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

[MD 0524] **MAY 2024** **Sub. Code: 4032**

M.D. DEGREE EXAMINATION

BRANCH XIII – BIOCHEMISTRY

PAPER IV – CLINICAL BIOCHEMISTRY AND MOLECULAR DIAGNOSTICS RELATED TO DIFFERENT BODY STSTEMS / ORGANS, ENDOCRINIOLOGY AND RECENT ADVANCES IN BIOCHEMISTRY

Q.P. Code: 204032

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

I. Elaborate on: **(2 x 15 = 30)**

1. Explain in detail the biochemistry of Antidiuretic hormone, regulation of secretion and clinical disorders related to it. Add a note on lab tests to diagnose Diabetes insipidus.

2. Discuss in detail the causes, types and compensatory mechanism of metabolic acidosis and alkalosis.

II. Write notes on: **(10 x 5 = 50)**

1. Tests to assess tubular functions of Kidney.
2. Sick euthyroid syndrome and its lab findings.
3. Postmenopausal osteoporosis with its specific biomarkers.
4. Hyponatremia.
5. Gut hormones.
6. Evaluation of female infertility.
7. Neutrophil gelatinase - associated lipocalin.
8. Alzheimer's disease
9. NonAlcoholic fatty liver disease.
10. Thalassemia.

III. Reasoning out: **(4 X 5 = 20)**

1. Prothrombin time interpreted as INR.
2. Ferritin is a biomarker of inflammation.
3. Friedewald equation not used if serum Triglyceride is more than 400mg%.
4. While treating diabetic ketoacidosis hypokalemia may occur.

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

[MD 1224] **DECEMBER 2024** **Sub. Code: 4032**

(OCTOBER 2024 EXAM SESSION)

M.D. DEGREE EXAMINATION

BIOCHEMISTRY

PAPER IV – CLINICAL BIOCHEMISTRY AND MOLECULAR DIAGNOSTICS RELATED TO DIFFERENT BODY STSTEMS / ORGANS, ENDOCRINOLOGY AND RECENT ADVANCES IN BIOCHEMISTRY

Q.P. Code: 204032

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

I. Elaborate on: **(2 x 15 = 30)**

(3+8+4)

1. a) Brief the regulation of sodium homeostasis.
   b) Discuss the algorithm and investigations for the differential diagnosis of hypernatremia.
   c) Add a note on Normovolemic Hypernatremia.

(4+6+5)

2. a) Enumerate the Liver function tests.
   b) Discuss in detail the clinical features and investigations of inherited liver disease.
   c) Add a note on iso enzymes of alkaline phosphatase.

II. Write notes on: **(10 x 5 = 50)**

1. Feces as diagnostic tool.
2. Functions and laboratory assessment status of Magnesium.
3. Analysis of renal calculi.
4. Radio isotopes and its clinical utility.
5. Insulin tolerance and arginine stimulation test for growth hormone.
6. Causes and laboratory investigations of hirsutism.
7. Detail about pre analytical variables.
8. Brief about CSF analysis and Interpretation.
9. Discuss the Laboratory Investigations for assessing Iron status.
10. Urea cycle disorders and their investigations.

III. Reasoning out: **(4 X 5 = 20)**

1. Assays based on urease for blood urea estimation are not reliable in hyperammonemic condition.
2. Extra cellular volume depletion leads to metabolic Alkalosis.
3. Acute pancreatitis results in hypocalcemia.
4. Methanol causes optic neuropathy.

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

[MD 0525] **MAY 2025** **Sub. Code: 4032**

M.D. DEGREE EXAMINATION

BIOCHEMISTRY

PAPER IV – CLINICAL BIOCHEMISTRY AND MOLECULAR DIAGNOSTICS RELATED TO DIFFERENT BODY STSTEMS / ORGANS, ENDOCRINOLOGY AND RECENT ADVANCES IN BIOCHEMISTRY

Q.P. Code: 204032

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

I. Elaborate on: **(2 x 15 = 30)**

1. Explain in detail the mechanism of regulation of blood pH.
2. Explain in detail the mechanism of signal transduction pathway of various hormones through G protein coupled receptor.

II. Write notes on: **(10 x 5 = 50)**

1. Hyperkalaemia.
2. Biochemical markers of bone turnover.
3. Brief about Renal tubular acidosis.
4. Write about the functions and assessment status of Chloride.
5. Brief the maternal serum screening for fetal defects.
6. Role of laboratory information system in post analytical activities.
7. Write about paraproteinemias and investigations done to diagnose them.
8. Enzymatic methods of creatinine estimation.
9. Evaluation of hypoglycaemia.
10. Biomarkers of liver fibrosis.

III. Reasoning out: **(4 X 5 = 20)**

1. Plasma glucose is maintained with large fluctuations in dietary intake.
2. Aspirin is contraindicated in patients with bleeding disorder.
3. Hyperosmolar hyperglycaemic syndrome does not have ketosis.
4. Hypothyroidism causes hyperprolactinemia.

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

[MD 1025] **OCTOBER 2025** **Sub. Code: 4032**

M.D. DEGREE EXAMINATION

BIOCHEMISTRY

PAPER IV – CLINICAL BIOCHEMISTRY AND MOLECULAR DIAGNOSTICS RELATED TO DIFFERENT BODY STSTEMS / ORGANS, ENDOCRINOLOGY AND RECENT ADVANCES IN BIOCHEMISTRY

Q.P. Code: 204032

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

I. Elaborate on: **(2 x 15 = 30)**

1. Discuss the hormones acting on calcium homeostasis. How do they regulate serum calcium? Add a note on hypo and hypercalcemia.

2. Explain in detail the causes, types and compensatory mechanism of respiratory acidosis and alkalosis. Add a note on Anion gap.

II. Write notes on: **(10 x 5 = 50)**

1. SIADH and its diagnostic test.
2. Insulin like growth factors.
3. Congenital adrenal hyperplasia.
4. Markers of cardiovascular risk.
5. Methemoglobinemia.
6. Laboratory tests of iron status.
7. prostate specific antigen.
8. Neonatal and adult hypoglycemia.
9. Biochemical screening for down's syndrome.
10. Procalcitonin.

III. Reasoning out: **(4 x 5 = 20)**

1. CK-MB mass is preferred over CK-MB activity in acute myocardial infarction.
2. Muscle weakness and headache common in Conns syndrome.
3. Adipocyte as an endocrine organ.
4. Multiple myeloma patients are susceptible for bacterial infections.

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

[MD 0526] **MAY 2026** **Sub. Code: 4032**

M.D. DEGREE EXAMINATION

BIOCHEMISTRY

PAPER IV – CLINICAL BIOCHEMISTRY AND MOLECULAR DIAGNOSTICS RELATED TO DIFFERENT BODY SYSTEMS / ORGANS, ENDOCRINOLOGY AND RECENT ADVANCES IN BIOCHEMISTRY

Q.P. Code: 204032

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

I. Elaborate on: **(2 x 15 = 30)**

1. a) Discuss in detail the pathophysiology, causes, compensatory mechanisms of Respiratory acidosis. (10)
   b) Explain the role of Hemoglobin as a buffer. (5)

2. a) Describe the pathogenesis, risk factors and prevention of atherosclerosis. (8)
   b) Brief about cardiac biomarkers. (7)

II. Write notes on: **(10 x 5 = 50)**

1. Causes of Chronic Hepatitis and Diagnostic Strategies.
2. Lab assessment of acute pancreatitis.
3. Analysis of Gall stones.
4. Glucose suppression and exercise stimulation test for growth hormone.
5. Evaluation of male infertility.
6. Validation of Auto verification of test results.
7. Allele- Specific P.C.R.
8. Biochemical Markers of Bone formation.
9. Mitochondrial disorders.
10. Aminoacidopathies.

III. Reasoning out: **(4 x 5 = 20)**

1. In I.F.C.C. assays for transaminases L.D.H. and pyridoxal phosphate are added in reagents.
2. Hypoglycemia in Von Gierek's disease cannot be overcome by glucagon administration.
3. Vitamin D exerts negative feedback on PTH secretion.
4. In acid base disturbance serum calcium concentration is altered.

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