UG/MBBS/208(AB)

Roll No. 21155ME018

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2022

BIOCHEMISTRY

PAPER-II

TIME: - THREE HOURS FULL MARKS: 100

(Write your Roll No. at the top immediately on the receipt of this Question Paper)

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A Marks: 50

1. What are the sequences of events in prokaryotic transcription? How are they different from eukaryotic transcription? Enumerate Post-transcriptional modification. (7+5+3=15)

2. Write short notes on the following: (5x5=25)
   (a) DNA Repair
   (b) Applications of PCR
   (c) Tumor Lysis Syndrome
   (d) RNA editing
   (e) Wobble hypothesis

3. Justify the following: (5x2=10)
   (a) Role of alcohol in gout
   (b) Rifampicin inhibit bacterial transcription
   (c) Role of Uridine in orotic aciduria
   (d) Role of RNAi/Antigene therapy in cancer treatment
   (e) Vectors use in gene therapy.

Section-B Marks: 50

4. A 65 year old female with diabetes mellitus reaches emergency room with lethargy, disorientation and long-deep breathing. Venous blood glucose is 400 mg/dL and arterial blood shows pH=7.2, HCO_3=15 mmol/L and pCO_2=40 mmHg. (2+1+4+4+4=15)
   (a) What is the most probable diagnosis?
   (b) What is the range of normal blood pH?
   (c) Discuss the biochemical basis of this condition.
   (d) Give list of other diseases that can show similar ABG results.
   (e) Describe the role of buffers in maintaining acid base balance.

5. Write short notes on: (4x5=20)
   (a) Oncogenes, proto-oncogenes and tumor suppressor genes.
   (b) Electrophoresis and its medical applications.
   (c) Immune response.
   (d) Kidney function tests.

6. Short answer questions. (5x3=15)
   (a) Enzymes involved in xenobiotics metabolism
   (b) Beer Lambert Law
   (c) Anion gap
   (d) Free radicals
   (e) Superoxide dismutase.

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Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

3rd Terminal MBBS Examination 2022

Time: 2 hours

Date: 03/12/22
Full Marks: 100

Paper I
Answer all the questions
MCQ 20 Marks

1. A 45-year-old CEO who is always at his desk in an air-conditioned room complained of fatigue, tiredness, vague aches and pains in limbs. After a thorough clinical examination, the physician prescribed a battery of tests. The only abnormal laboratory parameter was a vitamin D3 level of 5 ng/mL.
What is the probable cause for the low vitamin D3 level in this man?
Which other parameters are to be measured along vitamin D3 in the assessment of bone profile? Why?
Write of 3 food items that contain vitamin D. How is supplementation done in this patient?
Do you suggest any life style modification? Discuss the role of vitamin D. 12

2. Give a flow chart of heme biosynthesis. Summarize major features of porphyrias. 12

3. Answer the following questions: 7X8

a) Discuss the steps involved in fatty acid mobilization from adipose tissues and their oxidation under starvation
b) Discuss various tumour markers
c) Describe BMR
d) Define trace elements. Discuss roles of zinc and selenium.
e) How is fructose synthesized and catabolized in our body? What is hereditary fructose intolerance?
f) What are the different types of enzyme inhibition? Explain with suitable examples. Explain its therapeutic significance, giving two suitable examples.
g) Discuss LDL metabolism

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

3rd Terminal MBBS Examination 2022

Time: 2 hours

Date: 03/12/22
Full Marks: 100

Paper II
Answer all the questions
MCQ 20 Marks

1. Discuss the regulation of eukaryotic gene expression. 12

2. What are the causes of jaundice? How will you differentiate between them with the help of liver function tests? 12

7X8

3. Answer the following questions:
a) What is metabolic acidosis? Describe its types, causes and diagnosis.
b) Draw a labelled diagram of structure of antibody. What is Bence Jones proteinuria?
c) Discuss termination of prokaryotic transcription.
d) Write briefly on hormonal regulation of water homeostasis
e) Discuss phase II reactions of xenobiotic metabolism
f) Draw a flowchart of molecular gene cloning. What are its applications?
g) How is uric acid synthesized in our body? Mention the diseases associated with uric acid biosynthesis.

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

3rd Terminal MBBS Examination 2021

Time: 3 hours **Date: 10/12/21**
Full Marks: 100

Paper I

1. A 58 years old elderly man presented in emergency with left sided chest pain radiating to left arm, profuse sweating and dyspnea. He had a history of untreated high blood pressure. His investigation results were as follows.

BP: 90/60 mm Hg

Random blood sugar: 350 mg/dl

Creatine kinase-MB: 8 ng/mL (0.0–5.5 ng/mL)

ECG shows ST segment elevation in anterolateral leads.

What is your diagnosis? Suggest and justify further investigations in this patient? Write briefly about isoenzymes with example. 1+5+4

2. A 13 year old boy had periodic fever for three days. He was diagnosed to have malaria caused by *P. Vivax* . Along with other anti malarial drugs he was prescribed primaquine tablets. Clinician did not advise any investigation before starting primaquine. After one week of taking primaquine he developed yellowish discolouration of skin. His urine colour was normal.

What is your diagnosis? What investigation should be advised to avoid this kind of problem? What is the reason for yellowish discolouration of skin and normal coloured urine? Draw a flowchart of HMP shunt. What is its importance?

(b) Surgical resection of terminal part of small int...
megaloblastic anemia
(c) Plasma bic...

3. Write briefly on the following: 6X10

a) Phenylketonuria

b) Protein folding and associated disorders with misfolding

c) Classify dietary fibres. Explain their biochemical role in cancer and cardiovascular disease

d) Explain the metabolism in fed and starvation condition

e) Enumerate Biochemical roles of vitamin A

f) Transamination and clinical role of Transaminases

g) Ketogenesis and clinical condition associated with it

h) HDL cholesterol

i) Role of zinc and selenium

j) Lipotropic factors

4. Give reasoning for the following: 10X2

a) Fatty acid synthase is a processive enzyme

b) Vit B12 deficiency can lead to folic acid deficiency

c) Calcitriol is prescribed in chronic kidney disease

d) Methotrexate is an anticancer drug

e) For vegetarians it is necessary to take vegetable proteins from multiple sources

f) A 23 years old man cannot tolerate milk and milk products

g) Doctor should understand the socioeconomic background of the patient

h) Crigler- Najjar syndrome leads to hyperbilirubinemia

i) Dyslipidemia is present in Von Gierke's disease

j) Only primary bile acids have role in absorption of lipid

3. Explain the properties of genetic code. Explain different types of mutation. How does specific properties and arrangements of genetic code help to mitigate effect of mutations.

4+4+2=10

4. Write short notes on the following: 8X5=40

a) Provide mechanisms of action for following drugs: (i) aspirin, and (ii) statins
b) What are the sources of NADPH in the cell? Discuss the role of NADPH in fatty acid metabolism.
c) Isopeptide
d) Give a comparative account of glycoprotein and proteoglycan
e) Compare structure and function of haemoglobin and myoglobin
f) Discuss biochemical functions and deficiency symptoms of vitamin D
g) Tabulate difference between proto oncogenes and tumour suppressor genes
h) Structure of immunoglobulins with labelled diagram

5. Give short answers/explanations to the following questions: 10X2=20

a) Excess intake of fructose leads to dyslipidemia
b) G6 PD Deficiency leads to haemolytic anaemia
c) Biochemical mechanism of booster dose of vaccines
d) Mother complains of mousy odour in urine of neonate
e) Defect in DNA repair can lead to photosensitivity
f) Mobilization of fatty acids from adipose tissue under fasting condition
g) Example of super secondary structures
i) Vitamin K and post translational modification
j) Good doctor patient relationship
k) Methotrexate is an anticancer drug

UG/MBBS/207(AB)

Roll No. .....

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2020

BIOCHEMISTRY

PAPER-I

TIME: - THREE HOURS

FULL MARKS: 100

(Write your Roll No. at the top immediately on the receipt of this Question Paper)

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A

Marks: 50

1. What are enzymes? Enumerate the major classes of enzymes. What are isoenzymes? Give examples with their clinical significance. (2+4+2+4=12)

2. Write short notes on any four: (4x5=20)
   (a) HMP-Shunt
   (b) Transport Across Cell
   (c) Cori Cycle
   (d) Biological Oxidation
   (e) Fatty Acid Synthesis and its Regulations.

3. Differentiate between any three: (3x4=12)
   (a) Hexokinase and Glucokinase
   (b) Oxidative and substrate level Phosphorylation
   (c) Homopolysaccharides and Heteropolysachharides
   (d) Classical and Non Classical Galactosemia

4. Multiple choice questions: (1x6=6)
   (i) Creatine kinase level in serum is increased in-
   (a) Myocardial Infarction (b) Prostate cancer
   (c) Infective Hepatitis (d) Intravascular Hemolysis
   (ii) Cataracts are formed due to accumulation of-
   (a) Xylitol in essential pentosuria (b) Galcitol (Dulcitol) in Galactosemia
   (c) Mannitol in Galactosemia (d) Ribitol in Renal Glycosuria
   (iii) Defects in oxidation of fatty acids can produce all except-
   (a) Hypoglycemia (b) Ketonemia
   (c) Myopathy (d) Hyperammonemia
   (iv) Prostagalndins are stored:
   (a) In adipose tissue (b) As plasma lipoproteins
   (c) As granules in mast cells (d) As membrane phospholipids
   (v) Which of the electron carriers is soluble and mobile?
   (a) Co Q (b) Cytochrome-c
   (c) Cytochrome-a (d) Cytochrome-b
   (vi) Which of the statement regarding active transport is incorrect?
   (a) Requires carrier proteins (b) Energy dependent
   (c) Against concentration gradient (d) Transport of water is an example

P.T.O.

UG/MBBS/208(AB)

Roll No. .....

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2020

BIOCHEMISTRY

PAPER-II

TIME: - THREE HOURS FULL MARKS: 100

(Write your Roll No. at the top immediately on the receipt of this Question Paper)

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A Marks: 50

Long Answer Question: (1+4+10=15)

(1) A 70 year old male in good health previously, presented with sudden pain in the right great toe in the night after a bout of alcohol consumption. On examination, he had mild fever; his right great toe was swollen, warm, red and tender. Serum uric acid was 10 mg/dl.

(a) What is the probable diagnosis?

(b) Discuss the biochemical basis of this condition along with different types of it.

(c) Enumerate the pathway of purine nucleotide catabolism.

(2) Short Answer Question: (7x5=35)

1) Define Induction & repression. Describe briefly about Lac Operon

2) Explain briefly about Post Transcriptional Modification

3) Discuss about Recombinant DNA technology & it's applications

4) Define Mutation. Describe about types of Mutation with examples

5) Explain briefly about PCR technique & it's applications

6) Describe Structure of Immunoglobulins

7) Name drugs which inhibits translation & describe their mechanism of action.

P.T.O.

Section-B

Marks: 50

1. A 52 year old man with presents to the emergency department history in semiconscious state; he had diabetes mellitus since 20 years. He has an SpO_2 of 98% on room air and is obviously tachypnea on exam with what appears to be Kussmaul's respirations. A room air arterial blood gas is performed and reveals: (3x5=15)

pH: 7.15 (7.35-7.45)	Sodium: 140.0 (135-1555mEq/L)
pCO_2: 21(35-45 mm of Hg)	Potassium: 4.0 (3.5-5.5mEq/L)
HCO_3: 16.0(22-26 ~~mm of Hg~~ mEq/L)	Chloride: 104 (95-1055 mEq/L)
Blood glucose: 504 mg/dl	

(a) Which type acid-base imbalance is evident from it this ABG report?
(b) Define anion gap.
(c) Calculate the anion gap in this patient.
(d) Discuss all the possible differential diagnosis of underlying disorder in this patient?
(e) Describe the mechanism of compensation in this disorder?

2. Write short notes on: (4x5=20)
(a) Free radical and antioxidant
(b) Phase II xenobiotic
(c) Liver function test
(d) Tumor suppressor gene
(e) Cardiac markers

3. Short answer questions (justify it). (5x3=15)
(a) Blood creatinine more better investigation than urine creatinine.
(b) Vitamin C act as Pro-oxidant in higher doses.
(c) Serum is better than plasma for biochemical investigation.
(d) Lambert-beer law used for biochemical parameter.
(e) Enumerate body fluid in our body.

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U.G/MBBS/2018(All)

Roll No. .....

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2016

BIOCHEMISTRY

PAPER-II

TIME - THREE HOURS

FULL MARKS: 50

(Write your Roll No. at the top immediately on the receipt of this Question Paper)

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A

Marks: 25

1. How is uric acid synthesized in our body? Discuss the causes and management of hyperuricaemia. 9

(4x4=16)

2. Write short notes on the following:
   (a) Genetic code
   (b) Topoisomerase
   (c) lac operon
   (d) Gene cloning

Section-B

Marks: 25

1. Name the principal minerals which are macronutrients. State the biochemical importance of Sodium and Potassium in the body. 8

2. Classify hormones according to their mode of action. State the factors that regulate hormone action. 7

3. Write short notes on the following: 10
   (a) Balanced diet
   (b) Carcinogens
   (c) RIA

RDA

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Roll No. .....

First Professional M.B.B.S. (II Semester) Supplementary Examination, 2014

Biochemistry

Paper-II

Full Marks: 50

Time: - Three Hours

(Use Separate Answer Books for Each Section.)

Section-A

Marks: 25

1. Briefly discuss the following: (5x2=10)
   (a) Classification, brief functions and complete structure of immunoglobulins.
   (b) Lac-Operon theory of gene expression and regulation.

2. Describe briefly the following: (5x2=10)
   (a) Process of DNA replication in Prokaryotes.
   (b) Gout & Orotic Aciduria.

3. Principle and technique of Polymerase chain reaction and its application in the field of medicine and biological science. 5

Section-B

Marks: 25

4. Explain the various mechanisms by which the body maintains its pH of blood. 10

(5x3=15)

5. Explain in brief:
   (a) SDA
   (b) Titrable Acidity
   (c) Proto-oncogenes
   (d) Detoxification of Xenobiotics
   (e) Plasma-proteins.

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UG/MBBS/207(AB)

Roll No. .....

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2016

BIOCHEMISTRY

PAPER-I

TIME: - THREE HOURS FULL MARKS: 50

(Write your Roll No. at the top immediately on the receipt of this Question Paper)

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A Marks: 25

1. What is the normal blood glucose level in fasting and postprandial data? Explain the role of different hormones that play a role in its regulation. (2+7=9)

2. Give explanations for: (2+2=4)
   (a) Muscle glycogen cannot contribute to blood glucose.
   (b) Alcoholism leads to fatty liver.

3. Write briefly about: (4x3=12)
   (a) Transport mechanism across the membrane
   (b) Mucopolysaccharides
   (c) Uncouplers
   (d) Enzyme markers in myocardial infarction

Section-B Marks: 25

1. Name the important products from tryptophan and briefly discuss the disorders of its metabolism. 5

2. Write the steps of cholesterol synthesis upto mevalonate and briefly describe the regulation of cholesterol synthesis. 5

3. Write short notes on: (3x5=15)
   (a) Factors responsible for fluidity of cell membrane
   (b) Rapoport Luebering Cycle / BPG Shunt
   (c) Antioxidant Vitamins
   (d) Fatty acid synthase complex
   (e) Role of Vitamin-D in maintenance of blood calcium level

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UG/MBBS/207(AB)

Roll No. .....

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2015

BIOCHEMISTRY

TIME: - THREE HOURS PAPER-I FULL MARKS: 50

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A Marks: 25

1. Define Gluconeogenesis. Describe about Glucose- alanine and Coricycle in relation to gluconeogenesis. What is VONGIERKE'S disease? (1+7+2=10)

2. Write short notes on: (3x5=15)
   (a) Substrate Shuttles.
   (b) Functional & Non functional enzymes.
   (c) Allosteric inhibitions.
   (d) Chemiosmotic Theory.
   (e) Glycemic Index of diety food.

Section-B Marks: 25

1. Tyrosine has sparing action of phenyalanine. Briefly describe its metabolism and associated disorders. 5

2. Describe synthesis and oxidation of ketone bodies and discuss regulation of ketogenesis. 5

3. Write short notes on: (3x5=15)
   (a) Beri-beri
   (b) Lipotropic factors
   (c) Coenzymic role of vitamin B_{12} and folic acid.
   (d) Transamination and Deamination.
   (e) Fluid Mosaic Model of Biological membrane.

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UG/MBBS/211(AB)

First Professional M.B.B.S. (II Semester) (June) Examination, 2013

Biochemistry

Paper-I

Time: - Three Hours

Full Marks: 50

(Use Separate Answer Books for Each Section)

Section-A

Marks: 25

1. Describe glycogenesis and glycogenolysis. How are they regulated? (3+7=10)

2. Write notes on: (3x5=15)
   (a) Inhibitors of electron transport chain.
   (b) Epimerism with suitable example.
   (c) Covalent modification of enzyme activity.
   (d) Fructose Intolerance.
   (e) Pyruvate Dehydrogenase.

Section-B

Marks: 25

3. (a) Name the ketone bodies. How are they formed and utilized? (1+5=6)
   (b) Give two conditions characterized by excessive production of ketone bodies. 2

4. (a) Describe the pathway for degradation of Phenylalanine. 2
   (b) Discuss the genetic disease associated with this pathway. 5

5. Write short notes on any four: (2.5x4=10)
   (a) Carnitine Shuttle.
   (b) Transamination.
   (c) Wald's Visual Cycle.
   (d) Biochemical role of Vitamin C.
   (e) Fluid mosaic model.
   (f) Alkaptonuria.
   (g) Active Transport.

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First Professional M.B.B.S. (II Semester) Examination, 2014

Roll No. .....

Biochemistry

Paper-I

Time: - Three Hours

Full Marks: 50

Note: - Use Separate Answer Books for Each Section.

Section-A Marks: 25

1. Define WHO Criteria for Diagnosis of Diabetes mellitus. Describe briefly about the blood sugar regulation in our body. (2+8=10)

2. Write short note on: (3x5=15)
   (a) Galactosemia
   (b) Isoenzymes
   (c) Couplers and Uncouples for E.T.C.
   (d) Mucopolysaccharides
   (e) Substrate level phosphorylation (SLP).

Section-B Marks: 25

3. What is beta-oxidation? Enumerate the pathway for fatty acid degradation. (1+6=7)

4. Describe urea cycle. Discuss clinical significance of blood urea level. (5+3=8)

5. Write short notes on any **four**: (2.5x4=10)
   (a) Active transport.
   (b) Aromatic amino acid.
   (c) Maple Syrup Urine Disease.
   (d) Anti-oxidant vitamins.
   (e) Fatty Liver and Lipotropic Factors.
   (f) Catecholamines.
   (g) Prostaglandins.

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UG/MBBS/207(AB)

Roll No. .....

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2015

BIOCHEMISTRY

PAPER-I

TIME: - THREE HOURS FULL MARKS: 50

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A Marks: 25

1. Define Gluconeogenesis. Describe about Glucose- alanine and Coricycle in relation to gluconeogenesis. What is VONGIERKE'S disease? (1+7+2=10)

2. Write short notes on: (3x5=15)
   (a) Substrate Shuttles.
   (b) Functional & Non functional enzymes.
   (c) Allosteric inhibitions.
   (d) Chemiosmotic Theory.
   (e) Glycemic Index of diety food.

Section-B Marks: 25

1. Tyrosine has sparing action of phenyalanine. Briefly describe its metabolism and associated disorders.

2. Describe synthesis and oxidation of ketone bodies and discuss regulation of ketogenesis. 5

3. Write short notes on: (3x5=15)
   (a) Beri-beri
   (b) Lipotropic factors
   (c) Coenzymic role of vitamin B_{12} and folic acid.
   (d) Transamination and Deamination.
   (e) Fluid Mosaic Model of Biological membrane.

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FIRST PROFESSIONAL MBBS (II SEMESTER) (JUNE/JULY)
EXAMINATION, 2011
BIOCHEMISTRY
Paper No : I

Time : Three hours — Max. Marks : 50

NOTE: USE SEPERATE ANSWER BOOK FOR EACH SECTION

SECTION - A

1. Describe in detail Disease Maize Phenylketonuria and its metabolic importance and clinical significance. 1)5 10

2. Give a brief account of the following : 5×3=15

a) The salient features of active transport mechanism of cell membrane with examples.
b) Diagnostic significances of enzymes and isoenzymes.
c) Indicate diagrammatically the sites of ATP formation in the mitochondrial respiratory chain and their inhibitors.

SECTION - B

1. Define lipids. Give schematic representation and classification of Palmitic acid and Arachidonic acid.

2. Discuss in brief on the following :
   a) Urea
   b) Amino acid metabolic disorders
   c) Hyperammonemia
   d) Albumins
   e) Digestion of Proteins

3. Give schematic representation of catabolism of Nitrogen fraction of Amino acids and discuss its regulation.

Paper Code- 4193

MBBS 1ST PROFESSIONAL EXAMINATION

Subject- Biochemistry

PAPER I

Time Allowed: Three Hours (Including 30 Minutes for MCQs) **Maximum Marks: - 80**

Note: Section A & B should be answered in separate answer sheets provided. All questions are compulsory. Draw diagrams wherever necessary.

Section A

Total Marks: 40

Q1. Name the rate limiting step of cholesterol synthesis. Discuss the rate limiting step of cholesterol synthesis along with its regulation. How is it catabolised to bile acids and bile salts? Enumerate the hormones derived from cholesterol. Explain role of cholesterol in atherosclerosis.
(2+2+2+2+2=10 Marks)

Q2. Short Notes 4X5 Marks=20

a) Discuss the features of competitive enzyme inhibition. List two pharmacological applications of competitive inhibition.

b) Explain why G6PD deficient individuals are more prone to hemolysis and bacterial infections.

c) Explain what is Rapoport-Leubering Shunt and its biochemical significance in RBC's.

d) Explain why Ketone bodies can be used as an alternate source of fuel by the peripheral tissues but not liver.

Q3. Short Answer Questions 5X2 Marks=10

a) Explain the basis of hyperuricemia in Von Gierke's disease

b) Why is there a difference in severity of symptoms between GALT and galactokinase deficiency (classical and non- classical galactosemia)?

c) Ammonia detoxification in our body.

d) Explain why aspartame containing artificial sweeteners should be avoided in patients of phenylketonuria.

e) Vitamin C is synthesized in uronic acid pathway in lower animals but not in human beings. Why?

Section B

Total Marks: 40

Q1. A 40 year old man came to the OPD with complaints of anorexia, nausea and vomiting for the past 10 days.He gave history of passage of clay colour stools and dark urine. There was no history of fever or loose stools. Patient also had a history of episodic pain in right hypochondrium which relieved on its own after a few hours.
The laboratory findings are as follows: (2+3+2+3=10)

Blood sugar 105mg%	Total Bilirubin 10mg%
Total protein 7.0g%	Direct Bilirubin 7mg%
Albumin 4.0g%	ALP 800 u/L
Urea 40 mg%	SGOT 87u/L
Creatinine 0.8mg%	SGPT 92 u/L

I. In the given scenario, what is the type of Jaundice the patient has? What are the other types of Jaundice? (2)

II. How is bilirubin formed and excreted from the body? (3)

III. What tests would you do in the patients' urine? (2)

IV. In a tabular form, using liver function tests, differentiate between the different types of Jaundice. (3)

UG/MBBS/207(AB)

Roll No. .....

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2015

BIOCHEMISTRY

TIME: - THREE HOURS PAPER-I FULL MARKS: 50

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A Marks: 25

1. Define Gluconeogenesis. Describe about Glucose- alanine and Coricycle in relation to gluconeogenesis. What is VONGIERKE'S disease? (1+7+2=10)

2. Write short notes on: (3x5=15)
   (a) Substrate Shuttles.
   (b) Functional & Non functional enzymes.
   (c) Allosteric inhibitions.
   (d) Chemiosmotic Theory.
   (e) Glycemic Index of diety food.

Section-B Marks: 25

1. Tyrosine has sparing action of phenyalanine. Briefly describe its metabolism and associated disorders. 5

2. Describe synthesis and oxidation of ketone bodies and discuss regulation of ketogenesis. 5

3. Write short notes on: (3x5=15)
   (a) Beri-beri
   (b) Lipotropic factors
   (c) Coenzymic role of vitamin B_{12} and folic acid.
   (d) Transamination and Deamination.
   (e) Fluid Mosaic Model of Biological membrane.

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UG/MBBS/20

Roll No. .....

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2015

BIOCHEMISTRY

PAPER-II

TIME: - THREE HOURS FULL MARKS: 50

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Marks: 25

Section-A

1. Briefly describe the elongation steps of protein synthesis and name the inhibitors which may inhibit different steps. (5x2=10

2. Briefly discuss the following:
   (a) Post transcriptional modifications.
   (b) Structure and function of IgG and IgM.

(5x2=

3. Describe briefly the following:
   (a) RFLP and its importance.
   (b) Telomerase activity.

Marks

Section-B

1. Define Xenobicts. How are they detoxified?

2. Define trace elements. What are the roles of iron and copper in our body? Mention one disease associated with each of them. 7 10

3. Write short notes on the following:
   (a) Obesity
   (b) Hormonal action through nuclear receptors.
   (c) ELISA

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First Professional M.B.B.S. (II Semester) Examination, 2014

Roll No. .....

Biochemistry

Time: - Three Hours

Paper-I

Full Marks: 50

Note: - Use Separate Answer Books for Each Section.

Section-A

Marks: 25

1. Define WHO Criteria for Diagnosis of Diabetes mellitus. Describe briefly about the blood sugar regulation in our body. (2+8=10)

2. Write short note on: (3x5=15)
   (a) Galactosemia
   (b) Isoenzymes
   (c) Couplers and Uncouples for E.T.C.
   (d) Mucopolysaccharides
   (e) Substrate level phosphorylation (SLP).

Section-B

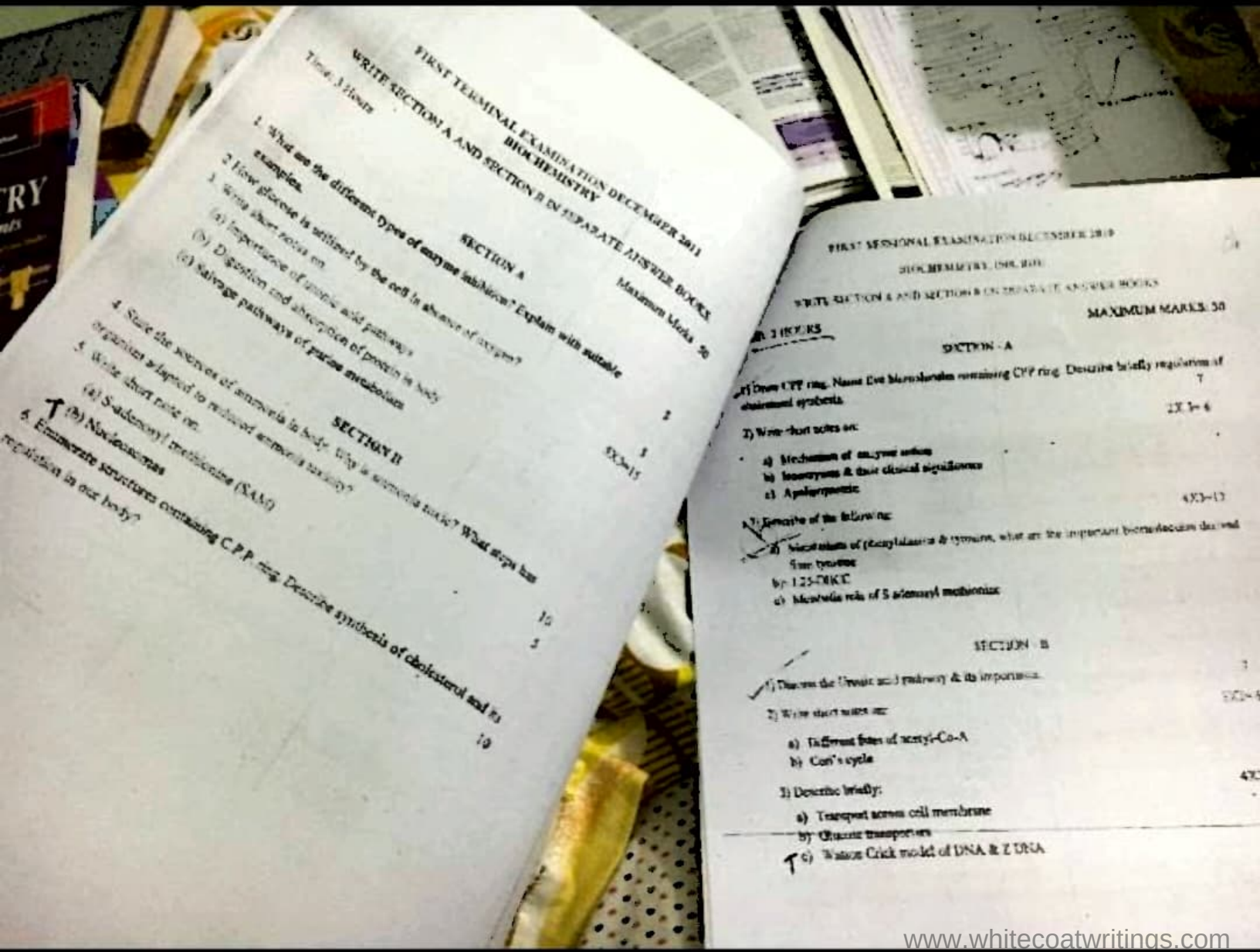
Marks: 25

3. What is beta-oxidation? Enumerate the pathway for fatty acid degradation. (1+6=7)

4. Describe urea cycle. Discuss clinical significance of blood urea level. (5+3=8)

5. Write short notes on any **four**: (2.5x4=10)
   (a) Active transport.
   (b) Aromatic amino acid.
   (c) Maple Syrup Urine Disease.
   (d) Anti-oxidant vitamins.
   (e) Fatty Liver and Lipotropic Factors.
   (f) Catecholamines.
   (g) Prostaglandins.

XXXXXX



FIRST TERMINAL EXAMINATION DECEMBER 2011
BIOCHEMISTRY
WRITE SECTION A AND SECTION B IN SEPARATE ANSWER BOOKS
Time: 3 Hours Maximum Marks: 50

SECTION A

1. What are the different types of enzyme inhibition? Explain with suitable examples. 2
2. How glucose is utilized by the cell in absence of oxygen? 3
3. Write short notes on 5X3=15
(a) Importance of purine acid pathway
(b) Digestion and absorption of protein in body
(c) Salvage pathways of purine metabolism

SECTION B

4. State the sources of ammonia in body. Why is ammonia toxic? What steps are organism adopted to reduced ammonia toxicity? 10
5. Write short note on: 5
(a) S-adenosyl methionine (SAM)
(b) Nucleosidases
6. Enumerate structures containing C P P ring. Describe synthesis of cholesterol and its regulation in our body? 10

FIRST SESSIONAL EXAMINATION DECEMBER 2010

BIOCHEMISTRY (BMLT III)

WRITE SECTION A AND SECTION B ON SEPARATE ANSWER BOOKS

MAXIMUM MARKS: 50

TIME: 3 HOURS

SECTION - A

1) Draw CPP ring. Name five Macromolecules containing CPP ring. Describe briefly regulation of cholesterol synthesis. 7

2) Write short notes on: 2X3=6

a) Mechanism of enzyme action
b) Isoenzymes & their clinical significance
c) Apoenzymatic

3) Enumerate the following: 4X3=12

a) Metabolic role of Acetylcholine & tyramine, what are the important biomolecules derived from tyrosine
b) 1,25-DHCC
c) Metabolic role of S adenosyl methionine

SECTION - B

1) Discuss the Uronic acid pathway & its importance. 7

2) Write short notes on:

a) Different fates of acetyl-Co-A
b) Cori's cycle

3) Describe briefly:

a) Transport across cell membrane
b) Glucose transporters
c) Watson Crick model of DNA & Z DNA

UG/MBBS/207(AB)

Roll No. 15ISSME006

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2016

BIOCHEMISTRY

PAPER-I

TIME: - THREE HOURS FULL MARKS: 50

(Write your Roll No. at the top immediately on the receipt of this Question Paper)

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A Marks: 25

1. What is the normal blood glucose level in fasting and postprandial data? Explain the role of different hormones that play a role in its regulation. (2+7=9)

2. Give explanations for: (2+2=4)
   (a) Muscle glycogen cannot contribute to blood glucose.
   (b) Alcoholism leads to fatty liver.

3. Write briefly about: (4x3=12)
   (a) Transport mechanism across the membrane
   (b) Mucopolysaccharides
   (c) Uncouplers
   (d) Enzyme markers in myocardial infarction

Section-B Marks: 25

1. Name the important products from tryptophan and briefly discuss the disorders of its metabolism. 5

2. Write the steps of cholesterol synthesis upto mevalonate and briefly describe the regulation of cholesterol synthesis. 5

3. Write short notes on: (3x5=15)
   (a) Factors responsible for fluidity of cell membrane
   (b) Rapoport Luebering Cycle
   (c) Antioxidant Vitamins
   (d) Fatty acid synthase complex
   (e) Role of Vitamin-D in maintenance of blood calcium level

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Roll No. 1711SAE061

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2015

BIOCHEMISTRY

PAPER-I

TIME: - THREE HOURS FULL MARKS: 50

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A Marks: 25

1. Define Gluconeogenesis. Describe about Glucose- alanine and Coricycle in relation to gluconeogenesis. What is VONGIERKE'S disease? (1+7+2=10)

2. Write short notes on: (3x5=15)
   (a) Substrate Shuttles.
   (b) Functional & Non functional enzymes.
   (c) Allosteric inhibitions.
   (d) Chemiosmotic Theory.
   (e) Glycemic Index of ~~diety~~ dietry food.

Section-B Marks: 25

1. Tyrosine has sparing action of phenyalanine. Briefly describe its metabolism and associated disorders. 5

2. Describe synthesis and oxidation of ketone bodies and discuss regulation of ketogenesis. 5

3. Write short notes on: (3x5=15)
   (a) Beri-beri
   (b) Lipotropic factors
   (c) Coenzymic role of vitamin B_{12} and folic acid.
   (d) Transamination and Deamination.
   (e) Fluid Mosaic Model of Biological membrane.

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B)

UG/MBBS/207(AB)

Roll No. .....

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2018

BIOCHEMISTRY

PAPER-I

TIME: - THREE HOURS FULL MARKS: 50

(Write your Roll No. at the top immediately on the receipt of this Question Paper)

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A Marks: 25

1. Describe glycogenesis. How are glycogenesis and glycogenolysis reciprocally regulated? Discuss the reason behind hyperuricemia in Glucose- 6-phosphatase deficiency. (4+4+2=10)

2. Write short notes on: (5x3=15)
   (a) Mitochondria
   (b) TCA cycle is an amphibolic pathway
   (c) Allosteric enzymes
   (d) Uncouplers
   (e) Hereditary lactose intolerance.

Section-B Marks: 25

1. Discuss why ketone bodies are synthesised only during fasting. Add a note on their synthesis and metabolism in our body. 5

2. Discuss the roles of various proteins found in human plasma. Enumerate three common causes of hypoproteinemia and their manifestations. 5

3. Write short notes on: (5x3=15)
   (a) Secondary active transport
   (b) Biochemical role of vitamin C, and their deficiency manifestations
   (c) Biochemical derangements in Phenylketonuria
   (d) Schilling's tests
   (e) Hartnup's disease.

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UG/MBBS/208(AB)

Roll No. 15155ME00

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2016

BIOCHEMISTRY

PAPER-II

TIME: - THREE HOURS FULL MARKS: 50

(Write your Roll No. at the top immediately on the receipt of this Question Paper)

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Section-A Marks: 25

1. How is uric acid synthesized in our body? Discuss the causes and management of hyperuricaemia. 9

2. Write short notes on the following: (4x4=16)
   (a) Genetic code
   (b) Topoisomerase
   (c) lac operon
   (d) Gene cloning

Section-B Marks: 25

1. Name the principal minerals which are macronutrients. State the biochemical importance of Sodium and Potassium in the body. 8

2. Classify hormones according to their mode of action. State the factors that regulate hormone action. 7

3. Write short notes on the following: 10
   (a) Balanced diet
   (b) Carcinogens
   (c) RIA

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UG/MBBS/208(AB)

Roll No. .....

FIRST PROFESSIONAL M.B.B.S. (II SEMESTER) EXAMINATION, 2015

BIOCHEMISTRY

PAPER-II

TIME: - THREE HOURS FULL MARKS: 50

NOTE: - USE SEPARATE ANSWER BOOKS FOR EACH SECTION.

Marks: 25

Section-A

1. Briefly describe the elongation steps of protein synthesis and name the inhibitors which may inhibit different steps. 5

(5x2=10)

2. Briefly discuss the following:
   (a) Post transcriptional modifications.
   (b) Structure and function of IgG and IgM.

(5x2=10)

3. Describe briefly the following:
   (a) RFLP and its importance.
   (b) Telomerase activity.

Marks: 25

Section-B

1. Define Xenobicts. How are they detoxified? 8

2. Define trace elements. What are the roles of iron and copper in our body? Mention one disease associated with each of them. 7

3. Write short notes on the following: 10
   (a) Obesity
   (b) Hormonal action through nuclear receptors.
   (c) ELISA

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First Professional MBBS (II Semester) Examination, 2014

Biochemistry

Time: - Three Hours | Paper-I | Full Marks: 50

Note: - Use Separate Answer Books for Each Section.

Section-A

Marks: 25

1. Define WHO Criteria for Diagnosis of Diabetes mellitus. Describe briefly about the blood sugar regulation in our body. (2+8=10)

2. Write short note on: (3x5=15)
   (a) Galactosemia
   (b) Isoenzymes
   (c) Couplers and Uncouples for E.T.C.
   (d) Mucopolysaccharides
   (e) Substrate level phosphorylation (SLP).

Section-B

Marks: 25

3. What is beta-oxidation? Enumerate the pathway for fatty acid degradation. (1+6=7)

4. Describe urea cycle. Discuss clinical significance of blood urea level. (5+3=8)

5. Write short notes on any four: (2.5x4=10)
   (a) Active transport.
   (b) Aromatic amino acid.
   (c) Maple Syrup Urine Disease.
   (d) Anti-oxidant vitamins.
   (e) Fatty Liver and Lipotropic Factors.
   (f) Catecholamines.
   (g) Prostaglandins.

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UG/MBBS/212(A)

First Professional M.B.B.S. (II Semester) (June) Examination, 2013

Biochemistry

Paper-II Full Marks: 50

Time: - Three Hours

(Use Separate Answer Books for Each Section)

Marks: 25

Section-A

1. Explain the breakdown of purine nucleotides. Discuss in brief the diseases associated with the pathway. (4+4=8)

2. What is a codon? Describe the salient features of codon. 5

3. Write briefly about: (3x4=12)
   (i) Oncosuppressor Gene.
   (ii) IgE
   (iii) ELISA
   (iv) Post-transcriptional Modifications.

Marks: 25

Section-B

4. Describe the sources, daily requirement, absorption, biochemical functions and deficiency manifestations of Iron. 10

5. Write short notes on: - (3x5=15)
   (a) Phase Two (II) Detoxification.
   (b) Mechanism of insulin action (only schematic diagram).
   (c) Oncogene & Protooncogene.

xxxxxxx

UG/MBBS/207(AB)

First Professional M.B.B.S. (II Semester) Examination, 2014

Roll No. .....

Biochemistry

Paper-I

Time: - Three Hours

Full Marks: 50

Note: - Use Separate Answer Books for Each Section.

Section-A

Marks: 25

1. Define WHO Criteria for Diagnosis of Diabetes mellitus. Describe briefly about the blood sugar regulation in our body. (2+8=10)

2. Write short note on: (3x5=15)
   (a) Galactosemia
   (b) Isoenzymes
   (c) Couplers and Uncouples for E.T.C.
   (d) Mucopolysaccharides
   (e) Substrate level phosphorylation (SLP).

Section-B

Marks: 25

3. What is beta-oxidation? Enumerate the pathway for fatty acid degradation. (1+6=7)

4. Describe urea cycle. Discuss clinical significance of blood urea level. (5+3=8)

5. Write short notes on any four: (2.5x4=10)
   (a) Active transport.
   (b) Aromatic amino acid.
   (c) Maple Syrup Urine Disease
   (d) Anti-oxidant vitamins.
   (e) Fatty Liver and Lipotropic Factors.
   (f) Catecholamines.
   (g) Prostaglandins.

XXXXX

UG/MBBS/208(AB)

Roll No. .....

First Professional M.B.B.S. (II Semester) Examination, 2014

Biochemistry

Paper-II

Full Marks: 50

Time: - Three Hours

Note: - Use Separate Answer Books for Each Section.

Section-A

Marks: 25

1. Briefly describe catabolism of Purine nucleotides and its metabolic and clinical significance. 5

2. Briefly discuss the following: 5
   (a) Different classes of Immunoglobulins and their functions. 5
   (b) Post translational modifications.

3. Describe briefly the following: 5
   (a) Principle of Recombinant DNA technology and its importance in the field of medicine. 5
   (b) Process of DNA replication in Prokaryotes.

Section-B

Marks: 25

4. Explain the regulation of water balance. 5

5. Describe the role of kidney in maintenance of blood pH.

6. Write shot notes on: (3x5=1
   (a) Anti-oncogenes.
   (b) Electrophoresis.
   (c) Role of albumin in blood.

XXXXX

Department of Biochemistry
Question paper
Test no-1(15.10.08)
Batch 2008

ttempt all Questions and try to do them in serial order- Max. Marks- 50

1. Write short notes on – 10
   (a) Ribosomes
   (b) Lactose Intolerance
   (c) Bile Salts
   (d) Role of saliva in digestion
   (e) Endopeptidases in digestion

2. Describe briefly about- 10
   (a) DNA organization
   (b) Gangliosides
   (c) Fluid Mosaic Model of Cell Membrane
   (d) EFA
   (e) Eicosanoids

3. (a) Explain the structural organization of hemoglobin molecule. How does the amino acid sequence affect the properties of hemoglobin? 7
   (b) Write a short note on Denaturation of proteins. 3

4. Write Briefly on – 15
   (a) Structural differences between starch and glycogen
   (b) Allosteric Enzymes
   (c) Zymogen Activation

5. Define- 5
   (a) Km
   (b) Active site
   (c) Anomer
   (d) Isozyme
   (e) Epimer

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

2nd Terminal MBBS Examination 2017
Biochemistry (Theory)

Time: Three hours (9 AM -12 Noon)

Date: 19.08.2017
Maximum Marks: 50

Paper II
Attempt all the questions in serial order

Section A

1. Give a flow chart of uric acid biosynthesis. Give the mechanism of action of hypouricemic drugs. 3+2
2. Enumerate the functions of different DNA polymerases in Prokaryotes. How are they different from eukaryotic DNA polymerases? Taq polymerase used for PCR is modified – justify. 2+2+1
3. Discuss the post transcriptional medications of mRNA. 5
4. Write short notes on: a) Cell mediated immunity (CMI)
   b) Hypersensitivity reactions 5x2

Section B

1. What is signal transduction? What is its significance in biochemical reactions? Draw a schematic diagram of insulin signalling. 1+3+3
2. Describe the role of kidney in the maintenance of body pH. 5
3. Write short notes on: 3+3+3+4
   a) Protein energy malnutrition (PEM)
   b) G protein coupled receptor (GPCR)
   c) ELISA
   d) Hormones regulating body fluid levels

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

2nd Terminal MBBS Examination 2017
Biochemistry (theory)

Time: Three hours (9 AM -12 Noon)

Date: 18.08.2017
Maximum Marks: 50

Paper I
Attempt all the questions in serial order

Section A

1. Describe schematically the components of electron transport chain and its inhibitors. What are the physiological uncouplers? 4+2
2. Describe various factors that affect velocity of enzyme action. What is Km value in enzyme studies? Mention the effect of different inhibitors on Km value of the enzyme. 2+1+2
3. Write short notes on: 2×5
   a) Glucose transporters
   b) Regulation of glycolysis
   c) Sorbitol pathway
   d) Futile cycles
4. Give reasons: 5×1
   a) RBC have Rapaport Leubring pathway instead of glycolysis
   b) Fats burn in the flame of carbohydrate
   c) Glucagon has no effect on muscle glycogen

Section B

1. What is CPPing? Describe the synthesis and regulation of cholesterol in our body. 1+6+2
2. Write short notes on: 4+5+5+5+5
   a) Transdeamination
   b) Phenylketonuria
   c) Explain deficiency manifestations of Thiamin, Riboflavin
   d) One carbon metabolism
   e) Lipotropic factors

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

2nd Terminal MBBS Examination 2016
Biochemistry (Theory)

Time: Three hours
Maximum Marks: 50

Date: 30.08.2016

Attempt all the questions

Part A

(5X5M=25M)

1. What are the sources of carbon and nitrogen atoms in purine and pyrimidine ring? How is PRPP synthesized? Discuss the role of PRPP in the biosynthesis of purine and pyrimidine.
2. Discuss the components of innate and adaptive immune response.
3. Discuss the roles of different enzymes in DNA replication. How does telomere protect the ends of eukaryotic chromosomes?
4. Discuss, the initiation of translation in both prokaryotes and eukaryotes. How do different antibiotics inhibit translation?
5. Write a short note on genetic code. What is wobble hypothesis? Explain with example.

Part B

1. Define Macrominerals and give examples. Describe briefly about calcium and phosphate metabolism and its regulation. (2+4+4=10 M)
2. Write short note on (Any three) (3X5M=15M)

a) Folate trap
b) Phase 2 Xenobiotic Metabolism
c) G Protein coupled Receptor mechanism
d) Mechanism of Oncogenesis.

AKSHAY KADAM

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2017
Biochemistry (Theory)

Time: Three hours

Date: 01.03.2017
Maximum Marks: 100

Attempt all the questions

Section A

1. Define gluconeogenesis. Explain the importance of the pathway and its regulation. 10

2. Classify amino acids. Explain zwitterions. Discuss the role of sulfur containing amino acids in stabilization of protein structure. 10

3. Write briefly about: 5X5= 25
   a) Hormonal regulation of fluid balance
   b) Mucopolysaccharides
   c) Role of carbonic anhydrase in maintenance of pH
   d) Reciprocal Regulation
   e) Differentiation of α helix and β pleated sheet.

4. Justification of the statements 2x2.5=5
   a) Fats burn in the flames of carbohydrates
   b) Muscle glycogen cannot contribute to blood glucose
   Glucose 6 - phosphatase -ve

Section B

1. Explain reversible and irreversible enzyme inhibition with suitable examples? Describe the role of enzymes and isoenzyme estimations in clinical diagnosis. 10

2. Describe the sources of carbon and nitrogen atoms of purine and pyrimidine rings. Explain the role and clinical significance of PRPP in purine and pyrimidine metabolism. 10

3. Write briefly about: 5×2=10
   a) Entry of fatty acids within mitochondrial matrix during β oxidation
   b) Lactose Intolerance and Cystic Fibrosis

4. Differentiate between oleic acid and elaidic acid; Glycerophospholipid and Sphingophospholipid 5

5. Specificity of enzyme action with exam[illegible] 9

6. Draw labeled diagram of mitochondria. What is the difference between eukaryotic and prokaryotic cell? 5

7. Classify hyperuricemia. Mention normal values of serum uric acid. 5

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2016
Biochemistry (Theory)

Time: Three hours **Date: 29.08.2016**
Maximum Marks: 50

Attempt all the questions

Part A

Q 1) Explain the metabolism and biochemical effects of alcohol in acute and chronic conditions. **(9M)**

Q 2) Explain the use of **(2X2M=4M)**

a) Anaplerotic Reaction

b) HMP shunt pathway

Q 3) Write short notes on- **(3X4M=12M)**

a) Enzyme profile in liver disease

b) Fluid Mosaic Model of Biomembrane

c) GTT

d) Glycolysis in RBC

Part B

Q 1) Explain how amino nitrogen of amino acids is removed as NH_3? What are the fates of ammonia in the body? Describe Urea cycle and its related disorders. **(2+2+6 = 10M)**

Q 2) Write short note on **(3 X5M=15M)**

a. Write in brief synthesis and Explain peripheral utilization of ketone bodies.

b. Draw labelled diagram of lipoprotein. Mention the names of lipoproteins with their functions.

c. What are different buffer systems in human body. Write in brief the role of blood buffers in acid-base balance.

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2019
Biochemistry (Theory)

Time: Three hours

Date: 19.01.2019
Maximum Marks: 90

Attempt all the questions

Section A

1. What are the different fates of Glucose 6 phosphate? Discuss both the phases of HMP shunt. Explain primaquine induced hemolysis. 2+5+3

2. Describe briefly about α- helix and β- pleated sheets? Discuss the forces stabilizing protein structure. What is the cause of Alzheimer's disease? 4+4+2

3. Write briefly about: 5X5= 25

   a) pH, pKa, pI
   b) Fructose 2, 6 bisphosphate
   c) Warburg effect
   d) Gluconeogenic substances
   e) Heteropolysaccharides

Section B

1. Discuss the reactions in beta oxidation of fatty acids. Enumerate number of ATPs generated from complete oxidation of one molecule of palmitic acid. 10

2. Define enzymes. Classify enzymes. Briefly discuss the specificity of enzyme action with example. 2+5+3

3. Write briefly about: 5×5=25

   a) Structure and classification of phospholipids
   b) Mitochondria
   c) Transport across the cell membrane
   d) Examples and significance of omega-3 fatty acids
   e) Structure and functions of cholesterol

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

2nd Terminal MBBS Examination 2018
Biochemistry (Theory)
Paper II

Time: Three hours

Date: 10.07.2018

Maximum Marks: 50

Attempt all the questions

Section A

1. How is DNA packed within nucleus? Discuss the DNA repair mechanisms. What are the biological roles of DNA? 3+4+3

2. Write short notes on: 3X5
   a) Post translational modifications
   b) Structure of immunoglobulins
   c) Mechanism of regulation of gene expression in eukaryotes
   d) Codon
   e) RFLP

Section B

1. Draw labeled diagram of G protein coupled receptor. Describe signaling of GPCR-cAMP pathway. Name two hormones which act through this signaling pathway. 3+3+2

2. Describe body mechanisms that regulate pH homeostasis. Discuss acidosis and alkalosis in brief. 4+3

3. Write short notes on: 3+3+4
   a) Oncogenes
   b) ELISA
   c) Xenobiotics

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

2nd Terminal MBBS Examination 2018
Biochemistry (Theory)
Paper I

Time: Three hours **Date: 09.07.2018**

Maximum Marks: 50

Attempt all the questions

Section A

1. Define enzymes, isoenzymes, and coenzymes with examples of each. Describe the role of different enzymes in Clinical diagnosis of Myocardial infarction with illustration. 3+4

2. Trace the pathway for the synthesis of glucose from alanine. Discuss the significance and regulation of the pathway. 4+4

3. Write briefly about: 4+3+3
   a) Entry of NADH from cytosol to mitochondria
   b) Abnormalities of digestion in cystic fibrosis
   d) Use of SGLT2 inhibitors in the treatment of diabetes mellitus

Section B

1. Enumerate metabolic products derive from tyrosine and tryptophan. Describe the biosynthesis of epinephirine and norepinephrine. What is tyrosinosis? 2+4+2

2. Describe fatty acid synthase complex along with the function. Discuss the reciprocal regulation of fatty acid biosynthesis and β oxidation. 4+3

3. Write short notes on: 3+3+4
   a) Protein degradation
   b) Vitamin K
   c) Prostglandins

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2016
Biochemistry (Theory)

Time: Three hours
Maximum Marks: 50

Date: 29.08.2016

Attempt all the questions

Part A

Q 1) Explain the metabolism and biochemical effects of alcohol in acute and chronic conditions. **(9M)**

Q 2) Explain the use of **(2X2M=4M)**

a) Anaplerotic Reaction

b) HMP shunt pathway

Q 3) Write short notes on- **(3X4M=12M)**

a) Enzyme profile in liver disease

b) Fluid Mosaic Model of Biomembrane

c) GTT

d) Glycolysis in RBC

Part B

Q 1) Explain how amino nitrogen of amino acids is removed as NH_3? What are the fates of ammonia in the body? Describe Urea cycle and its related disorders. **(2+2+6 = 10M)**

Q 2) Write short note on **(3 X5M=15M)**

a. Write in brief synthesis and Explain peripheral utilization of ketone bodies.

b. Draw labelled diagram of lipoprotein. Mention the names of lipoproteins with their functions.

c. What are different buffer systems in human body. Write in brief the role of blood buffers in acid-base balance.

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

2nd Sessional MBBS Examination June 2014

Paper 1

Total marks: 50 Time : 3 hrs

Section- A

Q.1 Outline the sequence of reactions involved in the breakdown of glycogen in the skeletal muscles. Explain the purpose served by this process. 10

Q.2 What are the different mechanism of controlling the enzyme action? Explain with examples. 10

Q.3 Enumerate the salient feature of active transport. 5

Section – B

Q.1 Classify lipoproteins. Explain their biological significance. 10

Q.2 Explain the role of bile salts in the digestion of and absorption of dietary lipids. Mention the change in observed in obstructive jaundice. 10

Q.3 Describe briefly about the fluid mosaic model of biomembranes. 5

2014 Paper
~~2013~~
2012
2011

Q.1 Describe the reaction catalysed by ALT (SGPT) and AST (SGOT).What is the significance of their serum level in clinical diagnosis? 5

Q.2 Describe prokaryotic translation. How does it differ from eukaryotic translation? 10

Q.3 Answer in brief on: 4x2.5=10

A. Topoisomerase
B. Role of mitochondria in urea cycle
C. Chromatin remodelling complex
D. Gene cloning

Section-B

Q.1 Describe the hormonal control of fluid and electrolyte homeostasis.

Q.2 Write short note on:- 2x2.5=5

A. Tumour marker
B. Alkali reserve

Q.3 Describe the role of vitamins in post translational modification. 5

Q.4 Give a schematic diagram of E.T.C. and describe the physiological uncoupler and inhibitors of E.T.C. 5

Q.5 Define xenobiotics. Describe briefly about phase I and phase II reactions of xenobiotics.5

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2016
Biochemistry (Theory)

Time: Three hours
Maximum Marks: 50

Date: 30.08.2016

Attempt all the questions

Part A

(5X5M=25M)

1. What are the sources of carbon and nitrogen atoms in purine and pyrimidine ring? How is PRPP synthesized? Discuss the role of PRPP in the biosynthesis of purine and pyrimidine.
2. Discuss the components of innate and adaptive immune response.
3. Discuss the roles of different enzymes in DNA replication. How does telomere protect the ends of eukaryotic chromosomes?
4. Discuss, the Initiation of translation in both prokaryotes and eukaryotes. How do different antibiotics inhibit translation?
5. Write a short note on genetic code. What is wobble hypothesis? Explain with example.

Part B

1. Define Macrominerals and give examples. Describe briefly about calcium and phosphate metabolism and its regulation. **(2+4+4=10 M)**

2. Write short note on **(Any three)** **(3X5M=15M)**

a) Folate trap
b) Phase 2 Xenobiotic Metabolism
c) G Protein coupled Receptor mechanism
d) Mechanism of Oncogenesis.

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2016
Biochemistry (Theory)

Time: Three hours

Date: 14.03.2016

Maximum Marks: 100

Attempt all the questions

1. Explain the hexose monophosphate pathway and its importance in various tissues. Discuss the various applied aspects of this pathway. 15

2. What are the metabolic products derived from tyrosine and tryptophan? Discuss the pathway of phenylalanine metabolism. Mention the defects associated with it. 15

3. Define primary and secondary bile acids with example. Discuss enterohepatic circulation of bile with its clinical significance. 15

4. Discuss the role of different body buffers along with lungs and kidneys in maintenance of normal pH. 15

5. Define enzyme, coenzyme and isoenzyme with example. Discuss diagnostic roles of enzymes with special reference to isoenzymes. 15

5X5= 25

6. Write briefly about:
   a) Fructose Metabolism
   b) Structure and functions of mitochondria
   c) Phospholipidis and their applications
   d) Tertiary structure of proteins
   e) Alcohol Metabolism

FIRST TERMINAL EXAMINATION DECEMBER 2011
BIOCHEMISTRY

WRITE SECTION A AND SECTION B IN SEPARATE ANSWER BOOKS.

Time: 3 Hours | Maximum Marks 50

SECTION A

1. What are the different types of enzyme inhibition? Explain with suitable examples. 5

2 How glucose is utilized by the cell in absence of oxygen? 5

3. Write short notes on. 5X3=15

(a) Importance of uronic acid pathways

(b) Digestion and absorption of protein in body

(c) Salvage pathways of purine metabolism

SECTION B

4. State the sources of ammonia in body. Why is ammonia toxic? What steps has organism adapted to reduced ammonia toxicity? 10

5. Write short note on. 5

(a) S-adenosyl methionine (SAM)

(b) Nucleosomes

6. Enumerate structures containing C.P.P. ring. Describe synthesis of cholesterol and its regulation in our body? 10

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2016
Biochemistry (Theory)

Time: Three hours

Date: 14.03.2016
Maximum Marks: 100

Attempt all the questions

1. Explain the hexose monophosphate pathway and its importance in various tissues. Discuss the various applied aspects of this pathway. 15

2. What are the metabolic products derived from tyrosine and tryptophan? Discuss the pathway of phenylalanine metabolism. Mention the defects associated with it. 15

3. Define primary and secondary bile acids with example. Discuss enterohepatic circulation of bile with its clinical significance. 15

4. Discuss the role of different body buffers along with lungs and kidneys in maintenance of normal pH. 15

5. Define enzyme, coenzyme and isoenzyme with example. Discuss diagnostic roles of enzymes with special reference to isoenzymes. 15

6. Write briefly about: 5X5= 25
   a) Fructose Metabolism
   b) Structure and functions of mitochondria
   c) Phospholipidis and their applications
   d) Tertiary structure of proteins
   e) Alcohol Metabolism

Department of Biochemistry
Institute of Medical sciences
Banaras Hindu University

1st Terminal MBBS Examination 2015
Biochemistry (Theory)

Attempt all the questions

Maximum Marks- 100

1. How is fructose synthesised in our body? Explain the clinical significance of this pathway. 10

2. Draw a CPP ring. Describe steps of synthesis of cholesterol. How is cholesterol synthesis regulated? 15

3. Describe briefly on – 10
   a. Transamination and its metabolic importance.
   b. Discuss the interrelation between urea cycle and TCA cycle

4. Justify the following statements- 15
   a. Haemoglobin is a better O_2 carrier in blood than myoglobin
   b. 1,25 DHCC as hormone in human body
   c. Von Gierkes Disease lead to gout.
   d. Blood sample for glucose estimation is collected in fluoride vials.
   e. LDL cholesterol is bad.
   f. G6PD is a preferred genetic disorder.

5. Write differences between 10
   a. Glucokinase and Hexokinase
   b. Competitive Inhibition and Suicidal Inhibition

6. Write short notes on- 30
   a. Reciprocal Regulation
   b. Secondary structure of proteins
   c. Galactosemia
   d. Transport of lipids in blood
   e. Lipotropic Factors
   f. Iso-electric pH

7. Explain briefly the digestion and absorption of proteins in our body. 10

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

2nd Sessional MBBS Examination June 2014

Paper 1

Time : 3 hrs

Total marks: 50

Section- A

Q.1 Outline the sequence of reactions involved in the breakdown of glycogen in the skeletal muscles. Explain the purpose served by this process. 10

Q.2 What are the different mechanism of controlling the enzyme action? Explain with examples. 10

Q.3 Enumerate the salient feature of active transport. 5

Section – B

Q.1 Classify lipoproteins. Explain their biological significance.

Q.2 Explain the role of bile salts in the digestion of and absorption of dietary lipids. Mention the change in observed in obstructive jaundice.

Q.3 Describe briefly about the fluid mosaic model of biomembranes.

2014 Pa
2013
2012
2011

EXAMINATION, 2010

BIOCHEMISTRY

Paper No. - II

Time : Three hours

Ma.

NOTE : USE SEPARATE ANSWERBOOK FOR EACH SECTION.

SECTION - A

(Marks

1. What are the genetic code? Discuss their properties? 5

2. Write briefly the salient feature of 'Lac Operon' and its regulation? 5

3. Describe the structure of Immunoglobulins? Mention the various classes of immunoglobulins and their uses? 5

4. What are the different types of Blot hybridization? Describe the method of Southern Blot hybridization? 5

5. Describe the mechanism of regulation of transcription in procaryotes and eukaryotes? 5

SECTION - B

(Marks : 25)

1. What are macrominerals? Describe about Calcium and phosphorus metabolism occur in our body. How it is regulated? 9

2. Define BIOTRANSFORMATION. Describe briefly various phases of dotoxification occur in our body. 8

3. Write short notes on : 2×4=8

   a) Minamata disease
   b) Anion Gap
   c) Rf value
   d) Onco-Suppressor Genes

Department of Biochemistry
Institute of Medical sciences
Banaras Hindu University

1st Terminal MBBS Examination 2015
Biochemistry (Theory)

Attempt all the questions **Maximum Marks- 100**

1. How is fructose synthesised in our body? Explain the clinical significance of this pathway. 10

2. Draw a CPP ring. Describe steps of synthesis of cholesterol. How is cholesterol synthesis regulated? 15

3. Describe briefly on – 10
   a. Transamination and its metabolic importance.
   b. Discuss the interrelation between urea cycle and TCA cycle

4. Justify the following statements- 15
   a. Haemoglobin is a better O_2 carrier in blood than myoglobin
   b. 1,25 DHCC as hormone in human body
   c. Von Gierkes Disease lead to gout.
   d. Blood sample for glucose estimation is collected in fluoride vials.
   e. LDL cholesterol is bad.
   f. G6PD is a preferred genetic disorder.

5. Write differences between 10
   a. Glucokinase and Hexokinase
   b. Competitive Inhibition and Suicidal Inhibition

6. Write short notes on- 30
   a. Reciprocal Regulation
   b. Secondary structure of proteins
   c. Galactosemia
   d. Transport of lipids in blood
   e. Lipotropic Factors
   f. Iso-electric pH

7. Explain briefly the digestion and absorption of proteins in our body. 10

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2016
Biochemistry (Theory)

Time: Three hours

Date: 14.03.2016
Maximum Marks: 100

Attempt all the questions

1. Explain the hexose monophosphate pathway and its importance in various tissues. Discuss the various applied aspects of this pathway. 15

2. What are the metabolic products derived from tyrosine and tryptophan? Discuss the pathway of phenylalanine metabolism. Mention the defects associated with it. 15

3. Define primary and secondary bile acids with example. Discuss enterohepatic circulation of bile with its clinical significance. 15

4. Discuss the role of different body buffers along with lungs and kidneys in maintenance of normal pH. 15

5. Define enzyme, coenzyme and isoenzyme with example. Discuss diagnostic roles of enzymes with special reference to isoenzymes. 15

6. Write briefly about: 5X5= 25
   a) Fructose Metabolism
   b) Structure and functions of mitochondria
   c) Phospholipidis and their applications
   d) Tertiary structure of proteins
   e) Alcohol Metabolism

FIRST SESSIONAL EXAMINATION DECEMBER 2019

BIOCHEMISTRY, IMS, BHU

WRITE SECTION A AND SECTION B IN SEPARATE ANSWER BOOKS

TIME: 3 HOURS MAXIMUM MARKS: 50

SECTION - A

1) Draw CPP ring. Name five biomolecules containing CPP ring. Describe briefly regulation of cholesterol synthesis. 7

2) Write short notes on: 2X 3= 6

a) Mechanism of enzyme action
b) Isoenzymes & their clinical significance
c) Apolipoprotein

3) Describe of the following: 4X3=12

a) Metabolism of phenylalanine & tyrosine, what are the important biomolecules derived from tyrosine
b) 1,25-DHCC
c) Metabolic role of S adenosyl methionine

SECTION - B

1) Discuss the Uronic acid pathway & its importance. 7

2) Write short notes on: 2X2= 6

a) Different fates of acetyl-Co-A
b) Cori's cycle

3) Describe briefly: 4X3=12

a) Transport across cell membrane
b) Glucose transporters
c) Watson Crick model of DNA & Z DNA

Department of Biochemistry
Question paper
Test no-1(15.10.08)
Batch 2008

Attempt all Questions and try to do them in serial order- Max. Marks- 50

1. Write short notes on – 10
   (a) Ribosomes
   (b) Lactose Intolerance
   (c) Bile Salts
   (d) Role of saliva in digestion
   (e) Endopeptidases in digestion

2. Describe briefly about- 10
   (a) DNA organization
   (b) Gangliosides
   (c) Fluid Mosaic Model of Cell Membrane
   (d) EFA
   (e) Eicosanoids

3. (a) Explain the structural organization of hemoglobin molecule. How does the amino acid sequence affect the properties of hemoglobin? 7
   (b) Write a short note on Denaturation of proteins. 3

4. Write Briefly on – 15
   (a) Structural differences between starch and glycogen
   (b) Allosteric Enzymes
   (c) Zymogen Activation

5. Define- 5
   (a) Km
   (b) Active site
   (c) Anomer
   (d) Isozyme
   (e) Epimer

Department of Biochemistry
Question paper
Test no-1(15.10.08)
Batch 2008

Attempt all Questions and try to do them in serial order. Max. Mar

1. Write short notes on –
   (a) Ribosomes
   (b) Lactose Intolerance
   (c) Bile Salts
   (d) Role of saliva in digestion
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   (a) DNA organization
   (b) Gangliosides
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   (d) EFA
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   (b) Write a short note on Denaturation of proteins.

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   (a) Structural differences between starch and glycogen
   (b) Allosteric Enzymes
   (c) Zymogen Activation

5. Define-
   (a) Km
   (b) Active site
   (c) Anomer
   (d) Isozyme
   (e) Epimer

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

2nd Terminal MBBS Examination 2015
Biochemistry (Theory)
Paper I

e: Three hours

Date: 27.07.2015

Maximum Marks: 50

Attempt all the questions

Section A

1. Discuss the significance of enzymes in evaluation of myocardial infarction. 7
2. Trace the pathway for the synthesis of glucose from alanine. Discuss the significance and regulation of the pathway. 8
3. Write briefly about: 10
   a) Peroxisome
   b) Cyanide poisoning
   c) Blood group substances
   d) Fructose intolerance

Section B

1. Describe the mechanism of hormonal regulation of glycogen degradation. Discuss the effect of taking tea or coffee on glycogenolysis. 5
2. Describe the biosynthesis and utilization of ketone bodies. Discuss the conditions under which the above processes are increased. 5
3. Describe the various mechanisms for the removal of $-NH_2$ group from amino acids. What is the fate of NH_3 in kidney? 5
4. Describe the biochemical mechanism of vision. Discuss the role of vitamin A in vision and diseases associated with vitamin A deficiency. 10

...AMINATION, 2009 ...JUNE / JULY.

BIOCHEMISTRY

Paper – I

Time: Three hours

Use Separate answer book for each section.

Full Marks: 50

Section - A

Marks – 25

I (a) Name glycogen storage diseases? Discuss briefly why a child suffering from von Gierke's disease is at the risk of suffering from severe hypoglycemia. (5)

(b) Discuss in brief the effect of 2,4-dinitrophenol on oxidative phosphorylation. (4)

II Write short notes: (4x2=8)

(a) Rapaport – Leubering Shunt Pathway and its significance.

(b) Lactose Intolerance.

III Discuss briefly: (4x2=8)

(a) Role of lysosomes and any one disease related to their function.

(b) What do you understand by "competitive enzyme inhibition"? Give examples of its therapeutic significance.

Section - B

Marks – 25

1. Describe how VITAMIN "D" is synthesized in body. Discuss the biochemical role of VITAMIN "D" in CALCIUM HOMEOSTASIS. 4+5=9

2. Describe β - OXIDATION of FATTY ACIDS. Discuss the role of CARNITINE TRANSPORTER system in its regulation. 6+2=8

3. Write very briefly about any four: 2x4=8

(a) HOMOCYSTINURIA

(b) LIPOTROPIC FACTOR

(c) SPHINGOMYELIN

(d) β - PLEATED SHEET

(e) HORMONE SENSITIVE LIPASE.

Diarrhoea

FIRST TERMINAL EXAMINATION DECEMBER 2011
BIOCHEMISTRY

WRITE SECTION A AND SECTION B IN SEPARATE ANSWER BOOKS.

Time: 3 Hours Maximum Marks 50

SECTION A

1. What are the different types of enzyme inhibition? Explain with suitable examples. 5

2 How glucose is utilized by the cell in absence of oxygen? 5

3. Write short notes on 5X3=15

(a) Importance of uronic acid pathways

(b) Digestion and absorption of protein in body

(c) Salvage pathways of purine metabolism

SECTION B

4. State the sources of ammonia in body. Why is ammonia toxic? What steps has organism adapted to reduced ammonia toxicity? 10

5. Write short note on 5

(a) S-adenosyl methionine (SAM)

(b) Nucleosomes

6. Enumerate structures containing C.P.P. ring. Describe synthesis of cholesterol and its regulation in our body? 10

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

2nd Sessional MBBS Examination June 2014

Paper 1

Total marks: 50 Time : 3 hrs

Section- A

Q.1 Outline the sequence of reactions involved in the breakdown of glycogen in the skeletal muscles. Explain the purpose served by this process. 10

Q.2 What are the different mechanism of controlling the enzyme action? Explain with examples. 10

Q.3 Enumerate the salient feature of active transport. 5

Section – B

Q.1 Classify lipoproteins. Explain their biological significance. 10

Q.2 Explain the role of bile salts in the digestion of and absorption of dietary lipids. Mention the change in observed in obstructive jaundice. 10

Q.3 Describe briefly about the fluid mosaic model of biomembranes. 5

2014 Paper
~~2013~~
2012
2011

FIRST SESSIONAL EXAMINATION –DECEMBER2003
BIOCHEMISTRY PAPER

SECTION B

TIME 2HOURS Max. Marks 25

Answer all Questions

1. Name the carbohydrate present in milk. Write down its structure. Describe it's digestion in GIT, metabolism, biosynthesis and biochemical defect in disease associated with it. 5

2. Describe the pathway for fatty acid biosynthesis. Discuss it's regulation by various factors. 5

3. Describe the detoxification of ammonia in human body. Explain the reasons for its toxicity to the brain. 4

4. Discuss the higher order folding of DNA in eukaryotes. Mention about the changes associated with various stages of cell growth. 3

5. Write short note on: 8
   (i) Classification of enzymes
   (ii) Coenzyme, Cofactor and Prosthetic group –Define and give one example for each.
   (iii) Mechanism of zymogen activation
   (iv) Pyruvate dehydrogenase enzyme complex-Composition and function

FIRST SESSIONAL EXAMINATION DECEMBER 2007
BIOCHEMISTRY-IMS BHU.

Write section A and Section B in SEPARATE ANSWER BOOKS.

Time: 3 Hours | Maximum Marks: 50

Answer all Questions

SECTION A

1. What are the different types of Enzyme inhibition? Explain with suitable examples. 5

2. What is Iso-enzyme? Give examples. What is their clinical significance? 5

3. Write short notes on. 5

   (a) Key enzymes of gluconeogenesis

   (b) Glycogen storage disease -

4. What are the hormones influencing blood sugar level and how are these hormones acting? 5

5. Write short notes on. 5

   (a) Pyruvate dehydrogenase complex (PDH)

   (b) Significance of H.M.P Shunt pathway

SECTION B

6. Give brief description of the steps by which Ammonia is detoxified. 5

7. Write short note on. 5

   (a) S-adenosyl methionine (SAM)

   (b) Name of the important compounds formed from glycine

8. What is a Balance diet? How do you prepare a diet for a normal young adult male performing minimum physical activity (Sedentary life style)

5

9. Write short note on 5

   (a) Lipotropic factors

   (b) Lipid profile Essential fatty Acid

10. Explain the steps of β-oxidation of palmitic acid, giving energetics 5

EXAMINATION, 2009 JUNE / JULY.

BIOCHEMISTRY

Paper – I

Time: Three hours

Use Separate answer book for each section.

Full Marks: 50

Section - A
Marks - 25

I (a) Name glycogen storage diseases? Discuss briefly why a child suffering from von Gierke's disease is at the risk of suffering from severe hypoglycemia. (5)

(b) Discuss in brief the effect of 2,4-dinitrophenol on oxidative phosphorylation. (4)

II Write short notes: (4x2=8)

(a) Rapaport – Leubering Shunt Pathway and its significance.

(b) Lactose Intolerance.

III Discuss briefly: (4x2=8)

(a) Role of lysosomes and any one disease related to their function.

(b) What do you understand by "competitive enzyme inhibition"? Give examples of its therapeutic significance.

Section - B
Marks - 25

1. Describe how VITAMIN "D" is synthesized in body. Discuss the biochemical role of VITAMIN "D" in CALCIUM HOMEOSTASIS. 4+5=9

2. Describe β - OXIDATION of FATTY ACIDS. Discuss the role of CARNITINE TRANSPORTER system in its regulation. 6+2=8

3. Write very briefly about any four: 2x4=8

(a) HOMOCYSTINURIA
(b) LIPOTROPIC FACTOR
(c) SPHINGOMYELIN
(d) β - PLEATED SHEET
(e) HORMONE SENSITIVE LIPASE.

Anupam

FIRST SESSIONAL EXAMINATION JAN 2010
BIOCHEMISTRY
WRITE SECTION A AND SECTION B ON SEPARATE ANSWER BOOKS

TIME: 3 HOURS

MAXIMUM MARKS: 50

SECTION A

1) What do you mean by Isoenzymes? What is their clinical significance?

2) Write short note on: 2X5=10

a. Allosteric regulation
b. Glycosylated Hemoglobin
c. Phospholipase: types & function
d. Mucopolysaccharides
e. Lactose intolerance

3) Describe of the following: 4X2= 8

a. Secondary structure of protein
b. t RNA: Structure & function

SECTION B

1) Describe how ATP can be generated anaerobically in the cells. Discuss its regulations. 8

2) Justify: 10

a. Fats burn in the flame of carbohydrates
b. Hemoglobin & not myoglobin is the transporter of O_2
c. Ammonia is highly toxic
d. LDL-cholesterol is bad cholesterol
e. Uncontrolled Diabetes mellitus leads to acidosis.

3) Describe urea cycle. Discuss its relationship with citric acid pathway.

First Sessional Examination December 2008

Biochemistry

Questions are Compulsory
ite Section A & Section B on the Separate Answer Booklets
ne: 3 Hours

Maximum Marks: 5

Section-A

Write short notes on:
(a) Heteropolysaccharides
(b) Secondary Structure of Protein
Describe Briefly: 5
(a) Digestion & Absorption of Protein
(b) Fluid Mosaic Model of Cell Membrane
Describe the reaction carried out by the following enzymes & discuss the regulation of reaction catalyzed by them. 5
(a) Pyruvate Carboxylase
(b) Phosphofructokinase
Define Glycogenolysis. Explain the various reaction of Glycogenolysis & how it is regulated.
Describe the replication of DNA. 5

Section -B

(A) Draw the structure and write one function of each of the following:
(i) Lecithin
(ii) Gangliosides
(B) What is the importance of apolipoproteins in lipoproteins?
Explain with examples from lipid metabolism, the different mechanisms to control enzyme action.
What are non functional plasma enzymes? Write briefly about the enzymes that show variation i serum in myocardial infarction.
Write short notes on:
(a) Prostaglandins
(b) Reverse cholesterol transport
(c) Nucleosomes
Explain the effect of alcohol on the metabolic activities of the body.

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2016
Biochemistry (Theory)

Time: Three hours
Maximum Marks: 50

Date: 29.08.2016

Attempt all the questions

Part A

Q 1) Explain the metabolism and biochemical effects of alcohol in acute and chronic conditions. **(9M)**

Q 2) Explain the use of **(2X2M=4M)**

a) Anaplerotic Reaction

b) HMP shunt pathway

Q 3) Write short notes on- **(3X4M=12M)**

a) Enzyme profile in liver disease

b) Fluid Mosaic Model of Biomembrane

c) GTT

d) Glycolysis in RBC

Part B

Q 1) Explain how amino nitrogen of amino acids is removed as NH_3? What are the fates of ammonia in the body? Describe Urea cycle and its related disorders. **(2+2+6 = 10M)**

Q 2) Write short note on **(3 X5M=15M)**

a. Write in brief synthesis and Explain peripheral utilization of ketone bodies.

b. Draw labelled diagram of lipoprotein. Mention the names of lipoproteins with their functions.

c. What are different buffer systems in human body. Write in brief the role of blood buffers in acid-base balance.

FIRST SESSIONAL EXAMINATION DECEMBER 2010

BIOCHEMISTRY, IMS, BHU

WRITE SECTION A AND SECTION B ON SEPARATE ANSWER BOOKS

TIME: 3 HOURS MAXIMUM MARKS: 50

SECTION - A

1) Draw CPP ring. Name five biomolecules containing CPP ring. Describe briefly regulation of cholesterol synthesis. 7

2) Write short notes on: 2X 3 = 6

a) Mechanism of enzyme action
b) Isoenzymes & their clinical significance
c) Apolipoprotein

3) Describe of the following: 4X3=12

a) Metabolism of phenylalanine & tyrosine, what are the important biomolecules derived from tyrosine
b) 1,25-DHCC
c) Metabolic role of S adenosyl methionine

SECTION - B

1) Discuss the Uronic acid pathway & its importance. 7

2) Write short notes on: 3X2= 6

a) Different fates of acetyl-Co-A
b) Cori's cycle

3) Describe briefly: 4X3=12

a) Transport across cell membrane
b) Glucose transporters
c) Watson Crick model of DNA & Z DNA

FIRST SESSIONAL EXAMINATION DECEMBER 2010

BIOCHEMISTRY, IMS, BHU

WRITE SECTION A AND SECTION B ON SEPARATE ANSWER BOOKS

TIME: 3 HOURS

MAXIMUM MARKS: 50

SECTION - A

1) Draw CPP ring. Name five biomolecules containing CPP ring. Describe briefly regulation of cholesterol synthesis. 7

2) Write short notes on: 2X 3= 6

a) Mechanism of enzyme action
b) Isoenzymes & their clinical significance
c) Apolipoprotein

3) Describe of the following: 4X3=12

a) Metabolism of phenylalanine & tyrosine, what are the important biomolecules derived from tyrosine
b) 1,25-DHCC
c) Metabolic role of S adenosyl methionine

SECTION - B

1) Discuss the Uronic acid pathway & its importance. 7

2) Write short notes on: 3X2= 6

a) Different fates of acetyl-Co-A
b) Cori's cycle

3) Describe briefly: 4X3=12

a) Transport across cell membrane
b) Glucose transporters
c) Watson Crick model of DNA & Z DNA

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2016
Biochemistry (Theory)

Time: Three hours **Date: 30.08.2016**
Maximum Marks: 50

Attempt all the questions

Part A
(5X5M=25M)

1. What are the sources of carbon and nitrogen atoms in purine and pyrimidine ring? How is PRPP synthesized? Discuss the role of PRPP in the biosynthesis of purine and pyrimidine.
2. Discuss the components of innate and adaptive immune response.
3. Discuss the roles of different enzymes in DNA replication. How does telomere protect the ends of eukaryotic chromosomes?
4. Discuss the initiation of translation in both prokaryotes and eukaryotes. How do different antibiotics inhibit translation?
5. Write a short note on genetic code. What is wobble hypothesis? Explain with example.

Part B

1. Define Macrominerals and give examples. Describe briefly about calcium and phosphate metabolism and its regulation. **(2+4+4=10 M)**

2. Write short note on **(Any three)** **(3X5M=15M)**

a) Folate trap
b) Phase 2 Xenobiotic Metabolism
c) G Protein coupled Receptor mechanism
d) Mechanism of Oncogenesis.

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2019
Biochemistry (Theory)

Time: Three hours **Date: 19.01.2019**
Maximum Marks: 90

Attempt all the questions

Section A (45)

1. **What are the different fates of Glucose 6 phosphate? Discuss both the phases of HMP shunt. Explain primaquine induced hemolysis.** 2+5+3

2. **Describe briefly about α- helix and β- pleated sheets? Discuss the forces stabilizing protein structure. What is the cause of Alzheimer's disease?** 4+4+2

3. **Write briefly about:** 5X5= 25
   a) pH, pKa, pI
   b) Fructose 2, 6 bisphosphate
   c) Warburg effect
   d) Gluconeogenic substances
   e) Heteropolysaccharides

Section B (45)

1. **Discuss the reactions in beta oxidation of fatty acids. Enumerate number of ATPs generated from complete oxidation of one molecule of palmitic acid.** 10

2. **Define enzymes. Classify enzymes. Briefly discuss the specificity of enzyme action with example.** 2+5+3

3. **Write briefly about:** 5×5=25
   a) Structure and classification of phospholipids
   b) Mitochondria
   c) Transport across the cell membrane
   d) Examples and significance of omega-3 fatty acids
   e) Structure and functions of cholesterol

First Sessional Examination December 2008

Biochemistry

All Questions are Compulsory
Write Section A & Section B on the Separate Answer Booklets
Time: 3 Hours Maximum Marks: 50

Section-A

1. Write short notes on: 5
   (a) Heteropolysaccharides
   (b) Secondary Structure of Protein
2. Describe Briefly: 5
   (a) Digestion & Absorption of Protein
   (b) Fluid Mosaic Model of Cell Membrane
3. Describe the reaction carried out by the following enzymes & discuss the regulation of reaction catalyzed by them. 5
   (a) Pyruvate Carboxylase
   (b) Phosphofructokinase
4. Define Glycogenolysis. Explain the various reaction of Glycogenolysis & how it is regulated. 5
5. Describe the replication of DNA. 5

Section -B

6. (A) Draw the structure and write one function of each of the following: 2
   (i) Lecithin
   (ii) Gangliosides
   (B) What is the importance of apolipoproteins in lipoproteins? 3
7. Explain with examples from lipid metabolism, the different mechanisms to control enzyme action. 5
8. What are non functional plasma enzymes? Write briefly about the enzymes that show variation in serum in myocardial infarction. 4
9. Write short notes on: 6
   (a) Prostaglandins
   (b) Reverse cholesterol transport
   (c) Nucleosomes
10. Explain the effect of alcohol on the metabolic activities of the body. 5

DATE: 25.11.2009

Q.1 With the help of structure of Hemoglobin, explain how it is able to transport O_2, CO_2, & H^+ (10)

Q.2. Explain the mechanism of catalysis by Enzymes. What are the factors which effect the action of enzymes & How ? (10)

Q3. Write short notes on : (4×5=20)

a. Covalent modification.
b. Structure of Biomembrane.
c. Glycosaminoglycans.
d. Phosphodiester bond.
e. Enzymes in Liver function test.

Q4. Define: (5)

a. Km
b. Prosthetic group.
c. Chaperones.
d. Eicosanoids.
e. Anomers.

Q5. Fill up the blanks: (5)

a. Cholesterol is an example of _____ lipid.
b. Sickle cell anemia is due to _____ mutation.
c. A complete turn of α- helix contains an average of _____ aminoacids.
d. Epimer of Glucose is _____.
e. Adenosine triphosphate contains _____ high energy bonds.

MID – TERM EXAMINATION

DEPARTMENT OF BICHEMISTRY

INSTITUTE OF MEDICAL SCIENCES

TIME: 1½ HRS DATE: 25.11.2009

Q.1 With the help of structure of Hemoglobin, explain how it is able to transport O2, CO2, & H+. (10)

Q.2 Explain the mechanism of catalysis by Enzymes. What are the factors which effect the action of enzymes & How ? (10)

Q3. Write short notes on : (4×5=20)

a. Co-valent modification
b. Structure of Biomembrane
c. Glycosaminoglycans
d. Phosphodiester bond
e. Enzymes in Liver function test

Q4. Define (5)

a. Km
b. Prosthetic group
c. Chaperones
d. Prostanoids
e. Anomers

Q5. Fill up the blanks: (5)

a. Cholesterol is an example of _____ lipid
b. Sickle cell anemia is due to _____ mutation
c. A complete turn of α- helix contains an average of _____ aminoacids
d. Epimer of Glucose is _____
e. Adenosine triphosphate contains _____ high energy bonds.

Examination, 2016

BIOCHEMISTRY

Paper No. - I

Time: Three Hours | Full Marks: 50

Use Separate answer book for each section.

Section - A

Marks - 25

1. Describe the 'Gluconeogenesis' pathway and it's regulation by various hormones. 10

2. Write short notes on the following: 5x3=15
   (a) Structure of intracellular and extracellular matrix
   (b) Competitive and noncompetitive inhibition of enzyme activity.
   (c) Molecular mechanism of oxidative phosphorylation.

Section - B

Marks - 25

1. Illustrate the co - enzyme role of various vitamins with suitable examples. In this context explain the biochemical basis of Beriberi. 6+3=9

2. Outline the process of fatty acid bio - synthesis. Add note on the regulation of this process. 6+2=8

3. Write very briefly about any four: 2x4=8
   (a) Oxidative deamination
   (b) Chylomicron
   (c) Fluid - Mosaic Model of membrane
   (d) Hartnup disease
   (e) Carbomoyl Phosphate Synthase - I

Aditi Gupta
MBBS - I.

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

1st Terminal MBBS Examination 2016
Biochemistry (Theory)

Time: Three hours

Date: 14.03.2016
Maximum Marks: 100

Attempt all the questions

1. Explain the hexose monophosphate pathway and its importance in various tissues. Discuss the various applied aspects of this pathway. 15

2. What are the metabolic products derived from tyrosine and tryptophan? Discuss the pathway of phenylalanine metabolism. Mention the defects associated with it. 15

3. Define primary and secondary bile acids with example. Discuss enterohepatic circulation of bile with its clinical significance. 15

4. Discuss the role of different body buffers along with lungs and kidneys in maintenance of normal pH. 15

5. Define enzyme, coenzyme and isoenzyme with example. Discuss diagnostic roles of enzymes with special reference to isoenzymes. 15

6. Write briefly about: 5X5= 25
   a) Fructose Metabolism
   b) Structure and functions of mitochondria
   c) Phospholipids and their applications
   d) Tertiary structure of proteins
   e) Alcohol Metabolism

DEPARTMENT OF BIOCHEMISTRY

RAMA MEDICAL COLLEGE HOSPITAL & RESEARCH CENTRE
MANDHANA, KANPUR

(MBBS & Medical M.Sc.-2016-17) **Date:-24.12.2016**

Total Marks – 50

1ST INTERNAL ASSESSMENT

A. LONG QUESTION

1. Define Glycolysis. Give its pathway with energetics. **(2+6+2=10)**

2. Discuss in detail structural organization of Proteins. Add a note on denaturation. **(7+3=10)**

B. Write short notes on : **(5 x 4=20)**

a. Fluidity of Cell Membrane.

b. Mutarotation.

c. Regulation of blood calcium.

d. Essential fatty acids & importance.

e. Structural Classification of amino acids.

C. Very short answer questions : **(10 x 1=10)**

a. Write the normal value of Blood calcium.
b. Name the semi-essential amino acids.
c. Name the metabolic disorders of calcium.
d. What in the shape of Lactose osazone.
e. Name the epimers of glucose.
f. Name the Key regulating enzyme of glycolysis.
g. Name any two glyerophospho lipids.
h. Name the glycosidic bond present in maltose.
i. What is the difference betweeen Benedict's test & Barfoed's test.
j. Name the GLUT concerned with absorption of glucose in the small intestine.

3rd Terminal MBBS Examination 2021

Time: 3 hours

Date: 11/12/21

Full Marks: 100

Paper II

1. A 54-year-old man with a history of chronic lung disease comes to the emergency department with difficulty in breathing, fever and cough. Upon examination, crackles and wheezes can be heard in the lower lobes; he has tachycardia and a bounding pulse. Arterial blood gas analysis shows pH 7.3, $PaCO_2$ 68 mm Hg and HCO_3 28 mmol/L.

(a) What acid base imbalance is it?

(b) Which compensatory mechanisms can play a role in this condition?

(c) Write normal range of blood pH, $PaCO_2$ and HCO_3 1+6+3

2. What are the differences in prokaryotic and eukaryotic transcription? Tabulate different post transcriptional modifications. What is the role of ribozyme in post transcriptional modifications? 5+2+3

6X10

3. Write short notes:

a) Bence Jones Proteinuria

b) Immune response

c) Antioxidant defence systems in our body

d) Cell cycle

e) Kidney function test

f) Tumor Markers

g) Chromatogrphy

h) Gene cloning

i) Nucleosome

j) Hypersensitivity reactions

4. Give reasons of the following: 10X2

a) Hyperuricemia occurs with excess alcohol ingestion

b) Nucleotide biosynthesis require one carbon metabolites

c) 6 mercaptopurine is an anticancer drug

d) Orotic aciduria is a disorder of pyrimidine metabolism

e) Diphtheria toxin inhibits translation

f) Telemere is present in eukaryotic DNA

g) Agarose gel is used to separate larger DNA fragments

h) Colostrum has immune function

i) p53 is called the Guardian of the Genome

j) Febuxostat is hypouricemic drug

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1st Terminal MBBS Examination 2020
Biochemistry (Theory)

Time: Three hours **Date: 04.03.2020**
Maximum Marks: 100

Attempt all the questions

1. Mention the coenzymes for vit. B1, B2, B3, B6 and the type of reactions they catalyse. Write one reactions for each. 4+6

2. Discuss the synthesis and fate of LDL cholesterol. What is the normal serum level of LDL cholesterol? Discuss the importance of HDL and LDL cholesterol in cardiovascular disorders. 3+2+1+4

3. Discuss the biomedical importance of carbohydrates. 5

4. What are the sources of ammonia in our body? Describe detoxification of ammonia. 1+4

5. Define zwitter ion with example. How can zwitterionic forms of protein be utilized in their separation? 2+3

6. Mention different level of structural organization of proteins. Discuss α helix and β pleated sheet with example. 1+4

7. Write short notes on the following: 10X3=30
   a. Importance of Cori's cycle
   b. Importance of uronic acid pathway
   c. Importance of different glucose transporters for different tissues
   d. Enterohepatic circulation of bile
   e. K_m and V_{max} of enzyme
   f. Enzymes used in diagnosis of myocardial infarction
   g. Metabolic products derived from glycine
   h. ATP dependent protein catabolism
   i. Mechanism of action and therapeutic property of statins

j. Empathy in patient encounter

8. Give your reasoning on the following: 15X2=30

a. Fat burns in the flame of carbohydrate

b. Analgesics are not taken in empty stomach

c. Morning hyperglycemia

d. Requirement of vitamin increases with increase in dietary carbohydrate

e. Hexokinase deficiency leads to haemolytic anemia

f. Amino acids in our body are not always coded

g. ORS is used in the treatment of diarrhoea

h. Megaloblastic anemia can occur in cobalamin deficiency

i. Excess carbohydrate is converted to fats but reverse does not occur

j. Phenylketonuria is screened at birth

k. Disorder of amino acid absorption can lead to nephrolithiasis

l. Pantothenic acid is required in fatty acid biosynthesis

m. Allosteric regulation is most important form of immediate regulation

n. Vit K cannot be given orally in chronic liver disease

o. Agarose gel is used for electrophoresis of genomic DNA

Department of Biochemistry
Institute of Medical Sciences
Banaras Hindu University

3rd Terminal MBBS Examination 2020
Biochemistry (Theory)

Time: Two hours

Date: 13.01.2021
Maximum Marks: 50

Attempt all the questions

1. Explain the pathway of glycolysis and its importance in RBCs . 5

2. What is reciprocal regulation? Explain it in reference to glycogen metabolism. 5

3. Name different lipoproteins. Discuss the formation and fate of chylomicrons. 5

4. Name different ketone bodies. How are they synthesized? 5

5. Describe urea cycle along with its regulation. How is it related to urea cycle? 5

6. Enumerate orders of protein structure. Explain α helix and β pleated sheet with example. 5

7. Describe in detail functions,deficiency and excess of Vitamin A 5

8. Discuss role of kidneys in regulation of pH. 5

9. Discuss different parameters of liver function tests. 5

10. What is translocation in translation? Discuss the antibiotics inhibiting translation. 5

Institute of Medical Sciences

Banaras Hindu University

2nd Terminal MBBS Examination 2021

Biochemistry (Theory)

Time: Three hours

Date: 30.09.2021

Maximum Marks: 100

Attempt all the questions

1. A middle age woman was brought to the emergency department of a hospital after she fell into the ground and hurt her left leg. She is having tachycardia and tachypnoea. Painkillers were given to lessen her pain. Suddenly, she started complaining that she is still in pain and now also experiencing muscle cramps, tingling, and paraesthesia. Measurement of ABG reveals pH- 7.6, PCO_2- 31 mm Hg, and HCO_3- 25 mmol/L.

(a) What is the diagnosis?
(b) Give normal ranges of blood pH, PCO_2 and HCO_3
(c) What is alkali reserve?
(d) Enlist possible complications of acid-base imbalances

2+2+3+3=10

2. An 18-year-old man who had suffered a flu-like illness for the previous two weeks is seen by his GP. Clinical examination includes urinalysis which indicates that his urine is strongly positive for protein on dipstick testing. A 24-hour urine collection done to confirm the dipstick finding shows gross proteinuria of 3g/24hours. The patient has pitting oedema of both ankles and his blood pressure is 142/84 mmHg. He is referred urgently for renal review and his baseline urea and electrolytes are as follows; Na+ 127 mmol/L (135-145), K+ 4.8 mmol/L (3.4-4.9), Urea 11.6 mmol/L (2.5-8.0) ,Creatinine 152 µmol/L (40-130) Renal biopsy confirmed an acute glomerulonephritis.

(a) Describe and comment on the biochemical abnormalities.
(b) Give your assessment of the patient's sodium and water status.
(c) Why does the patient have oedema?

4+3+3=10

PREVIOUS YEAR QUESTIONS

Cellular Organisation

* Fluid Mosaic Model of Cell Membrane
* Transport across cell membrane – Active and Passive
* Na-K ATPase and Inhibitors
* Mitochondria
* Ribosome * Eukaryotic & Prokaryotic cell
* Peroxisome
* Structure of Intracellular and Extracellular Matrix

Carbohydrate Metabolism

- Glucose Transporter
- Regulation of Glycolysis
- Sorbitol Pathway
- Futile Cycles
- Rapaport Leubring Pathway
- Fat burns in flame of carbohydrate
- Glucagon has no effect on muscle glycogen
- Gluconeogenesis → Glucose-Alanine and Cori Cycle → VONGIERKE'S Disease
- Reciprocal Regulation
- HMP Shunt Pathway → G6PD Deficiency
- GTT
- Glycolysis in RBC
- Ketone Bodies
- Fructose Metabolism and Fructose Intolerance
- Glycemic Index
- Glycogen Metabolism
- Galactosemia
- Blood Sugar regulation - Diabetes Mellitus
- Epimerism
- Pyruvate Dehydrogenase
- —Reactions catalysed by ALT (SGPT) and AST (SGOT)
-
- Digestion and Metabolism of Starch
- Essential Fructosuria
- Glycogen Storage Disease → Inherited Disorders

. . . and extracellular pH

Enzymes

- Diagnostic Application of Enzyme
- Factors affecting enzyme Velocity, Km
- Enzyme Inhibitors - Reversible and Irreversible / Competitive and Non-competitive
- Isoenzyme and Co-enzyme
- Specificity of enzyme action
- Enzyme profile in Liver Disease
- Functional & Non-Functional Enzyme
- Allosteric Inhibitors
- Mechanism controlling enzyme action
- Covalent Modification of enzyme

Vitamins

- Folate Trap
- Scurvy - Vitamin C
- Thiamin
- Riboflavin
- Beri-Beri
- Vitamin B12
- Folic Acid
- Visual Cycle - Vitamin A
- Anti-oxidant Vitamins
- Vitamin B_3 - Pellagra
- Anti-Haemorrhagic Vitamin
- Co-enzyme role of Vitamins
- Role of Vitamin K in Coagulation

- Visual Purple
- Transcobalamine
- Avidine (B_{10})

- Deficiency manifestations

Body Fluids and pH

- Buffer System in Body → Blood Buffer
- Hormonal Regulation of fluid Balance
- Role of Carbonic Anhydrase in maintaining pH

- Mucopolysaccharide
- Lactose Intolerance
- Cystic Fibrosis

Protein Metabolism + Amino Acid Metabolism

- Protein misfolding disease
- Non-Standard A.A.
- Transdeamination, Transamination, Deamination, Oxidative Deamination
- Phenylketonuria
- classify amino acids and Proteins
- Zwitterions
- α-Helix and β-Pleated sheet
- Ammonia Metabolism
- Tyrosine → Its sparing action on Phenylalanine
- Tryptophan
- Phenylalanine → Degradation, Diseases
- Structure of Proteins
- Urea Cycle
- Aromatic A.A.
- Maple Syrup Urine Disease
- Catecholamines
- Alkaptonuria
- Hartnup Disease
- CPS-I
- Creatine Kinase
- Tay-Sachs Disease
- Branched chain a.a and their metabolism
- Glycine
- Bo

Nutrition

- Protein Energy Malnutrition
- Balanced Diet
- RDA
- Obesity
- Calorie Malnutrition
- Importance of protein in diet

Immunology

* Type IV hypersensitivity reaction
- Cell mediated immunity
- Innate and Adaptive immunity
- Structure & function - IgG, IgM, IgE
- Immunoglobins and their function
- Arrangement of Immunoglobin in germ line
- Formation of final Ig Gene by somatic gene recombination

Hormones

- Glucagon - Mechanism of action
- Signal Transduction - Significance
- Insulin Signalling and Action
- G-Protein Coupled Receptor
- Hormones regulating blood volume
- Classify Hormone on basis of action
- Hormonal action through nuclear receptor
- Mechanism of action of Steroid Hormones
- " " " " Peptide Hormone

Department of Biochemistry
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3rd Terminal MBBS Examination 2022

Time: 2 hours

Date: 03/12/22
Full Marks: 100

Paper II
Answer all the questions
MCQ 20 Marks

1. Discuss the regulation of eukaryotic gene expression. 12

2. What are the causes of jaundice? How will you differentiate between them with the help of liver function tests? 12

3. Answer the following questions: 7X8

a) What is metabolic acidosis? Describe its types, causes and diagnosis.
b) Draw a labelled diagram of structure of antibody. What is Bence Jones proteinuria?
c) Discuss termination of prokaryotic transcription.
d) Write briefly on hormonal regulation of water homeostasis
e) Discuss phase II reactions of xenobiotic metabolism
f) Draw a flowchart of molecular gene cloning. What are its applications?
g) How is uric acid synthesized in our body? Mention the diseases associated with uric acid biosynthesis.

Lipid Metabolism

- Essential & Non-Essential Fatty Acids * FATTY LIVER
- CPPP ring
- Synthesis and Regulation of Cholesterol in body
- Lipotropic factors
- Oleic and Elaidic Acid
- Glycerophospholipid and Sphingolipid
- Lipoprotein
- Phospholipids
- Beta-Oxidation
- Prostaglandins
- Digestion and Absorption of Lipids - Bile Salts - Jaundice
- De novo synthesis of fatty acid
- Chylomicrons
- Lipogenesis from Glucose
- Steroids
- Carnitine Shuttle
- Myocardial Infarction

Integrated Metabolism

- Citric Acid Cycle
- FATTY LIVER
- ETS and its inhibitors
- Uncouplers and Couplers of ETC
- One carbon metabolism
- Alcohol Metabolism - Acute & Chronic Condition
- Anaplerotic and Cataplerotic Reactions
- Substrate Shuttles - Malate Aspartate
  - Glycerol Phosphate
- Chemiosmotic Theory
- Cyanide Poisoning
- Substrate Level Phosphorylation
- Oxidative Phosphorylation
- Primary and Secondary Bile Acids - Enterohepatic Circulation
- figlu Test

- Mechanism maintain intra- and extracellular pH
- Role of kidney in maintaining pH.
- Alkali Reserve

Nucleic Acid Metabolism

- Uric Acid metabolism
* Hyperuricemia
- Source of C & N in Purine & Pyrimidine
- Role of PRPP in biosynthesis
- Salvage Pathway

Transcription, Translation, Replication

- Transcription - Regulation
* Post-Translational Modification
* lac Operon
- Nucleosome
- Tumor Suppressor Gene
- Function of different DNA Polymerase
- Taq Polymerase
* Genetic code and Wobble Hypothesis
- Topoisomerase
* Telomerase
- Role of Different enzyme in Replication
- Initiation of Translation and Inhibition by antibiotics
- Elongation step of Translation and Inhibitors of Translation
- Double Helix Model of DNA
- Induction & Repression
- Catalytic Property of DNA Polymerase
- DNA Polymerase I - Use in DNA replication & repair
- Chromatin Remodelling Complex
- Vitamins in Post-translational modification
- Translation - Eukaryote vs. Prokaryote
- Eukaryote vs Prokaryote

1st Professional MBBS
Biochemistry Syllabus

Paper I

Section A

1. Molecular and functional organization of a cell
2. Chemistry, digestion, absorption and metabolism of Carbohydrates
3. Enzyme including isoenzymes and clinical enzymology
4. Biological Oxidation
5. Chemistry, digestion, absorption and metabolism of lipids

Section B

1. Chemistry, digestion, absorption and metabolism of proteins
2. Water and fat soluble vitamins
3. Mineral metabolism
4. Nutrition
5. Extracellular Matrix
6. Functions and metabolism of heme along with porphyria

Paper II

Section A

1. Molecular biology including DNA replication, transcription, translation along with structural organization and basic mechanism of regulation of gene expression.
2. Principles and applications of genetic engineering

Section B

1. Processes involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these.
2. Chemistry of blood
3. Oncogenesis
4. Role of xenobiotics, oxidative stress, antioxidants
5. Principles of conventional and specialized laboratory investigations
6. Functions, tests and abnormalities of kidney, liver, thyroid and adrenal glands
7. Immunology

These topics are indicative and must be correlated with competencies advised by National Medical Council