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PGIIIS-N 1560 B - 15

M.Sc. IIIrd Semester (CBCS) Degree Examination

Biochemistry

(Clinical Biochemistry & Nutrition)

Paper - HCT 3.1

(New)

Time : 3 Hours Maximum Marks : 80

Instructions to Candidates

Answer Question **No. 1** and any **four** of the remaining.

1. Answer the following: **(10×2=20)**

a) What are platelets? Give their functions.

b) How is the erythrocyte sedimentation rate determined? Give its significance.

c) What is the difference between standard and maximum urea clearance? What is its Significance?

d) What is diabetic ketoacidosis?

e) Distinguish between hypo and hyper acidity. How it can be managed?

f) What is meant by proximate analysis? Give its significance.

g) What is malnutrition?

h) How are dietary proteins classified?

i) What are anti-vitamins? Give examples.

j) What is Lesch-Nyhan syndrome?

2. a) Enumerate the liver function tests and discuss their significance. **(5+5+5+=15)**

b) Discuss human hereditary disorders of coagulation.

c) Discuss the composition of CSF in normal healthy and diseased individual.

3. a) Explain clinical manifestation of jaundice. (5+5+5+=15)

b) Discuss different inborn errors of amino acid metabolism.

c) What is atherosclerosis? Explain causes and prevention of atherosclerosis.

4. a) Discuss the clinical significance of the following enzymes. (6+4+5+=15)

1. SGOT & SGPT 2. LDH & CPK

b) What is gastric ulcer? Explain its causes and treatment.

c) What is Gout? Discuss its causes and clinical symptoms.

5. a) Discuss the factors influencing water balance. Give the importance of increased fluid intake. (5+5+5+=15)

b) What are essential fatty acids? Give their health benefits.

c) What is kwashiorkar? Discuss its causes and prevention.

6. a) Explain the following in health promotion and disease prevention. (9+6=15)

1. Iron and Iodine 2. Vitamin C and E

b) Give the importance of inclusion of minerals in food formulation.

7. Write short notes on any **three** of the following : (3×5=15)

a) Plasma proteins

b) Dialysis

c) Glycogen storage diseases

d) ORS

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PGIIIS-N 1561 B-15

M.Sc. IIIrd Semester (CBCS) Degree Examination

Biochemistry

(Immunology)

Paper - HCT : 3.2

(New)

Time : 3 Hours Maximum Marks : 80

Instructions to Candidates :

Answer Question **No. 1** and any **four** of the remaining.

1. Answer the following: **(10×2=20)**

a) What is affinity maturation?

b) Write the principle of RIA.

c) Differentiate between TCR and B-cell receptor.

d) What are adjuvants? Give examples.

e) Differentiate between allotypic and idiotypic variations.

f) Give the Gell and Coombs classification of hypersensitive reactions.

g) How innate immunity differs from adaptive immunity?

h) What are incomplete antibodies?

i) Compare and contrast active and passive Immunization.

j) What is Autoimmunity? Give examples.

2. a) Describe the structural organization and functions of spleen. **(7+8=15)**

b) What is compliment system? Discuss its activation by any two methods.

3. a) What is antigen processing? Explain the processing and presentation of endogenous antigens. (7+8=15)

b) Give the principle and applications of biotin avidin assay.

4. a) Give the general structure of antibody emphasizing the hypervariable region.(7+8=15)

b) What is MHC? Explain the structure and functions of class II MHC.

5. a) Discuss the role of Macrophages, NK, and dendritic cells in innate immunity.(7+8=15)

b) Describe the organization of Ig genes.

6. a) How are monoclonal antibodies produced? Give their applications. (7+8=15)

b) Discuss the molecular events associated with the maturation of B-cells.

7. Write notes on any **three** of the following : (3×5=15)

a) Vaccines.

b) Blood group antigens.

c) Cytokines.

d) Organ transplantation.

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PGIIIS-O 1561-A B-15

M.Sc. IIIrd Semester (Non-CBCS) Degree Examination

Biochemistry

(Metabolism-II)

Paper - 3.2

(Old)

Time : 3 Hours Maximum Marks : 80

Instructions to Candidates:

Answer question No.**1** and any **Four** of the remaining.

Answer the following: **(10×2=20)**

1. a) What are ketogenic and glycogenic amino acids?

b) What are non-essential amino acids? Give an example.

c) What are C4 family amino acids? Give an example.

d) What is enzyme multiplicity?

e) List the disorders of Urea cycle.

f) Every metabolic pathway has a final committed step, why?

g) Give the role of Xanthine-oxidase enzyme.

h) Give the structure and function of Indole-3-acetic acid

i) What is Lesch-Nyhan syndrome?

j) What is Gout? Give its symptoms.

2. a) Explain the role of glutathione in the absorption of amino acids. **(6+6+3=15)**

b) Discuss the role of PLP in transamination reaction.

c) How does deamination differ from transamination?

3. a) What are C3 family of amino acids? Give their structure and roles. **(6+9=15)**

b) Discuss the degradation of methionine and associated disorder.

4. a) Discuss the reactions of urea cycle and its regulation. (9+6=15)

b) How are these transformations brought about?

i) Proline to alpha-ketoglutarate

ii) Prephenate to phenylalanine

5. a) Give an account on heme biosynthesis and degradation. (9+6=15)

b) Write the biosynthesis of epinephrine and nor epinephrine.

6. a) write the de-novo synthesis of pyrimidine nucleotides. (3×5=15)

b) Discuss the regulation of biosynthesis of purines.

c) Give an account on the regulation of deoxyribonucleotide biosynthesis.

7. Write a note on any **Three** of following. (3×5=15)

a) Antifolic drugs.

b) Polyamine biosynthesis.

c) Inborn errors of amino acid metabolism.

d) creatine and creatinine metabolism.

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PGIIIS-O 1562-A B-15
M.Sc. IIIrd Semester (Non-CBCS) Degree Examination
Biochemistry
(Clinical Biochemistry & Hormones)
Paper - 3.3
(Old)

Time : 3 Hours Maximum Marks : 80

Instructions to Candidates:

Answer question **No.1**, Any **Four** of the remaining.

Answer the following : **(10×2=20)**

1. a) What is ESR?
   b) Define Pheromones and give examples.
   c) What is ketosis? Give its clinical significance.
   d) Distinguish between Total and differential count.
   e) What are gall stones?
   f) What is hyper cholesterolemia?
   g) What is nephritis?
   h) Define hormones.
   i) What is diabetes?
   j) Give the functions of parathyroid hormones.
2. a) Explain the liver function tests and their significance in diagnosis. **(3×5=15)**
   b) Describe the blood grouping system and Rh factors.
   c) List out the normal and abnormal constituents of urine and their clinical significance.

3. a) Mention the composition of blood and explain their functional importance. (3×5=15)

b) Describe the Glucose tolerance tests.

c) Describe the mechanism of electrolyte and acid base balance.

4. a) Discuss the major plasma protein and its functions. (3×5=15)

b) Discuss the role of insulin & glucagon in regulation of blood glucose level.

c) Describe hereditary fructosuria and lactose intolerance.

5. a) What is renal clearance tests? How is it performed? (3×5=15)

b) Explain the molecular mechanism of GOUT. How it can be treated?

c) Describe the mechanism of blood clotting.

6. a) How is the detoxification efficiency of liver determined? (3×5=15)

b) Describe the biological role of vasopressin and oxytocin.

c) What is hypo and hyperacidity? What are its causes and clinical significance?

7. Write a note on any **Three** of following. (3×5=15)

a) Clinical significance of SGPT.

b) Classification of hormones.

c) Malabsorption syndrome.

d) Kidney stones.

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PGIIIS-O 1560-A B-15

M.Sc. IIIrd Semester (Non - CBCS) Degree Examination

Biochemistry

(Metabolism - I)

Paper - 3.1

(Old)

Time : 3 Hours Maximum Marks : 80

Instructions to Candidates :

Answer Question **No. 1** and any **four** of the remaining.

1. Answer the following: **(10×2=20)**

a) Define the terms autotrophs and heterotrophs.

b) How does a cell extracts energy and reducing power from its environment?

c) What are high energy compounds? Give two examples.

d) What are acyl carrier proteins? Mention their importance.

e) Why TCA cycle is called amphibolic pathway?

f) What is β-oxidation?

g) Define free energy of a reaction?

h) Give the stoichiometry of glycolysis.

i) What is galactosemia?

j) Define gluconeogenesis?

2. a) Discuss the event of glycolysis and its regulation. **(7+8=15)**

b) Discuss the catabolism of different hexoses and disaccharides.

3. a) Discuss the breakdown of glycogen and starch. (8+7=15)

b) Describe the pentose phosphate pathway and mention its significance.

4. a) Outline the reactions of glyoxylate pathway. Give its importance. (8+7=15)

b) Give an account of Cori Cycle.

5. a) Discuss substrate level phosphorylation. Mention their importance. (7+8=15)

b) Discuss the biosynthesis of palmitic acid.

6. a) Elaborate the hormonal regulation of carbohydrate metabolism. (7+8=15)

b) Discuss cyclic and non-cyclic photophosphorylation reactions.

7. Write a note on any **three** of the following : (3×5=15)

a) Glycogen storage diseases.

b) Prostaglandins.

c) PDH complex.

d) Electron transport chain.

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PGIIIS-N 1563 B-15
M.Sc. IIIrd Semester (CBCS) Degree Examination
Biochemistry
(Fundamentals of Enzyonology)
Paper - OET 3.1

Time : 3 Hours Maximum Marks : 80

Instructions to Candidates:

Answer question **No.1** and any **Four** of the remaining.

Answer the following: **(10×2=20)**

1. a) Differentiate between isolation and purification of enzyme?

b) What are general characteristics of enzyme?

c) Mention the coenzymic function of biotin

d) What are the advantages of multi enzyme complexes?

e) Mention any two applications of plant proteases

f) What is acid catalysis?

g) What is the effect of pH on the enzyme catalyzed reactions?

h) How is enzyme activity controlled by reversible modification?

i) What are metalloenzymes? Give examples

j) What are multifunctional enzymes? Give examples.

2. a) What are Km and Vmax? What is the effect of competitive and non-competitive? Inhibitors on them? **(6+6+3=15)**

b) Give an account of criteria of purity of enzymes.

c) How are enzymes classified? Give example for each class.

3. a) Discuss with suitable example the covalent catalysis involved in enzyme catalysis. **(7+8=15)**

   b) What is meant by an active site of an enzyme? Explain any two methods used for the identification

4. a) Discuss the mechanism of action of ribonuclease. **(7+8=15)**

   b) Derive the Michaelis Menten equation for single substrate enzyme catalyzed reaction.

5. a) Discuss the regulation of enzyme activity by reversible covalent modification. With suitable example. **(8+7=15)**

   b) Give an account of assay of enzyme activity by spectrophotometry.

6. a) Discuss different enzyme immobilization methods. **(7+8=15)**

   b) Explain the action and regulation of activity of pyruvate dehydrogenase complex.

7. Write a note on any **Three** of following. **(3×5=15)**

   a) LDH

   b) Application of enzymes.

   c) Purification of enzymes.

   d) ATCase.