

(e) The compound in urine responsible for the color reactions was identified as \_\_\_\_\_.

(f) \_\_\_\_\_ is the precursor for steroid hormones such as progesterone, testosterone etc.

(g) Degradative processes are termed as \_\_\_\_\_.

2. Answer the following briefly :  $2 \times 4 = 8$

(a) What are triacylglycerols ?

(b) State *two* physiological roles of fatty acids.

(c) How liver maintains a constant level of glucose in the blood ?

(d) Define oxidation and reduction.

3. Answer the following: **(any three)**  $5 \times 3 = 15$

(a) Define glycolysis and gluconeogenesis. State the enzymatic differences between glycolysis and gluconeogenesis.

(b) Describe ureotelic, uricotelic and ammonotelic animals.

(c) What is oxidative phosphorylation ? Write a note on the significance of the ADP-ATP high energy cycle.

(d) Discuss aerobic and anaerobic hydrogen transfer reaction. Compare the energy yield of the *two* processes.

(e) Describe catabolism and anabolism.

4. (a) What is glycolysis ? Give an account on the different steps in the glycolytic pathway along with its energetics.  $2+6+2=10$

**Or**

(b) What is Citric Acid Cycle or TCA ? Explain the various steps of citric acid cycle along with its energetics.  $2+6+2=10$

5. (a) What are Ketone bodies ? Under what circumstances are they formed in the body ? Write a note on the consequences of Ketosis.  $2+3+5=10$

**Or**

(b) Give an account of the ornithine cycle of urea synthesis in animals. 10

(b) Which one of the following transcription factors binds to TATA box ?

- (i) TFIID
- (ii) TFIIB
- (iii) TFIIIA
- (iv) TFIIIE

(c) The Wobble hypothesis refers to the less stringent base pairing specificity of the

- (i) 5' end base of the codon
- (ii) 3' end base of the anticodon
- (iii) 5' end base of the anticodon
- (iv) None of the above

(d) Synthesis of peptide bond is catalysed by

- (i) A site of the ribosome
- (ii) P site of the ribosome
- (iii) 23S rRNA
- (iv) tRNA

(e) How do the sugars of RNA and DNA differ ?

- (i) RNA has a six carbon sugar, DNA has a five carbon sugar
- (ii) The sugar of RNA has a hydroxyl group that is not found in sugar of DNA
- (iii) Sugar in DNA has a phosphorous atom attached, whereas sugar in RNA does not
- (iv) All of the above

(f) In its organization, chloroplast DNA is most similar to

- (i) bacteria
- (ii) archaea
- (iii) nuclear DNA of plants
- (iv) nuclear DNA of primitive eukaryotes

(b) Write short notes on : 5+5=10

(i) Nucleosomes

(ii) Plasmids

(c) Distinguish between promoters and enhancers. Describe the steps involved in post transcriptional processing in eukaryotes. 3+7=10

(d) "Prokaryotes have an efficient mechanism for metabolizing lactose." Explain elaborately. 10

(e) What are introns ? Why are the introns removed ? Describe the types of introns and its functions. 2+2+6=10

(f) Discuss in detail the various steps involved in the synthesis of proteins. How does post translational modification affect gene expression ?

8+2=10

6. (a) Explain Cori's cycle with a schematic diagram. Add a note on its significance. 3+2+5=10

**Or**

- (b) What is deamination? Describe the glucogenic and ketogenic amino acids and their deamination. 2+8=10

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2023

**ZOOLOGY**

(Honours Core)

Paper : ZOO-HC-4036

**(Biochemistry of Metabolic Processes)**

Full Marks : 60

Time : Three hours

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

1. Fill in the blanks : 1×7=7
- (a) Adipose cells are the major site of accumulation of \_\_\_\_\_.
  - (b) Lactate and alanine are the major raw materials of \_\_\_\_\_.
  - (c) Human erythrocytes contain no \_\_\_\_\_.
  - (d) Gluconeogenesis and Glycolysis are \_\_\_\_\_ regulated.