MUHS MBBS QUESTION PAPERS

BIOCHEMISTRY PART 1

Paper – 1

SUMMER 2014

(2 ½ hours) **Total marks : 40**

SECTION – B

2. Brief answer question: (any 6 of 7) : **(6x4=24)**

a) Protein energy malnutrition.

b) Diagnostic enzymes in myocardial infraction.

c) Applications of Recombinant DAN Technology.

d) Functional classification of proteins.

e) Oxidative Phosphorylation.

f) A nine year old boy presented with spongy bleeding gums and painful swelling of gums and joints.

1) Name the disease.

2) Which biomolecule is deficient?

3) Give any four biochemical functions of the deficient factor.

g) Genetic code.

SECTION – C

3. Long answer question :(any 2 of 3) : **(2x8=16)**

a) Describe in detail Protein biosynthesis with its inhibitors.

b) Describe Kerbs-Hensleit Urea cycle in details and discuss its abnormalities.

c) What is enzyme inhibition ? Give an account of competitive and non-competitive enzyme inhibition.

Paper – 1

MAY/JUNE 2013

(2 ½ hours) **Total marks : 40**

SECTION – B

2. Brief answer question : (any 6 of 7) : **(6x4=24)**

a) Describe Biochemical functions of Folic acid.

b) Explain Malate Asparate Shuttle.

c) Explain conjugated Proteins.

d) Explain enzymes of diagnostic importance in Cardiac disease.

e) 60 years old woman complain of pain and swellin gin joints and her serum uric acid level was found to be 13 mg/dl

1) Name the probable disease.

2) Name the enzyme defect.

3) What are the normal serum Uric acid level in the body.

4) Suggest Treatment.

f) State any four applications of recombinant DNA technology.

g) A ten year old boy had difficulty to see in dim light in the evening and while he entered in to cinema theater. His plasma retinol level was very low.

1) Name the vitamin deficiency responsibe for this.

2) Name the disease.

3) What is biomedical basis of above manifestation.

4) What is treatment for this condition.

SECTION – C

3. Long answer Question : (any 2 Of 3) : **(2x8=16)**

a) What is biochemical basis of Alkaptonurai? What test will you do to diagnose Alkaptonuria?

b) Describe the process of DNA replication. Name the two inhibitors of replication.

c) Describe formation and fate of Bilirubin. Add a note on Jaundice.

Paper – 1

WINTER 2012

(2 ½ hours) **Total marks : 40**

SECTION – B

2. Brief answer question : (any 6of 7) : **(6x4=24)**

a) Write short note on a reverse transcription.

b) Isoenzymes and their clinical application.

c) Genetic code.

d) Define an antioxidant. Name antioxidant enzymes. Vitamins and minerals.

e) Purine salvage pathway.

f) Deficiency manifestations of Vitamin A.

g) A 2 year old boy was brought to paediatric OPD with complaints of listlessness, apathy and recurrent infection. O/E the child had puffy face and oedema on feet. The hair was light in colour and dry serum total protein value was 5 gm/dl and albuim was 2 gm/dl.

i) What is the probable diagnosis.

ii) Give the biochemical basis of the findings.

iii) Give the outline of the treatment.

SECTION – C

3. Solve (any 2 of 3) : **(2x8=16)**

a) Describe the catabolism of hemoglobin with its significance.

b) Describe the pathway for biosynthesis of urea from ammonia. Add a note on a metabolic disorders of urea cycle.

c) Describe the process of oxidative phosphorylatin.

Paper – 1

WINTER 2011

(2 ½ hours) **Total marks : 40**

SECTION – B

2. Brief answer questions (any 6 of 7) : **(6x4=24)**

a) Describe any four biochemical functions of nucleotides.

b) Explain malate aspartate shuttle with its significance.

c) Name any two antioxidants enzymes with their functions.

d) Enumerate four examples of abnormal hemoglobins and specify the changes in their amino acid and sequence.

e) Write a note on beneficial and adverse effects of dietary fibres in nutrition.

f) State any four clinical applicatios of recombinant DNA technology.

g) A full term baby born to normal and healthy parents. Her body of pigmentation. The baby had white hair, blue eyes and dispigmented skin. There was no impairment In the eyesight of baby. However baby was unable to tolerate light (photophobia). The parental grandfather of baby had similar problem.

i) Name the disease.

ii) Name the deficient enzyme causing the disease.

iii) Describe the biochemical basis of symptoms observed in child.

SECTION – C

3. Solve (any 2 of 3) : **(2x8=16)**

a) Discuss chemistry, sources, daily requirements, (RDA), physiological functions and deficiency manifestations of Vitamin C (Ascorbic acid).

b) Give the complete account of the factors affecting enzyme activity.

c) Describe the metabolic pathway for synthesis of urea from ammonia. Add a note on metabolic disorders of urea cycle.

Paper – 1

NOV./DEC.2008

(2 ½ hours) **Total marks : 40**

SECTION – B – (SAQ)

2. Write in brief : (any 6 of 7) : **(6x4=24)**

a) Km value.

b) Uncouplers of oxidative phosphorylation.

c) Gout.

d) Polymerase chain reaction.

e) A three year old child from a poor illiterate family reported with edema, discoloration of hair and skin, anemia, diarrhea. His serum albumin and K+ were low.

i) Give the diagnosis and etiology.

ii) What is the cause of edema?

iii) Suggest line of treatment and preventive measures.

f) Diagnositc importance of enzymes in myocardial infraction.

g) A middle aged women reported with history of pain in the back and limbs. She also gave history of pathological fracture. Her bone scan revealed low bone-density.

i) What is the diagnosis and probable cause?

ii) Which serum enzyme level will be affected?

iii) Suggest the treatment and preventive measures.

SECTION – C – (LAQ)

3. Solve (any 2 of 3) : **(2x8=16)**

a) Describe the process of transamination and deamination in the body. Add a note on ammonia toxicity.

b) Describe biochemical functions, dietary sources, deficiency manifestations and daily requirements of Thaimin.

c) Descericbe the pathway of Heme biosynthesis and its regulation. Write in brief about Acute intermittent Porphyria.

Paper – 1

MAY/JUNE 2008

(2 ½ hours) **Total marks : 40**

SECTION – B

2. Answer in brief : (any 6 of 7) : **(6x4=24)**

a) Secondary and tertiary structure of proteins and forces stabilizing them.

b) Lac operon and its regulation in presence of lactose.

c) Salvage pathway of purine synthesis and its significance.

d) A one year old child with delayed milestone was brought to the hospital. His mother gave history of mousy odour from dipers.

i) What is the probable disease?

ii) What is the biochemical basis of diper odour ?

iii) What should be the management of this patient ?

iv) Draw the reaction catalyzed by the deficient enzyme.

e) Name three enzymes most commonly estimated in the diagnosis of myocardial infraction. Describe importance and limitations of each.

f) an alcoholic individual had symtoms of memory loss and unstable gait. His blood pyruvate level was increased.

i) What is the probable diagnosis?

ii) What is the biochemical basis of increase in pyruvate and presence of neurological signs?

iii) Which test can confirm diagnosis?

g) Mention the site of reactions and enzymes involved in activation of cholecalciferol. Justify the action of active form as a hormone.

SECTION – C

3. Answer (any 2) : **(2x8=16)**

a) Describe electron transport chain. Mention the sites of ATP synthesis. Discuss the action of inhibitors.

b) Describe the process of transcription and post transcriptional modification. Name any two antibiotics inhibiting this process.

c) Describe the general reactions of catabolism of amino acids. What is the role of liver and kidney in detoxication of ammonia?

Paper – 1

MAY/JUNE 2007

(2 ½ hours) **Total marks : 40**

SECTION – B

2. Answer in brief : (any 6 of 7) : **(6x4=24)**

a) What are the biochemical features and clinical manifestations of Alkaptonuria? Draw the reaction sequence catalyzed by the deficient enzyme.

b) Define 'activation energy' of an enzyme. Explain its relation to formation of ES complex with the help of a diagram.

c) A 42 year old male presented with a complaint of severe pain in his right leg toe and knee joint. Laboratory anealysis revealed elevated serum uric acid level.

a) Name the disease.

b) Name the metabolism affected.

c) What is the probable cause?

d) Name any two drugs used in the treatment of above disease.

d) What is recombinant DNA? Give atleast any 4 application of recombinant DNA technology

e) What is oxidative phosphorylation ?How it differs from substrate level phosphorylation?

f) What is protein energy malnutrition ? Explain the biochemical basis of any two clinical manifestaions os kwashiorkor.

g) Draw a well labelled diagram of 1-RNA. Explain its role in protein biosynthesis.

SECTION – C

3. Solve (any 2 of 3) : **(2x8=16)**

a) Describe the sources, coenzyme form, biochemical functions, deficiency manifestations and daily requirement of Thiamine.

b) Explain the reactions of urea cycle with the help of a diagram. Add a note on inherited disorders of urea cycle enzymes.

c) Describe the pathway of heme biosynthesis. Explain its regulation.

Paper – 1

JUNE/JULY 2006

(2 ½ hours) **Total marks : 35**

SECTION – B

2. Write short answers (any 5 of 6) : **(5x2=10)**

a) What is Chargaff's rule?

b) Methemoglobin.

c) Structure and functions of lgG.

d) Two examples of transmethylation reactions.

e) Why is the calorific value of fats much higher than that of carbohydrates and proteins.

f) Inhibitors of the respiratory chain.

3. Answer in short (any 2 of 3) : **(2x4=8)**

a) Diagnostic applications of enzymes and isoenzymes.

b) Nitrogen balance.

c) A boy has developed a tendency of biting of nails, fingers and lips, often causing selfmutilation. He also suffers from spasticity and mental retardation.

i) Name the disease.

ii) Name the deficient enzyme causing the disease.

iii) Name the concerned metabolic pathway.

iv) Explain why only males are affected with the disease.

SECTION – C

4. Describe translation phase of protein biosynthesis and its inhibition.**(1x9=9)**

OR

Describe sources, biochemical functions, deficiency manifestations and daily requirement of pyridoxine.

5. Answer (any 2 of 3) : **(2x4=8)**

a) Tertiary and quaternary structure of proteins.

b) Kwashiorkor.

c) Lac Operon Concept.

Paper – 1

JULY/AUGUST 2005

(2 ½ hours) **Total marks : 35**

SECTION – B

2. Write short answers : (any 5 of 10) : **(5x2=10)**

a) Name the isoenzymes of creatine kinase and its use in clinical diagnosis.

b) Enumerate the sources of purine ring formation. Show diagrammatic representation of the components in purine ring contributed by them.

c) Give four characteristics of genetic code.

d) Give coenzymes forms of niacin and riboflavin and one reaction each representing their coenzyme role.

e) Name the two examples each of free radicals and antioxidants.

3. Solve (any 2 of 3) : **(2x4=8)**

a) Primary gout and secondary gout.

b) Abnormal hemoglobins.

c) A nine year boy is suffering from gum bleeding, swollen gingiva and with a painful swellings of bones and joints.

i) Name the disease. **01**

ii) Disorders is due to the deficiency of which biomolecule **01**

iii) State any four biochemical functions of the concerned biomolecule. **02**

SECTION – C

4. Long answer question : **(1x9=9)**

Describe the formation and fate of ammonia.

OR

Describe the factors affecting enzyme activity.

5. Answer (any 2 of 3): **(2x4=8)**

a) Applications of genetic engineering.

b) Metabolism of glycine.

c) Primary and secondary structure of proteins.

Paper – 1

JUNE/JULY 2004

(2 ½ hours) **Total marks : 35**

SECTION – B

2. Write short answers to (any 5 of 6) : **10**

a) Name any two biologically important compounds derived from Glycine and give their importance.

b) What is purine salvage pathway? Name the tissues in which it is operating.

c) Name origins and one function each of any two peptide hormones.

d) Indicate diagrammatically in sites of ATP synthesis in E.T.C.

e) Give the coenzyme form and deficiency manifestation of vitamin B12.

f) 2 example of enzymes inhibitors used as drugs.

3. Solve (any 2 of 3) : **08**

a) Transmethylation Reactions.

b) A 10 year old boy is hospitalized with symptoms of weight loss, digestive disorders, dermatitis, depression and dementia :

i) Name the disorder

ii) Disorder is due to deficiency of which biomolecule.

iii) Name the active forms of the biomolecule.

iv) Give one reaction where the active form is used.

SECTION – C

4. Describe the metabolism of Phenylalaine and Tyrosine with special reference of two inborn errors. **09**

OR

Diaframmatic representation of various steps involved in biosynthesis of protein. Indicate the site of inhibition of protein synthesis by antibiotics.

5. Answer (any 2 of 3) : **08**

a) Functional and Nutritional classification of proteins.

b) Walds visual cycle.

c) Name the free radicals and explain the role of vitamins in scavenging them.

Paper – 1

OCTOBER 2003

(2 ½ hours) **Total marks : 35**

SECTION – B

2. Write short answers (any 5 of 6) : **10**

a) Uncouplers of oxidative phosphorylatin.

b) IGA

c) Composition and two functions of Glutathione.

d) Types and functions of endoplasmic reticulum.

e) Define isoelectric pH. Give two properties of a protein at its isoelectric pH.

f) What is the source and coenzyme form of Niacin in the body? Give one reaction as coenzyme.

3. Solve (any 2 of 3) : **08**

a) Application of recombinant DNA technology.

b) Phenyl ketonuria.

c) A 4 year old boy complains of joint pain, aggressive behavior, learning disability and urge of bite his own fingure and lips. His serum uric acid is above normal.

i) Name the disorder and Enzyme defect.

ii) Draw the reaction catalyzer.De

iii) What is normal uric acid level and explain the cause of hyperuricemia observed above.

SECTION – C

4. Describe various types of enzyme inhibition with suitable examples. Explain how enzyme inhibitors act as drugs,giving two examples. **09**

OR

Describe the formation and fate of Ammonia.

5. Answer (any 2 of 3) : **08**

a) Genetic Code.

b) Kwashiorker and Marasmus.

c) Chemiosmotic hypothesis of oxidative phosphorylation

Paper – 1

MAY 2003

(2 ½ hours) **Total marks : 50**

SECTION – B

2. Write short answers (any 5 of 6) : **10**

a) Optimum pH of an enzyme.

b) I131

c) Types and functions of immunoglobullins.

d) Name the stages of transcription.

e) Draw and label the structure of t-RNA.

f) Define antioxidant. Name the any two vitamins with antioxidant property.

3. Solve (any 2 of 3): **08**

a) Transamination.

b) Characteristics of genetic code.

c) A twenty three year old woman had complaints of weakness and lethargy. Her hemoglobin level was 7g/dl. Her blood was found to contain large abnormal immature erythrocytes. This woman had a highly elevated excretion of FIGLU ; a metabolite of Histidine in urine.

i) What is the probable cause of anemia ?

ii) Which type of anemia does the patient suffer from? What is its biochemical basis?

SECTION - C

4. Explain the synthesis, break down, metabolic role and metabolic defects in Glycine metabolism. **09**

OR

Explain with example various types of enzyme inhibition.

5. Answer (any 2 of 3): **08**

a) Cytochrome P450.

b) Metabolic role and deficiency manifestation of Ascorbic acid.

c) Functions of plasma proteins.

(2 ½ hours) **Total marks : 35**

2. Write short answers : (any 5of 6) : **10**

a) Draw and label the structure of Mitochondria.

b) Give four functions of Nucleotides.

c) Give four differentiating points for Tight (T) & Relaxed (R) form of Haemoglobin.

d) Give two examples each of allosteric enzyme activators and inhibitors.

e) Define "Peptide". Give the important functions of two biologically important peptides.

f) Give four causes of Secondary Gout.

3. Write notes on : (any 2of 3) : **08**

a) Thalassaemias.

b) Protein energy malnutrition.

c) A five year old girl had bleeding gums, anaemia and complained of pain in the joints.

i) What is the probable diagnosis?

ii) Which factor is deficient in the diet ?

iii) What is the daily requirement of this factor?

iv) Name the rich sources of this factors.

SECTION – C

4. Describe the role of enzymes and isoenzymes in various clinical disorders.**09**

OR

Describe the metabolism and inherited disorders of Phenylalanine and Tyrosine.

5. Attempt : (any 2 of 3) : **08**

1) Purine Salvage Pathway.

2) Lac Operon Concept.

3) Vitamin B12 – Chemistry, functions and deficiency

Paper – 1

28th MAY ,2002

(2 ½ hours) **Total marks : 35**

SECTION – B

2. Write short answers (any 5 of 6) : **10**

a) State any two biologically important peptides along with their functions.

b) Give four characterictics of the genetic code.

c) State four applications of recombinant DNA technology.

d) Give two derivatives of hameoglobin and state how they are formed.

e) Give a diagrammatic representation of the plasma membrane.

f) Write in briefly about any two inhibitors of protein synthesis & their mode of action.

3. Answer in short (any 2 of 3) : **08**

a) State the names of three enzymes, most commonly estimated after a myocardial infract. Give details of the pattern show by these three enzymes after an infarct.

b) Kwashiorkor and Marasmus.

c) A 3-week old female infant was diagnosed to have phenylketonuria (PKU).

i) State the enzyme which is most likely to b defective.

ii) What is the screening test available? Discuss the genetics of the disease.

iii) What are the characteristics of PKU?

iv) What is the treatment given to the patient?

SECTION – C

4. Explain the routes of ammonia disposal via: i) glutamate ii) glutamine and iii)urea. **09**

OR

Explain the electron transport chain in detail. Mention the ATP synthesizing sites, the inhibitors and uncouplers of oxidative phosphorylation.

5. Attempt (any 2 of 3) : **10**

a) Catabolism of pyrimidines and related disorders.

b) Explain the biochemical role and deficiency manifestations of vitamin C.

c) Describe the secondary and tertiary level of protein structure.