(V(1st Sm.)-Biochemistry-H/CC-1/CBCS

# 2021

# **BIOCHEMISTRY — HONOURS**

## Paper : CC-1

### Full Marks : 50

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

#### 1. Answer any five questions :

- (a) Write the name of two homopolysaccharides which are the storage forms of fuel.
- (b) What is triacylglycerol? Name the specialized cells, which are storage of triacylglycerols in vertebrates.
- (c) What is glycolipid? Give an example.
- (d) What is the difference between hemoglobinopathies and thalassemias?
- (e) What is the Tm of double-stranded DNA?
- (f) Why sucrose is a non-reducing sugar?
- (g) What is epimerism? Give an example.
- (h) What is nitrogenous base present in lecithin?
- (i) 'The absorption maxima of nucleic acid is 260 nm'.— Briefly justify.
- (j) Why DCCD is used in SPPS method?
- 2. Answer any two questions :
  - (a) (i) What are the advantages to use triacylglycerols as stored fuels, rather than polysaccharides glycogen and starch?
    - (ii) What are conjugated proteins? Mention two classes of conjugated proteins indicating the prosthetic groups.
      2+(1+2)
  - (b) (i) Give biochemical explanation for the finding that geographical distribution of glucose-6-phosphate dehydrogenase deficiency correlates well with malarial incidence.

(ii) What is chloride shift?

3+2

- (c) (i) What is prion protein? What does it do?
  - (ii) What is the role of vitamin C in the biosynthesis of collagen? (2+1)+2
- (d) (i) How many double bonds are there in arachidonic acid? Mention their positions.
  - (ii) Draw the structure and biological importance of chitin.  $1\frac{1}{2}+(1\frac{1}{2}+2)$

#### **Please Turn Over**

 $2 \times 5$ 

#### V(1st Sm.)-Biochemistry-H/CC-1/CBCS

- 3. (a) What is 'Salting out' of proteins?
  - (b) Describe the predominate base pairing in nucleic acid structure according to Watson-Crick model along with their structures.
  - (c) What is the clinical significance of HbF?
  - (d) The three dimensional structure of which protein has been carried out *first* from x-ray diffraction study? What are the functions of this protein? 2+3+2+(1+2)

#### *0r*,

- 4. (a) Classify fatty acids with examples. Which type is prevalent in human body?
  - (b) Name two common types of secondary structures. Mention how they are preserved.
  - (c) What is the difference between  $D^-$  and  $L^-$  sugars? (3+1)+(2+2)+2
- 5. (a) How ring structure of glucose is formed?
  - (b) What are deoxy sugars? Give examples.
  - (c) What is the special feature of sphingomyelin?
  - (d) Draw the structure of cholesterol.

#### Or,

- 6. (a) What are the factors responsible for holding the two strands of DNA together?
  - (b) What are glycosaminoglycan? Give examples with structures.
  - (c) State and explain Bohr effect. 2+(2+2)+(2+2)
- 7. (a) Describe carbohydrate as informational molecules.
  - (b) Discuss the role of lipid as signalling molecules with examples.
  - (c) What is the drawback of using carboxypeptidase in c-terminal residue determination? 3+(3+1)+3

#### *Or*,

- 8. (a) Name the N-terminal amino acid identification method :
  - (i) Which is suitable for as little as 100 picomoles of proteins.
  - (ii) Where after releasing the N-terminal amino acid residue, the rest of the polypeptide chain remains intact.
  - (b) Draw the structure of sialic acid. Name an use of it.
  - (c) What is glutathione? Show its sequence. What is its utility in cells?
  - (d) What does  $A_{260} / A_{280}$  indicate?

#### $2+(2+1)+(1+1\frac{1}{2}+1)+1\frac{1}{2}$

3+3+2+2

#### (2)