antenatal mothers. (2)
b) Role of tumour markers in diagnosis of diseases. (4)
6. Enumerate the liver function tests. Discuss the markers of liver injury (2+4)
7. A 75 year old male came to OPD with complaints of low back ache, anaemia, hyperproteinemia with increase of Globulin fraction, Urine positive for a peculiar protein and serum protein electrophoresis had a characteristic band in the gamma region.
a) What is the probable diagnosis? Name the protein excreted in urine of the patient. (2)
b) Discuss the electrophoretic patterns in any two diseases. (4)

8. Explain the Renal regulation of acid base balance.
9. A 50 year old male patient attended nephrology clinic for decreased urine output. The clinician suspected a chronic kidney disease and ordered eGFR in addition to other tests. (2 +2+2)
 - a) Significance of Estimated GFR (eGFR).
 - b) Comment on Plasma Osmolality.
 - C) Indication of urine microalbumin test.
10. Role of physician in health care system.

[MBBS 0825]

M.B.B.S. DEGREE EXAMINATION

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

FIRST PROFESSIONAL – SUPPLEMENTARY (CBME)

PAPER II – BIOCHEMISTRY

Q.P. Code: 527056

Time: Three hours

Maximum: 100 Marks (80 Theory + 20 MCQs)

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. Discuss how toxic ammonia generated in tissues is converted into nontoxic Urea in Liver.

II. Reasoning out short notes:

(2 x 5 = 10)

1. a) Gouty arthritis typically affects the first metatarsophalangeal joint. Why?
b) Antibiotics can inhibit bacterial protein synthesis. Explain
2. Primary transcript undergoes modification to form mature mRNA. Explain

III. Write Short notes on:

(10 x 6 = 60)

1. Mention the isoelectric pH of Histidine and its significance. Discuss the characteristics of Isoelectric pH. (2+4)
2. a) Discuss the role of Glutathione in absorption of aminoacids. (3)
b) Any three clinical applications of PCR. (3)
3. a) Glucose alanine cycle and its significance. (3)
b) Brief the synthesis and significance Gamma amino butyric acid (GABA). (3)
4. Define Mutation. Explain the different types and their clinical effects.
5. A 50 year old male with 2 years history of refractory hypertension and occasional panic attacks reported to clinic with sudden episode of pounding headache. There was excessive sweating. He had similar attacks earlier. Family history is positive for hypertension. On examination BP was 170/90mmHg. On examination findings were unremarkable. 24hr VMA was elevated.
a) What is the probable diagnosis? (1)
b) Describe the catabolism of Tyrosine. (5)
6. Classify Jaundice. Discuss the biochemical investigations to differentiate the types of jaundice.

7. A severe form of obstructive lung disease with dyspnoea, and emphysema was found in several members of the family. Blood analysis showed abnormally low level of alpha 1 antitrypsin.
- a) Reason behind emphysema in Alpha 1 antitrypsin deficiency. (2)
 - b) What are acute phase proteins? Give two examples of negative acute phase proteins. (4)
8. A 15 year old IDDM patient who skipped insulin injections for 3 days was admitted in shock in ICU.
- a) Discuss about High anion gap Metabolic acidosis. (3)
 - b) Reference range for arterial blood pH, pCO₂ and Bicarbonate (3)
9. a) Purine salvage pathway and its significance. (4)
- b) Any one drug used in the treatment of gout and its biochemical basis. (2)
10. What are the responsibilities of the physician to the society?

[MBBS 1025]

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

[MBBS 0726]

JULY 2026

Sub. Code: 7056

M.B.B.S. DEGREE EXAMINATION

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

FIRST PROFESSIONAL – (CBME)

PAPER II – BIOCHEMISTRY

Q.P. Code: 527056

Time: Three hours

Maximum: 100 Marks (80 Theory + 20MCQs)

Answer All Questions

I. Essay:

(1 x 10 = 10)

1. During new born screening on a baby, its blood sample was found to have very high phenylalanine levels.
 - a) Describe the metabolism of phenylalanine in normal and Phenylketonuric persons (2)
 - b) Explain the types, biochemical abnormalities and clinical features of phenylketonuria. (3)
 - c) Write in detail about the laboratory diagnosis of phenylketonuria. (3)
 - d) What is the complication in untreated phenylketonuria? Explain the treatment policy in phenylketonuria to prevent the complication. (2)

II. Reasoning out short notes:

(2 x 5 = 10)

1. Apo B gene codes for two isoforms of a protein in two different organs.
2. Alkalosis may lead to tetany even though the blood total calcium level is normal.

III. Write Short notes on:

(10 x 6 = 60)

1. Biochemical investigations in acute pancreatitis.
2. Eukaryotic DNA replications.
3. Important products synthesized from glycine.
4. Second messenger systems.
5. Buffer systems to maintain physiological pH.
6. Generation of free radicals and free radical scavenger systems in the body.
7. Copper – Sources, biochemical functions and associated disorders.
8. Polymerase chain reaction.
9. Mitochondrial DNA.
10. Discuss the role of a physician as a researcher.
