



RAN-2406120201010503

Medical Faculty M.D. (Biochemistry) Examination August - 2026

Paper - III (Set-I)

Time: 3 Hours]

| Total Marks: 100

सूचना : / Instructions

- (1) उपरोक्त दृष्टविव विगतो उत्तरवली पर अवश्य बभवी.
Fill up strictly the above details on your answer book

Seat No.:

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Solanki G.D

Student's Signature

SET-I

- 1) Draw flow chart for synthesis and regulation of T4. Explain role of Laboratory in diagnosis of Thyroid Disorders. Explain difference in principle of measurement of TSH and Free T4 by chemiluminescence immunoassay. Explain biochemical basis for Graves' disease and Hashimoto's Thyroiditis. What are methods for monitoring serum and urine iodine for Public health survey of Iodine deficiency disorders? (25)
- 2) Write Notes on: (25)
- Mechanism of action of steroid hormones.
 - Clinical relevance of measurement of LH, FSH, prolactin, beta-HCG, testosterone and AMH
 - DNA double helix
 - DNA packaging of metaphase chromosome
 - Hyperchromicity of DNA denaturation
- 3) Write Notes on: (25)
- Central dogma of genetics
 - Telomere and Telomerases
 - Agents causing DNA damage
 - DNA Mismatch repair
 - Types of DNA mutations
- 4) Write Notes on: (25)
- PCR
 - Semi conservative DNA replication
 - Post translational modification of protein
 - m-RNA
 - Structure of immunoglobulins

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Doctor of Medicine Examination August - 2026
Biochemistry (Paper - II) (Set- 3) Medical Faculty

Time: 3 Hours |
[Total Marks: 100
સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
 Fill up strictly the above details on your answer book

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Student's Signature

- Q. 1.** Explain catabolism of heme. Explain types of bilirubin found in plasma. What are the causes of jaundice? How can laboratory help in differential diagnosis of jaundice? How dry slide technology differentiates between unbound and albumin-bound conjugated bilirubin? **(25 marks)**
- Q. 2.** **Write Notes on:** **(25 marks)**
- Overview of carbohydrate metabolism
 - Fatty acid metabolism in adipose tissue
 - Genetic defect in sickle cell anemia and biochemical basis of its consequences
 - Biochemistry of Magnesium
 - Building blocks of cell
- Q. 3.** **Write Notes on:** **(25 marks)**
- Integration of carbohydrate, lipids and protein metabolism
 - Protein-Energy Malnutrition
 - Overview of lipoprotein metabolism
 - G6PD deficiency
 - Diagnostic criteria for Diabetes Mellitus
- Q. 4.** **Write Notes on:** **(25 marks)**
- Examples of covalent modification of enzymes
 - ABG reports in various acid base disorders
 - EPA and DHA
 - Leptin
 - Causes of anemia



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Doctor of Medicine Examination August - 2026

Biochemistry (Paper - I) (Set - 1) Medical Faculty

Time: 3 Hours]

[Total Marks: 100

સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book

Seat No.:

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Soluanki G. D

Student's Signature

- Q. 1. Explain terms Quality Manual, Internal Quality Control, Quality Objectives and Quality Indicator in relation to medical laboratories. Explain requirements for quality indicators in relation to NABL accreditation? What are essential Quality Indicators recommendations from IFCC Working Group on Laboratory Errors and Patient Safety? Comment on Applicability of essential QIs across laboratory disciplines and opportunities for expansion. (25 marks)

11/15

- Q.2. Write Notes on: (25 marks)

- a) Induction of New Technical Staff in a Medical Laboratory
- b) Making Biochemistry lecture effective to an entire batch of 250 students in a class room
- c) Overview of Xenobiotics
- d) Fluid mosaic model of membrane
- e) Causes of analyser probe injury in medical laboratory and its Risk Management

- Q.3. Write notes on: (25 marks)

- a) Characteristics of good slide presentation in 50 students demonstration room
- b) Biochemistry of Water molecule
- c) Characteristics of good medical laboratory
- d) Cell cycle
- e) Document control in medical laboratory - NABL requirements

- Q.4. Write notes on: (25 marks)

- a) principles various types of spectrophotometry used in clinical laboratory
- b) Capillary electrophoresis vs ordinary electrophoresis
- c) NABL accreditation cycle
- d) Antioxidants found in food and their role in health and diseases
- e) Accuracy Precision and Trueness

Time: 3 Hours]

સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book

Seat No.:

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Student's Signature

- Q.1.** Describe iron metabolism and its regulation? Explain Iron, UIBC, TIBC measurements and common interferences. List iron related tests included in anemia profile. How do they help clinicians in differential diagnosis of anemia? 25
- Q.2.** Write notes on : 25
- ✓ a) Explain types of centrifuges. What is RCF? Explain inhouse calibration of centrifuge.
 - ✓ b) Importance of buffers in reagent and calibration , care of pH meter?
 - ✓ c) Nobel Prize in Physiology or Medicine 2025
 - ✓ d) Schematic diagram of automated biochemistry analyser -
 - ✓ e) Describe types of glasswares commonly used in the lab. Explain method and traceability of inhouse single volume micropipette calibration
- Q.3.** Write notes on : 25
- ✓ a) Performance check of medical laboratory equipments .
 - ✓ b) Interfering vs influencing factors in medical laboratory testing
 - ✓ c) Bidirectional learning in District Residency Program
 - ✓ d) Principle and Parts of HPLC equipment *
 - ✓ e) Parts of type I water plant in a medical laboratory.
- Q.4.** Write notes on : 25
- ✓ a) Sample barcodes - types, need, standardization and troubleshooting
 - ✓ b) Problems and solutions in Outpatient sample collection center in public hospital
 - ✓ c) Communication between laboratory equipments and LIS
 - ✓ d) Periodic evaluation of IQC
 - ✓ e) Preanalytical errors in ABG analysis and its correction