

U.G. 4th Semester Examination-2026**ZOOLOGY****[MAJOR-V]****Course Code : ZOO-MJ-T-402****(Biochemistry)****[NEP-2020]****Full Marks : 40****Time : 2½ Hours***The figures in the right hand margin indicate marks.**Candidates are required to give their answer in their own words as far as practicable.*

1. Answer any five of the following: $2 \times 5 = 10$
- a) What is mutarotation?
 - b) Difference between phosphofructokinase and hexokinase.
 - c) What is CPPP? Give one example of saturated fatty acid.
 - d) Difference between alpha helix and beta pleated structure of protein.
 - e) What is glucogenic and ketogenic amino acids? Give one example which goes both way.
 - f) Define C value. What is nucleosome?

[Turn Over]

- g) How many ATP molecules will be synthesized during β -oxidation of a lauric acid (12C saturated fatty acid)?
- h) What is un-coupler reagent? Give an example.
2. Answer any two of the following: $5 \times 2 = 10$
- a) How "carnitine shuttle" operates in mitochondrial membrane?
- b) Differentiate between wax and fat. Describe the process of fatty acid biosynthesis. $2+3$
- c) What is isoelectric point? Describe any three non covalent bond which are responsible for protein structure formation. $2+3$
- d) Enumerate the properties of solubility and tautomerism in purines and pyrimidines.
3. Answer any two of the following: $10 \times 2 = 20$
- a) Mention the role and example of following types of enzymes – oxidoreductase, lyase, hydrolase. What is isoenzyme? Give one example. Define K_m . How velocity of enzyme depends upon substrate concentration and temperature? $3+2+1+2+2$
- b) What is Pasteur effect? How vitamin B_6 can influence transamination? What is essential amino acid? Describe the process of urea cycle. $2+2+2+4$

- c) Write the function of following RNAs - snRNA, miRNA, gRNA. Differentiate between B-DNA and Z-DNA. Why DNA is anti-parallel in nature? Why DNA is more stable with relative to RNA? What is Poly-A tail? $3+2+2+2+1$
- d) What are the cellular advantages of phosphorylating glucose? Describe the energy generation phase of glycolysis pathway. How hexokinase and phosphofructokinase regulate glycolysis? Mention the structural difference between reducing and non-reducing sugar. $3+3+2+2$