DCZ-003-1013022 Seat No. _____

B. Sc. (Sem. III) (W.E.F. 2016) Examination

August - 2022

Biochemistry : Paper - 301

(Biomolecules)

Faculty Code : 003

Subject Code : 1013022

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instruction : Write the answers of any five questions out of 10 questions.

1 (a) Write the correct answers for the following questions : **4**

(1) What is invert sugar?

(2) What is chiral carbon?

(3) Write the general chemical formula for carbohydrate.

(4) Give example of epimers.

(b) Describe the formation of glycoside bond and give its significance. **2**

(c) Write the reaction of osazone formation and give its significance. **3**

(d) Define and classify carbohydrates with examples. **5**

2 (a) Write the correct answers for the following questions : **4**

(1) Define oligosaccharide.

(2) Define pentose sugar and write its example.

(3) Name two sources that are rich in carbohydrate.

(4) Write two examples of polysaccharide.

(b) What is peptidoglycan? **2**

(c) Describe mutarotation with example. **3**

(d) Write the reactions of monosaccharide with one example in each reaction. **5**

3 (a) Write the correct answers for the following questions : **4**

(1) What is the solubility of lipids in water?

(2) The synthesis of glucose from fat is called _____.

(3) Name the two essential fatty acids.

(4) What is rancidity of lipid?

(b) Define phospholipid and give its example. **2**

(c) Give the biological functions of lipid. **3**

(d) Write an essay on triacylglycerols. **5**

4 (a) Write the correct answer for the following questions : **4**

(1) Give two examples of unsaturated fatty acid.

(2) What are prostaglandins?

(3) Liquid form of triglycerides at ordinary room temperature are called _____.

(4) β-oxidation of fatty acids takes place in _____ (organelle).

(b) What is saponification? **2**

(c) Write a short note on wax. **3**

(d) Describe the saturated and unsaturated fatty acids of biological importance, along with their structures. **5**

5 (a) Write the correct answers for the following questions : **4**

(1) Draw general structure of amino acid.

(2) Why primary structure of protein is important?

(3) Give name and draw the structure of hydroxyl group containing amino acid (any one).

(4) What is isoelectric pH?

(b) Define essential amino acid. Name any two essential amino acids. **2**

(c) Write a note on secondary structure of protein. **3**

(d) Enlist physical properties of amino acids. **5**

6 (a) Write the correct answers for the following questions : **4**

(1) Define ampholytes.

(2) Which bond is present in primary structure of protein?

(3) Give example of transporter protein.

(4) What is non standard amino acid?

(b) Explain biuret reaction. **2**

(c) Enlist positively charged amino acids and draw their structures. **3**

(d) Explain the classification of proteins. **5**

7 (a) Write the correct answers for the following questions : **4**

(1) Draw structure of purine.

(2) Explain Chargaff's rule.

(3) Which sugar is present in DNA?

(4) Write the complementary DNA sequence of 5'-CGGCTTA-3'.

(b) How prokaryotic chromosome differs from eukaryotic chromosome? **2**

(c) Write a note on nucleotide. **3**

(d) Explain Griffith's experiment. **5**

8 (a) Write the correct answers for the following questions : **4**

(1) What is nucleoside?

(2) Why DNA is more stable than RNA?

(3) Define Tm.

(4) Enlist different forms of DNA.

(b) Write differences between DNA and RNA. **2**

(c) Draw labelled diagram of B form of DNA. **3**

(d) Describe the types of RNA. **5**

9 (a) Write the correct answers for the following questions : **4**

(1) What is the life span of mature RBC?

(2) Give two examples of structural proteins.

(3) Give the name of the disease caused due to deficiency of Vitamin B1.

(4) How obstructive jaundice occurs?

(b) Give the biological significance of porphyrins. **2**

(c) What is jaundice and when it occurs? **3**

(d) Explain source, daily requirements, functions and deficiency disease for Vitamin C. **5**

10 (a) Write the correct answers for the following questions : **4**

(1) Name the rate limiting enzyme of heme synthesis.

(2) Name two sources that are rich in Vitamin K.

(3) How Hamoglobin is different from chlorophyll?

(4) Which metalloprotein helps to transport oxygen in our body?

(b) Classify the vitamins on the basis of its solubility in water. **2**

(c) Give important biological functions of Vitamin A. **3**

(d) Write a detailed note on breakdown of heme. **5**
