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This question paper contains 4 printed pages.

Your Roll No. 18/5/18

Sl. No. of Ques. Paper : 6743

HC

Unique Paper Code : 32231402

***Name of Paper : Animal Physiology : Life
Sustaining Systems***

Name of Course : B.Sc. (Hons.) Zoology

Semester : IV

Duration : 3 hours

Maximum Marks : 75

***(Write your Roll No. on the top immediately
on receipt of this question paper.)***

***Attempt five questions in all.
Question No. 1 is compulsory.
Draw suitable well labelled
diagrams wherever necessary.***

1. (a) Define the terms given below:

- (i) Compliance**
- (ii) Hematocrit**
- (iii) Stroke volume**
- (iv) Ultrafiltration**
- (v) Portal triad.**

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(b) Differentiate between:

- (i) Granulocytes and Agranulocytes**
- (ii) PCT and DCT**
- (iii) Acidosis and Alkalosis**

P. T. O.

- (iv) Auerbach's and Meissner's Nerve Plexus. 8
- (c) Expand the following:
- (i) ANP
 - (ii) GIP
 - (iii) GBHP
 - (iv) PCV
- (d) Write the location and function of the following:
- (i) Papillary muscle
 - (ii) Podocytes
 - (iii) Paneth cells
 - (iv) Carotid bodies
- (e) State true or false:
- (i) Dissociation curve shifts to the right when hydrogen ion concentration increases in blood.
 - (ii) Atrial systole is followed by isovolumetric contraction phase in the cardiac cycle.
 - (iii) During normal breathing, the pressure between the two pleural layers (intrapleural pressure) is subatmospheric.
 - (iv) Aldosterone converts angiotensinogen into angiotensin I.
 - (v) Phrenic nerves innervate the diaphragm.
 - (vi) Nitric oxide acts as a vasoconstrictor.

3

- (f) Write significance of the following:
- (i) Biconcave shape of erythrocytes
 - (ii) Long refractory period in cardiac muscle
 - (iii) Presence of submucosal glands in the duodenum.
2. (a) Discuss in detail the countercurrent mechanism and its importance. 9
 - (b) Add a note on the pressures responsible for glomerular filtration. 3
 3. (a) What is cardiac output? Explain the factors that regulate the stroke volume. 9
 - (b) Comment on coronary circulation of the heart. 3
 4. (a) Describe the extrinsic and intrinsic pathway of blood clotting. 9
 - (b) Comment on the fibrinolytic system. 3
 5. (a) Discuss in detail different phases of digestion. 9
 - (b) Draw a well labelled diagram of oesophagus showing histological details. 3
 6. (a) Explain the mechanism of gas exchange in respiration. 6
 - (b) Write a note on the neural control of respiration. 6

7. Write short notes on any *three* of the following:

(a) Spirogram

(b) Structure of Liver

(c) ECG

(d) Regulation of blood pressure

(e) Juxtaglomerular apparatus.

4,4,4

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This question paper contains 4 printed pages.

Your Roll No.

241518

Sl. No. of Ques. Paper : 6744

HC

Unique Paper Code : 32231403

Name of Paper : Biochemistry of Metabolic Processes

Name of Course : B.Sc. (Hons.) Zoology

Semester : IV

Duration : 3 hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all.

Question No. 1 is compulsory.

Structures to be given in all pathways.

1. (a) Define:

- (i) Glycogenin
- (ii) Ketonemia
- (iii) Amphibolic Pathway
- (iv) Uricotelic Organisms
- (v) Cytochromes.

1×5=5

(b) Differentiate between:

- (i) Thioesterase and Thiolase
- (ii) Anabolism and Catabolism
- (iii) Glucogenic and Ketogenic amino acid
- (iv) β oxidation and ω oxidation

P. T. O.

(v) Hexokinase and Glucokinase. 2x5=10

(c) Name:

(i) A three carbon amino acid that is metabolized to pyruvate

(ii) Transporter of Acyl CoA into the mitochondrial matrix

(iii) Enzyme that converts Glycerol to Glycerol-3-Phosphate

(iv) Any one rate limiting step in Glycolysis. 1x4=4

(d) Write the importance of the following:

(i) Thiamine Pyrophosphate

(ii) Acyl Carrier Protein

(iii) Pyruvate Carboxylase

(iv) Oxaloacetate

(v) NADPH. 1x5=5

(e) Expand the following:

(i) FAD

(ii) Tyr

(iii) PDH

(iv) PLP

(v) DHAP

(vi) AMP

1/2x6=3

2. (a) Elucidate the metabolic pathway of biosynthesis of Palmitic acid. 9

(b) What is the importance of Fatty Acid Synthase (FAS) multienzyme complex? 3

3. (a) Give a detailed account of ketogenesis in liver. 9

(b) What role do dehydrogenases play in the beta oxidation of fatty acid? 3

4. (a) Describe the reactions of Citric Acid Cycle. 8

(b) Give a brief account of the rate limiting reactions of glycolysis. Calculate the energy yield per molecule of glucose oxidised. 4

5. (a) Describe the process of Glycogenolysis and give its importance. 9

(b) Why are animals unable to convert fatty acids into glucose? 3

6. (a) Explain the Oxidative phase of Pentose Phosphate pathway. 6

(b) Mention the importance of inhibitors or uncouplers of Electron Transport Chain. 6

7. Write short notes on the following: (Any three)

(a) Gluconeogenesis

(b) **Glycerol Phosphate Shuttle**

(c) **Chemiosmotic Hypothesis**

(e) **Role of Carnitin.**

4×3=12

(11)

May
2018

~~SET A~~

Sr. No. of question paper : 5843

Roll No.

Unique paper code :223403

Name of the paper :BIOCHEMISTRY

Name of the course : B.Sc. (HONS.) ZOOLOGY

Semester :IV

Maximum Marks :75

Time :3 Hours

(Write your Roll No. on the top immediately on receipt of this question paper.)

This paper contains seven questions.

Answer *five* questions in all.

Question No. *1* is compulsory.

Write structural formulae where specified.

Q.1. (a) Define the following:

(4)

(i) Holoenzyme

(ii) Zwitter ion

(iii) Ketosis Oxidative phosphorylation

(iv) Allosteric site

(b) Differentiate between the following:

(10)

(i) Glucokinase and hexokinase

(ii) Transamination and deamination

(iii) Ketogenic and glucogenic amino acids

(iv) Glycosidic and peptide bond

(v) Starch and Cellulose

(c) Give the structure of the following:

(i) A C-16 saturated fatty acid

(4)

(ii) A 3C amino acid which is the precursor in gluconeogenesis

(iii) A disachharide composed of glucose and fructose

(iv) A dicarboxylic intermediate of TCA cycle

(d) Expand the following :

(i) DHAP

(3)

(ii) FAD

(iii) PDH

(iv) FMN

(v) c-AMP

(vi) TPP

(e) Give the major contribution of the following scientists:

(2)

(i) Hans Krebs

(ii) Luis Leloir

(f) Fill in the blanks

(4)

(i) Name the enzyme which catalyzes the conversion of :

Glycogen _____ Glucose-1-Phosphate.

(ii) Glucose 6-phosphatase is _____ in the muscle.

(iii) Pyridoxal phosphate is a carrier of an _____ group.

(iv) _____ is the primer required during glycogen synthesis.

Q.2. (a) Elucidate the Michaelis-Menten kinetics for a one enzyme-one substrate reaction. (8)

(b) Explain the function of transaminases in the catabolism of amino acids.

Support your answer with suitable example.

(4)

Q.3. (a) Explain the β -oxidation pathway of palmitic acid.

(6)

(b) Discuss the Embden - Meyerhof pathway for carbohydrate metabolism.

(6)

Q.4. (a) Enumerate various fates of glucose in the living system.

(5)

(b) Describe secondary and tertiary structures of the proteins. Comment _____

upon the factors involved in stabilizing these structures.

(7)

Q.5. (a) With the help of structural formulae, ^dDescribe the citric acid cycle (use structural formulae). How is it regulated in the body? (7)

(b) Comment upon the statement, "Gluconeogenesis is not a reversal of glycolysis".

Support your answer with suitable chemical reactions. (5)

Q.6. (a) Describe the urea cycle, represent chemical reactions with structures and enzymes only. (9)

(b) Briefly explain the malate-aspartate shuttle. (3)

Q.7. Write short notes on any three of the following: (3 X 4 = 12)

(i) Cori cycle

(ii) Allosteric inhibition

(ii) Ketogenesis

(iv) Glycogenolysis