

M. D. EXAMINATION, April/May, 2009

BIOCHEMISTRY

Paper First

(General and Systemic Biochemistry)

Time : Three Hours]

[Maximum Marks : 100

Note : Answer all questions.

1. Discuss Oxidative Phosphorylation with special reference to ATP generation. Mention the importance of natural uncouplers. 20
2. Discuss the methodology for determination of protein structure and molecular weight in the laboratory. 20
3. Discuss various diseases associated with transport of aminoacids across the celis. Outline the role of receptors in cells. 20
4. Explain the following : 10 each
 - (a) Nanotechnology
 - (b) Protein Kinases
 - (c) Gene therapy
 - (d) Flavinooids

Roll No.

P-10

M. D. EXAMINATION, April/May, 2009

BIOCHEMISTRY

Paper Second

(Metabolism and Regulatory Mechanisms)

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt all questions. All questions carry equal marks.

1. Discuss the different hepatotoxic metabolic/nutritional causes and their pathogenetic mechanisms leading to chronic liver disease/cirrhosis of liver. Add a note on the biochemical basis of hepatic encephalopathy. 20
2. Discuss in brief the following : 10, 10
 - (a) Signal transduction by G-protein Coupled Receptors
 - (b) Tyrosine kinases as novel targets of anticancer therapy.
3. Discuss the different causes/biochemical mechanisms of metabolic acidosis and the laboratory parameters used for its differential diagnosis. Add a note on the interrelationship between acid-base and electrolyte disturbances. 20
4. Discuss the role of inflammation, lipids and other risk factors in pathogenesis of atherosclerosis. 20
5. Write short notes on the following : 10, 10
 - (a) Natriuretic peptides as biomarkers
 - (b) Important products synthesised from Glycine

Roll No.

P-11

M. D. EXAMINATION, April/May, 2009

BIOCHEMISTRY

Paper Third

(Clinical Biochemistry)

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt all questions.

1. Define proteinuria and describe its molecular mechanism. Discuss its differential diagnosis and outline the biochemical investigative approach of a case of proteinuria. 25
2. Define and classify anaemias. Enlist the common causes of nutritional anaemias and describe in detail the role of vitamins in their pathogenesis. Briefly write the biochemical approach of diagnosis and treatment of a iron deficiency anaemia case. 25
3. Define and classify gout. Briefly discuss highlighting the biochemical basis of primary gout. Mention the diagnostic and therapeutic principles from a biochemists perspective. 25
4. Write on the following : 5 each
 - (a) Neonatal hyperbilirubinaemias
 - (b) Biochemical features of end stage renal disease
 - (c) DNA damage and repair mechanisms
 - (d) Monoclonal antibodies and their role in management of diseases
 - (e) Molecular mechanisms of diabetic micro-angiopathy

Roll No.

P-12

M. D. EXAMINATION, April/May, 2009

BIOCHEMISTRY

Paper Fourth

(Recent Advances)

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt all questions.

1. Describe the Nobel Prize winning work of Françoise Barré-Sinoussi and Luc Montagnier. Explain the utility of gene rearrangement in immune response. 10, 10
2. Explain the role of cancer markers with examples. Describe the biochemistry of Metastasis. 13, 12
3. Describe the significance of genetic polymorphism of biochemical parameters as a diagnostic and prognostic tool. 25
4. Write notes on the following : 10 each
 - (i) Stem cell research
 - (ii) FISH
 - (iii) Shine-Delgarno sequence

Roll no.

P-2680

M.D. EXAMINATION, APRIL, 2008

M.D. – BIOCHEMISTRY

(Paper - I)

(General & Systemic Biochemistry)

Time : 3 hours

Maximum Marks – 100

Note : Attempt all questions.

1. (a) Explain oxidative phosphorylation with special reference to chemiosmotic hypothesis. 12 marks
- (b) Comment on inhibitors and uncouplers of electron transport chain. 8 marks
2. Describe in details the structure and metabolic functions of :
 - (a) Insulin receptors 10 marks
 - (b) LDL receptors 10 marks
3. (a) Describe the chemical nature of dietary fibres and their role in nutrition 10 marks
- (b) Explain why obesity is a malnourished state 10 marks
4. Write note son the following : 10 marks each
 - (a) Various transport systems across cell membrane
 - (b) Reciprocal regulation of glycolysis and gluconeogenesis
 - (c) Structural organization of collagen
 - (d) Role of reactive oxygen species (ROS) in health and disease

Roll no.

P-2681

M.D. EXAMINATION, APRIL, 2008

M.D. – BIOCHEMISTRY

(Paper -II)

(Metabolism and clinical Biochemistry)

Time : 3 hours

Maximum Marks – 100

Note : Attempt all questions.

1. Describe the mechanism of action of insulin and discuss its role in regulation of blood glucose levels. 25 marks
 2. Define and classify jaundice. Discuss various biochemical tests to differentiate different types of jaundice. 25 marks
 3. Enumerate various water soluble vitamins and discuss the biochemical role of any three. 25 marks
 4. Write short notes on :
 - (a) Respiratory chain 7 marks
 - (b) Wilson's disease 6 marks
 - (c) Energetics of β oxidation 6 marks
 - (d) Translation 6 marks
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Roll no.

P-2682

M.D. EXAMINATION, APRIL, 2008

M.D. – BIOCHEMISTRY

(Paper -II)

(Recent advances in Biochemistry)

Time : 3 hours

Maximum Marks – 100

Note : Attempt all questions.

1. Who are considered as 'Pioneers of Gene Targetting'? Describe their work for which they were recently awarded the Nobel Prize. 30 marks
2. What is RNA ? Describe its role in Gene silencing and its clinical implications. 25 marks
3. Enumerate recent cardiac markers. Describe in detail their significance. 25 marks
4. Write notes on :
 - (a) Nitric oxide 10 marks
 - (b) Polyclonal antibodies 10 marks

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PG- B1

POST GRADUATE DEGREE EXAMINATION, APRIL- 2011

**MD BIOCHEMISTRY
(PAPER ONE)**

GENERAL BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions

- Q. 1. Describe indicators under heading: (20)
- a. Chemical nature
 - b. Types
 - c. Mechanism
 - d. Color change
 - e. Sensitivity range of indicators.
- Q. 2. Describe the mechanism of action of enzymes in detail. (20)
- Q. 3. Describe briefly: (3 x 10 = 30)
- a. Phospholipids chemistry
 - b. Diffusion and osmosis
 - c. Hemoglobinopathies
- Q. 4. Write short notes on: (5 x 6 = 30)
- a. Radioisotopes and its biological applications.
 - b. Mechanism of fusion of synaptic vesicles with plasma membrane.
 - c. Crystalloids and colloids.
 - d. Chemical composition of connective tissue.
 - e. Glucose transporters in different tissues.

POST GRADUATE DEGREE EXAMINATION, APRIL- 2011

MD BIOCHEMISTRY

(PAPER TWO)

METABOLISM

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions

Illustrate with suitable diagnosis.

- Q. 1. Discuss in detail – Role of vitamins in fat metabolism. (20)
- Q. 2. Discuss in details – Biochemical mechanism of osteoporosis and biochemical principles for diagnosis and treatment. (20)
- Q. 3. Describe briefly: (3 x 10 = 30)
- Vitamin as a regulatory molecule.
 - Orotic aciduria.
 - Glucose tolerance factors.
- Q. 4. Write short notes on: (5 x 6 = 30)
- Retenoid X receptors.
 - Small stable RNA.
 - Haemolytic anaemia due to error in carbohydrate metabolic pathway.
 - Secondary hyperparathyroidism.
 - Inborn errors of amino acid metabolism diagnosed by urine examination.

POST GRADUATE DEGREE EXAMINATION, APRIL- 2011**MD BIOCHEMISTRY****(PAPER THREE)****CLINICAL & SYSTEMIC BIOCHEMISTRY**

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions

- Q. 1. Describe the biochemical parameters which are measured as marker of oxidative stress. Mention the role of antioxidants in cardiovascular diseases. (20)
- Q. 2. Describe the clinical significance of enzymes and isoenzymes estimation. (20)
- Q. 3. Describe briefly: (3 x 10 = 30)
- Thyroid function tests
 - Diagnostic uses of Radioisotopes
 - Quality assurance in a clinical laboratory
- Q. 4. Write short notes on: (5 x 6 = 30)
- Biochemical features of end stage renal disease
 - Monoclonal antibodies and their role in management of diseases
 - Role of telomerase in ageing
 - Heat shock proteins
 - Chemiluminescence

POST GRADUATE DEGREE EXAMINATION, APRIL- 2011**MD BIOCHEMISTRY
(PAPER FOUR)****RECENT ADVANCES IN BIOCHEMISTRY**

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions

- Q. 1. a. Give an account of newer anti cancer drugs directed against tyrosinekinase. (10)
 b. What are molecular mechanisms associated with resistance to chemotherapy. (10)
- Q. 2. Justify following: (4 x 5 = 20)
 a. DNA vaccine is advantageous over other vaccines.
 b. P 53 is termed as guardian of genome.
 c. Nanotechnology has an important role to play in clinical biochemistry.
 d. Enzymes repair damaged DNA.
- Q. 3. Describe briefly: (3 x 10 = 30)
 a. Gene library
 b. Tumor markers
 c. Biological effects of radiation and radiation protection.
- Q. 4. Write short notes on: (5 x 6 = 30)
 a. Gene therapy
 b. Hypersensitivity reactions
 c. Monogenetic diseases
 d. Micro RNA's
 e. Class switching of immunoglobulin

POST GRADUATE EXAMINATION, APRIL- 2012

MD BIOCHEMISTRY

(PAPER ONE)

GENERAL BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagnosis.

- Q. 1.** What are colloids? What are their properties? How do they differ from crystalloids? What is physiological application of colloids? (20)
- Q. 2.** Define enzymes? What is mechanism of their action and mention the role of coenzymes? What is the effect of temperature and pH on enzyme activity, give physiological examples? (20)
- Q. 3.** Describe briefly: (3 x 10 = 30)
- Newer markers of gastrointestinal diseases.
 - Molecular events in muscle contraction.
 - Biosynthesis of haemoglobin
- Q. 4.** Write short notes on: (5 x 6 = 30)
- Oxidative phosphorylation
 - Purines and their derivatives
 - Triglycerides and their physiological significance
 - Tyrosine and its derivatives
 - Mucopolysaccharides and Mucopolysaccharoidosis

POST GRADUATE EXAMINATION, APRIL- 2012**MD BIOCHEMISTRY****(PAPER TWO)****METABOLISM**

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions

Illustrate with suitable diagnosis.

- Q. 1.** What are the different initiation factors involved in eukaryotic protein synthesis? Write their functions. Give an account of the steps in the formation of 80S initiation complex. (20)
- Q. 2.** Describe the different pathways for the biosynthesis of purine nucleotides. Mention the important disorders of purine metabolism and their treatment. (20)
- Q. 3.** Describe briefly: (3 x 10 = 30)
- Insulin biosynthesis and the current concepts on its mechanism of action.
 - Normal serum calcium regulation and different causes that lead to hypercalcemia.
 - Coenzymes derived from vitamins and different coenzymes involved in oxidative decarboxylation of pyruvate.
- Q. 4.** Write short notes on: (5 x 6 = 30)
- Porphyrias and their laboratory assessment.
 - Formation and clinical significance of glycosylated haemoglobin.
 - Factors promoting atherosclerosis, mechanism of its development and effects.
 - Eicosanoids types, functions and drugs inhibiting their synthesis.
 - Co-ordinated regulation of glycogenesis and glycogenolysis.

POST GRADUATE EXAMINATION, APRIL- 2012

**MD BIOCHEMISTRY
(PAPER THREE)**

CLINICAL & SYSTEMIC BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagnosis.

- Q. 1.** Discuss in detail about the etiopathogenesis of malabsorption syndrome and the biochemical tests for its diagnosis. (20)
- Q. 2.** Discuss the differential diagnosis of jaundice and biochemical basis of different type of jaundice. (20)
- Q. 3.** Describe briefly: (3 x 10 = 30)
- PET Scan
 - Thyroid function tests
 - Biochemical principles for cancer treatment
- Q. 4.** Write short notes on: (5 x 6 = 30)
- Glucagon like peptide
 - Real time PCR
 - Biochemistry of Polycystic ovarian disease (PCOD)
 - Apoptosis
 - High sensitive CRP (C- Reactive Protein)

X

POST GRADUATE EXAMINATION, APRIL- 2012

✓ MD BIOCHEMISTRY
(PAPER FOUR)

RECENT ADVANCES IN BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagnosis.

- Q. 1. Who are considered ^{the} 'Pioneers of Gene'? Briefly give a review of their work and mention how this work can be further directed towards future developments in technology and research. (20)
- Q. 2. What are proto-oncogene and oncogenes? Name the major groups of genes regulating cell proliferation. Describe the mechanism of carcinogenesis by an oncogene with a specific example. Reflected on genetic model of cancer. (20)
- Q. 3. Describe briefly: (3 x 10 = 30)
- a. Gene Library
 - b. Tumor markers
 - c. Applications of stem cell research
- Q. 4. Write short notes on: (5 x 6 = 30)
- a. RFLP
 - b. Hypersensitivity reaction
 - c. Monogenetic disease
 - d. Micro RNA's
 - e. Cytokines in immune regulation

POST GRADUATE EXAMINATION, MAY- 2013

**MD BIOCHEMISTRY
(PAPER ONE)**

GENERAL BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Explain how enzymes exhibit their action and what are the various parameters affecting enzyme activity. (20)
- Q. 2.** Define isotopes. What do you understand by half life of an isotope? Discuss the diagnostic and therapeutic significance of radioisotopes in medicine giving examples. (20)
- Q. 3.** Describe briefly: (3 x 10 = 30)
- a. Coefficient of viscosity and applications of viscosity.
 - b. Electron transport chain and mention the sites of action of inhibitors and ATP production.
 - c. Gastrointestinal hormones.
- Q. 4.** Write short notes on: (5 x 6 = 30)
- a. Heteropolysaccharides
 - b. Structure and functions of collagen
 - c. Isoenzymes
 - d. Functions of hemoglobin
 - e. Structure and function of various types of RNA

POST GRADUATE EXAMINATION, MAY- 2013

**MD BIOCHEMISTRY
(PAPER TWO)**

METABOLISM

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Describe the metabolism and role of amino acids and their derivatives as neurotransmitters. (20)
- Q. 2.** Describe the molecular mechanism of reciprocal regulation of glycolysis, gluconeogenesis and glycogen metabolism in early starvation. (20)
- Q. 3.** Describe briefly: (3 x 10 = 30)
- a. Synthesis and metabolic role of thyroid hormones.
 - b. Metabolic role of folic acid and its role in medicine.
 - c. Ribozymes with example and mechanism of action.
- Q. 4.** Write short notes on: (5 x 6 = 30)
- a. Hepcidine and its role of iron metabolism.
 - b. Regulation of gene expression at the translation level.
 - c. Galactosemia
 - d. Oxidation of oleic acid.
 - e. Salvage pathway of Purine synthesis

POST GRADUATE EXAMINATION, MAY- 2013**MD BIOCHEMISTRY****(PAPER THREE)****CLINICAL & SYSTEMIC BIOCHEMISTRY**

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- 12 **Q. 1.** Describe the genetic code. With the help of proper illustrations give an account of the process of translation, its regulation and post – translational modifications. (20)
- 14 **Q. 2.** Discuss the role of different organs and systems in acid-base homeostasis. Give an account of various types of acid-base disturbances, their common causes and mechanism of their correction (compensation). (20)
- Q. 3.** Describe briefly: (3 x 10 = 30)
- 6 a. Kidney function tests
 - 6 b. Enzymes and isoenzymes in clinical biochemistry
 - 5 c. Detoxification
- Q. 4.** Write short notes on: (5 x 6 = 30)
- 4 a. Apoptosis
 - 4 b. Hepatic coma
 - 2 c. RIA
 - 4 d. Schilling's test
 - 2 e. Congenital Adrenal Hyperplasia

POST GRADUATE EXAMINATION, MAY- 2013

**MD BIOCHEMISTRY
(PAPER FOUR)**

RECENT ADVANCES IN BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Name the scientists who received Nobel Prize, for Medicine & Physiology, in 2012. Describe their work in detail. (20)
- Q. 2.** Describe the process of immune complex mediated hypersensitivity. (20)
- Q. 3.** Describe briefly : (3 x 10 = 30)
- a. Reactive Oxygen species.
 - b. Post transcriptional modifications
 - c. Cancer cells and Apoptosis.
- Q. 4.** Write short notes on: (5 x 6 = 30)
- a. Selectins
 - b. Back mutation
 - c. Site directed mutagenesis
 - d. Si RNAs
 - e. Role of stem cells in Cancer.

POST GRADUATE EXAMINATION, APRIL/MAY - 2014

**MD BIOCHEMISTRY
(PAPER ONE)**

GENERAL BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Discuss different orders of protein structure with specific references to collagen. How is protein structure linked to pathogenesis of prion disease. (20)
- Q. 2.** Discuss the components of electron transport chain. Analyze the effects of antimycin A, 2,4-dinitrophenol and oligomycin on mitochondrial oxygen consumption. (20)
- Q. 3.** Describe briefly: (3 x 10 = 30)
- Gibb's free energy of reaction.
 - Structure and function of cytochrome p450.
 - Biochemical and biophysical principles underlying respiratory distress syndrome.
- Q. 4.** Differentiate between: (5 x 6 = 30)
- Micelle and chylomicron
 - Small interfering RNA and micro RNA.
 - End-point PCR and real time PCR.
 - Osmosis and reverse osmosis.
 - Glycerophospholipids and sphingophospholipids.

POST GRADUATE EXAMINATION, APRIL/MAY - 2014

MD BIOCHEMISTRY

(PAPER TWO)

METABOLISM

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Discuss principles and mechanism of gene expression in pro and eukaryotic cells. (20)
- Q. 2.** Give the description of physiological functions of hormones and enumerate the hormone receptors along with action of G-protein. (20)
- Q. 3.** Describe briefly: (3 x 10 = 30)
- a. Glycogen storage diseases.
 - b. Restriction fragment length polymorphism.
 - c. Fatty liver and lipotropic factors.
- Q. 4.** Write short notes on: (5 x 6 = 30)
- a. G-6-PD deficiency: Causes and manifestations.
 - b. One carbon metabolism.
 - c. Inborn errors of metabolism of sulphur containing amino acids.
 - d. Role of uridine nucleotide in carbohydrate metabolism.
 - e. Wilson's disease.

POST GRADUATE EXAMINATION, APRIL/MAY - 2014

**MD BIOCHEMISTRY
(PAPER THREE)**

CLINICAL & SYSTEMIC BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

Q. 1. With the help of adequately labeled diagrams, describe the replication of DNA. How is damaged DNA repaired and what happens when the mechanism of DNA repair fails? Explain with clinical examples. (20)

Q. 2. Describe the metabolism of xenobiotics and the process of detoxification. Give suitable examples. (20)

Q. 3. Describe briefly: (3 x 10 = 30)

- a. Metabolic acidosis.
- b. Neurotransmitters.
- c. Gene regulation.

Q. 4. Write short notes on: (5 x 6 = 30)

- a. Uses of radioisotopes in diagnosis.
- b. Metabolic syndrome
- c. Uremia
- d. Gastric function tests
- e. RIA

POST GRADUATE EXAMINATION, APRIL/MAY - 2014

**MD BIOCHEMISTRY
(PAPER FOUR)**

RECENT ADVANCES IN BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Name the scientists who received Nobel Prize, for Medicine & Physiology, in 2013. Describe their work in detail and explain how it will help in the understanding of diseases. (20)
- Q. 2.** What are proto-oncogene and oncogenes? Name the major groups of genes regulating cell proliferation. Describe the mechanism of carcinogenesis by an oncogene with a specific example. Reflected on genetic model of cancer. (20)
- Q. 3.** Describe briefly : (3 x 10 = 30)
- a. Gene library
 - b. Cytocaines
 - c. Auto immunity and auto immune diseases
- Q. 4.** Write short notes on: (5 x 6 = 30)
- a. Telomeres
 - b. Reactive oxygen species
 - c. Metabolic theory of aging
 - d. Proteinases of neutrophils
 - e. Antibiotics in Proteins synthesis

POST GRADUATE EXAMINATION, APRIL - 2015

**MD BIOCHEMISTRY
(PAPER ONE)**

GENERAL BIOCHEMISTRY, BIOCHEMICAL TECHNIQUES AND BIostatISTICS

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Define isomerism. What are various types of isomerism? What kind of isomerism is exhibited by fatty acids? Why is consumption of excessive processed foods linked with cardiovascular disease? (20)
- Q. 2.** What are levels of organization of proteins? Write a note on protein misfolding. (20)
- Q. 3. Describe briefly:** (3 x 10 = 30)
- a. Oligosaccharides as recognition molecules.
 - b. Radioactive isotopes.
 - c. Therapeutic applications of synthetic nucleotides.
- Q. 4. Write short notes on:** (5 x 6 = 30)
- a. Fourth isoenzyme of creatine kinase.
 - b. External quality assurance.
 - c. Uncouplers of oxidative phosphorylation.
 - d. Brown adipose tissue.
 - e. Sensitivity & specificity of a technique.

POST GRADUATE EXAMINATION, APRIL - 2015

**MD BIOCHEMISTRY
(PAPER TWO)**

METABOLISM, ENDOCRINOLOGY AND NUTRITION

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1. Describe in detail the metabolic changes occurring during starvation. (20)
- Q. 2. Give a detailed account of heme breakdown, its excretion and associated disorders. Add a note on the lab findings seen in three types of jaundice. (20)
- Q. 3. Describe briefly: (3 x 10 = 30)
- a. Adipose tissue as an endocrine organ.
 - b. Biosynthesis and regulation of vitamin D and its role in calcium homeostasis.
 - c. Pyrimidine metabolism and associated disorders.
- Q. 4. Write short notes on: (5 x 6 = 30)
- a. Selenium
 - b. Role of reactive oxygen species (ROS) in health and disease.
 - c. HDL subclasses.
 - d. Glucose transporters
 - e. Anti-inflammatory action of Glucocorticoids.

POST GRADUATE EXAMINATION, APRIL - 2015

**MD BIOCHEMISTRY
(PAPER THREE)**

GENETICS, MOLECULAR DIAGNOSTICS, CANCER AND IMMUNOLOGY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Outline the principles of translation. With the help of adequately labelled diagrams, describe the stages of translation in prokaryotes. Add a note on inhibitors of translation. (20)
- Q. 2.** Name different types of T. Cells and their cell surface markers and functions. Which one of them particularly is susceptible to infection by immunodeficiency virus? (20)
- Q. 3. Describe briefly:** (3 x 10 = 30)
- a. How are monoclonal antibodies produced? Write the applications of monoclonal antibodies.
 - b. What is the principle underlying and the procedure of PCR, add a note on its application, enlist the types of PCR.
 - c. Write briefly the activation of proto-oncogenes.
- Q. 4. Write short notes on:** (5 x 6 = 30)
- a. DNA microarray
 - b. Acute phase reactants
 - c. Gout
 - d. Role of G-proteins in signal transduction.
 - e. Explain the term Isotype, Allotype and Idiotypic.

POST GRADUATE EXAMINATION, APRIL - 2015

**MD BIOCHEMISTRY
(PAPER FOUR)**

CLINICAL & SYSTEMIC BIOCHEMISTRY & RECENT ADVANCES IN BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Discuss in detail about the causes, types and compensatory mechanisms of Metabolic acidosis and alkalosis. (20)
- Q. 2.** Define different neurotransmitters, their synthesis and current concept of their mechanism of action. (20)
- Q. 3. Describe briefly :** (3 x 10 = 30)
- a. Carbohydrate – related tumor
 - b. Define xenobiotics, give examples and discuss in detail the steps of detoxification of drugs in human beings.
 - c. Name the scientist who received the Nobel prize in physiology of medicine in 2012. Describe their work in detail and explain how their discovery has revolutionized our understanding of how cells and organisms develop?
- Q. 4. Write short notes on:** (5 x 6 = 30)
- a. Male infertility.
 - b. Acute phase proteins.
 - c. Laboratory diagnosis of osteoporosis.
 - d. Inborn errors of galactose metabolism.
 - e. Biochemical derangements in metabolic syndrome.

POST GRADUATE EXAMINATION, MAY - 2016

**MD BIOCHEMISTRY
(PAPER ONE)**

GENERAL BIOCHEMISTRY, BIOCHEMICAL TECHNIQUES AND BIOSTATISTICS

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Define quality control in a laboratory. What do you understand by accreditation? Give in detail an account of quality assurance program. **(20)**
- Q. 2.** What are polysaccharides? Add a note on Mucopolysaccharides. Discuss the biochemical basis of use of glucosamine in osteoarthritis. **(20)**
- Q. 3. Describe briefly:** **(3 x 10 = 30)**
- a. Regulatory RNA
 - b. Acute phase proteins
 - c. Lipoproteins and role of sd LDL.
- Q. 4. Write short notes on:** **(5 x 6 = 30)**
- a. Sphingolipids
 - b. Metabolic role of mitochondria
 - c. Mobile Cytochrome – C
 - d. Drug designing based on substrate binding
 - e. Secreted and membrane bound immuno globulin

X

POST GRADUATE EXAMINATION, MAY - 2016

**MD BIOCHEMISTRY
(PAPER TWO)**

METABOLISM, ENDOCRINOLOGY AND NUTRITION

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Enumerate various pathways of carbohydrate metabolism. Discuss glycogenolysis and its regulation. (20)
- Q. 2.** Describe the various steps of β oxidations and discuss its energetics. (20)
- Q. 3.** Describe briefly: (3 x 10 = 30)
- a. Glycogen storage diseases.
 - b. Trace elements
 - c. Coenzymes
- Q. 4.** Write short notes on: (5 x 6 = 30)
- a. Inborn errors of metabolism
 - b. Mechanism of action of hormones.
 - c. Visual cycle
 - d. Metabolic syndrome
 - e. BMR.

X

POST GRADUATE EXAMINATION, MAY - 2016

**MD BIOCHEMISTRY
(PAPER THREE)**

GENETICS, MOLECULAR DIAGNOSTICS, CANCER AND IMMUNOLOGY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1.** Discuss the process of translation in eukaryotes. What are the post translational modifications? Add a note on inhibitors of translation. (20)
- Q. 2.** Describe in detail the structure, classification and functions of immunoglobulins. (20)
- Q. 3. Describe briefly:** (3 x 10 = 30)
- Regulation of gene expression in eukaryotes.
 - Describe mutations affecting membrane proteins. Add a note on cystic fibrosis.
 - Describe the cell cycle and its control. Write briefly on apoptosis.
- Q. 4. Write short notes on:** (5 x 6 = 30)
- Micro arrays
 - Class switching of immunoglobulins
 - Protein targeting
 - Tumour suppressor genes
 - Immobilized enzymes

X

POST GRADUATE EXAMINATION, MAY - 2016

**MD BIOCHEMISTRY
(PAPER FOUR)**

CLINICAL & SYSTEMIC BIOCHEMISTRY & RECENT ADVANCES IN BIOCHEMISTRY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagrams.

- Q. 1. Define thyrotoxicosis. What are the different ways to evaluate the function of thyroid gland? Mention the laboratory findings in hyperthyroidism. (20)
- Q. 2. What is proteomics? Discuss in brief the principle of various techniques used in proteomics. Explain the importance of proteomics in medicine. (20)
- Q. 3. Describe briefly : (3 x 10 = 30)
- a. Xenobiotics and the various biochemical ways to overcome the harmful effects of xenobiotics.
 - b. Nanotechnology application with reference to genomics and enzymology.
 - c. Various mechanisms responsible for the maintenance of pH of body fluids.
- Q. 4. Write short notes on: (5 x 6 = 30)
- a. Clinical uses of carcinoembryonic antigen (CEA)
 - b. Enzymes and proteins in the diagnosis of acute myocardial infarction.
 - c. Biochemical parameters of oxidant stress and the role of antioxidants in cardiovascular disease.
 - d. Restriction fragment length polymorphisms and its role in prenatal detection of hereditary disorder.
 - e. Enzymes valuable in the differential diagnosis of liver disease.

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