

Total No. of Printed Pages—3

4 SEM TDC ZOOH (CBCS) C 9

2024

(May/June)

ZOOLOGY

(Core)

Paper : C-9

(Animal Physiology : Life Sustaining Systems)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. (a) Fill in the blanks : 1×5=5
- (i) Bile juice is produced in _____ in human body.
 - (ii) Most of the CO_2 produced in the tissues is transported to the lungs as _____.
 - (iii) In a healthy adult, the glomerular filtration rate is approximately _____ ml/min.
 - (iv) The plasma protein _____ is responsible for blood coagulation.
 - (v) _____ valve is located between the left ventricle and aorta.

(2)

(b) Write short notes on (any two) : $4 \times 2 = 8$

(i) Granulocytes

(ii) Regulation of acid-base balance

(iii) Carbon monoxide poisoning

(iv) Factors affecting O_2 -dissociation curve

2. Distinguish between (any two) : $4 \times 2 = 8$

(a) Bohr effect and Haldane effect

(b) Lung volume and Lung capacity

(c) Digestion of carbohydrate and Digestion of protein

(d) Pulmonary circulation and Systemic circulation

3. Define pulmonary ventilation. Discuss the transport of oxygen and carbon dioxide in blood. $1 + 3\frac{1}{2} + 3\frac{1}{2} = 8$

Or

Describe the structure of human lungs with suitable illustrations. Add a note on control of respiration. $4 + 4 = 8$

4. Draw a labelled diagram of nephron. Discuss the mechanism of urine formation. $3 + 5 = 8$

Or

Describe the extrinsic and intrinsic pathway of blood clotting. $4 + 4 = 8$

24P/1276

(Continued)

(3)

5. What is the structure of haemoglobin? Describe the different blood groups and Rh factors. $2 + 6 = 8$

Or

What is coronary circulation? Write a note on the origin and conduction of cardiac impulse. $1 + 7 = 8$

6. Define cardiac cycle. Write about the different phases of cardiac cycle. $1 + 7 = 8$

Or

Write a detailed structure of mammalian heart. Write about the nervous and chemical regulation of heart rate. $3 + 5 = 8$

24P—3000/1276

4 SEM TDC ZOOH (CBCS) C 9

Total No. of Printed Pages—3

4 SEM TDC ZOOH (CBCS) C 10

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(May/June)

ZOOLOGY

(Core)

Paper : C-10

(Biochemistry of Metabolic Processes)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Fill in the blanks :

1×5=5

- (a) Glycolysis occurs in ____.
- (b) The process of breaking down glycogen into glucose units is called ____.
- (c) The complete oxidation of glucose yields ____ ATP.
- (d) ____ is a coenzyme of citric acid cycle.
- (e) Urea cycle takes place in ____.

(2)

2. Write short notes on (any two) : $4 \times 2 = 8$

- (a) Substrate level phosphorylation
- (b) Malate-Aspartate shuttle
- (c) Reducing equivalents
- (d) Transamination

3. Write and complete reactions catalysed by the following : $2 \times 5 = 10$

- (a) Hexokinase
- (b) α -ketoglutarate dehydrogenase
- (c) Carbamoyl phosphate synthetase I (CPSI)
- (d) Lactate dehydrogenase
- (e) Arginase

Or

Distinguish between catabolism and anabolism. Write about the various stages of catabolism. $3+7=10$

4. What is gluconeogenesis? Describe the steps and enzymes involved in gluconeogenesis. $2+8=10$

Or

Explain the process of glycogen synthesis mentioning enzymes and cofactors involved. Write how it differs from glycogenolysis. $7+3=10$

(3)

5. Explain the process of beta-oxidation of saturated fatty acids. Mention the steps and enzymes involved. Include a diagram of the β -oxidation cycle. $8+2=10$

Or

Describe the steps and enzymes involved in the omega oxidation of saturated fatty acids. What are the products and the significance of this pathway? $8+2=10$

6. Describe the urea cycle with steps and enzymes involved. Write about the fate of C-skeleton of glucogenic amino acids. $6+4=10$

Or

Describe the mitochondrial electron transport chain with suitable illustrations. How does the mitochondrial electron transport chain generate a proton gradient? $8+2=10$
