

**63/1 (SEM-4) CC10/ZOOHC4106**

**2023**

**ZOOLOGY**

Paper : ZOOHC4106

**( Biochemistry of Metabolic Processes )**

Full Marks : 60

Pass Marks : 24

Time : 3 hours

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

1. Choose the correct answer from the following  
(any five) : 1×5=5

(a) Omega oxidation occurs in

(i) mitochondria

(ii) Golgi bodies

(iii) endoplasmic reticulum

(iv) cytosol

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**( Turn Over )**

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- (b) The number of carbon atom found in palmitic acid is
- (i) 6
  - (ii) 12
  - (iii) 14
  - (iv) 16
- (c) Which one of the following is not an amino acid?
- (i) Glycine
  - (ii) Hydroxyproline
  - (iii) Glutamic acid
  - (iv) Choline
- (d) Which one of the following is non-essential amino acid?
- (i) Tyrosine
  - (ii) Valine
  - (iii) Methionine
  - (iv) Cysteine

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( Continued )

( 3 )

- (e) How many ATP molecules are gained in glycolysis?
- (i) 2
  - (ii) 4
  - (iii) 6
  - (iv) None of the above
- (f) Which of the following characters of glucose makes it most efficient fuel molecule?
- (i) Glucose is present in almost all the carbohydrates
  - (ii) Glucose is the simplest carbohydrate
  - (iii) Glucose has strong tendency to exist in ring form and therefore more stable
  - (iv) Glucose is readily soluble in water
- (g) Oxidative phosphorylation complexes are present in
- (i) outer membrane of mitochondria
  - (ii) inner membrane of mitochondria
  - (iii) cytosol
  - (iv) Golgi bodies

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(h) The entry point for most electrons into respiratory chain is

(i) cytochrome c

(ii) NADH

(iii) complex II

(iv) complex V

(i) Phosphofructokinase converts fuctose-1,6-biphosphate. The source of phosphorus in this phosphorylation is

(i) ATP

(ii) ADP

(iii) Pi

(iv) GTP

(j) Which of the following does not take place in mitochondrial matrix?

(i) Glycolysis

(ii) Conversion of pyruvate to acetyl-CoA

(iii) TCA cycle

(iv) All of the above

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( Continued )

( 5 )

2. Answer any five of the following : 2×5=10

(a) What are the four steps of fatty acid biosynthesis?

(b) State the role of NADH in respiratory chain.

(c) Give the full form of FAD.

(d) What is deamination in urea cycle?

(e) Explain how carbon monoxide (CO) arrests electron transport.

(f) Mention two chemical compounds that inhibit electron transfer.

(g) What are the end products of oxidative deamination?

3. Answer any five of the following : 5×5=25

(a) Write a short note on degradation of heme.

(b) Distinguish between transamination and deamination.

(c) Write a short note on mitochondrial shuttle.

(d) Write a short note on ATP as 'energy currency of cell'.

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(e) Give an account of glucogenic pathways.

(f) Explain the functions and significance of glycogenolysis.

(g) Explain in brief fatty acid beta oxidation.

(h) Distinguish between catabolism and anabolism.

(i) Write the fate of C-skeleton of ketogenic amino acids.

4. Answer any *two* of the following :  $10 \times 2 = 20$

(a) Explain the mechanism of EMP pathways or glycolysis.

(b) Describe intermediary metabolism of carbohydrates.

(c) Describe ornithine cycle along with its regulation.

(d) Explain the mechanism of electron transport chain in mitochondria.

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