SC

SEAT No._____ No. of Printed Pages : 2

Note: Answer to all questions (including multiple choice questions) should be written in the provided answer book only. For MCQ, do write both correct option(s) as well as answers.

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SARDAR PATEL UNIVERSITY
M.Sc. Chemistry (Semester II)
Tuesday, 26th March, 2019
10:00 AM – 1:00 PM
PS02ECHE22- INTRODUCTION TO BIOCHEMISTRY (Elective Paper)

TOTAL MARKS: 70

Q.1 Tick mark / select the correct answer for the following. (*Only correct option against given question number needs to be written in provided answer book*) **(08 Marks)**

1) One of the following acid is present in gooseberry and tomatoes:
   a) Arachinodic acid
   b) Succinic acid
   c) Lactic acid
   d) Citric acid

2) One of the following disease occurs due to deficiency of essential fatty acid.
   a) Atherosclerosis
   b) Cancer
   c) Ageing
   d) Phrynoderma

3) One of the following type of bond is an amide type of covalent chemical bond linking two consecutive alpha-amino acids from C1 (carbon number one) of one alpha-amino acid and N2 (nitrogen number two) of another along a peptide or protein chain
   a) Peptide bond
   b) Disulfide bond
   c) Ionic bond
   d) Hydrogen bond

4) Each subunit of hemoglobin is composed of a protein chain tightly associated with one of the following non-protein prosthetic group.
   a) Heme
   b) Globin
   c) Manganese
   d) Copper

5) One of the following pair is an example of non-reducing sugar
   a) Sucrose and Trehalose
   b) Sucrose and Glucose
   c) Sucrose and Fructose
   d) Sucrose and Galactose

6) Which of the following enzyme from Jack bean was the first enzyme to be crystallized, accomplished by James. B. Sumner.
   a) Zymase
   b) Invertase
   c) Urease
   d) Diastase

7) With which base is the 5' end of m-RNA is capped?
   a) 5-Methyl Uridine
   b) 3- Methyl cytosine
   c) 7-Methyl Guanosine
   d) 5 - Amino Purine

8) Number of hydrogen bonds between adenosine and thymine is:
   a) Four
   b) Three
   c) Two
   d) One

(P.T.O.)

Q.2 Answer **any seven** from the following: **14**

a) What are vitamers? Write vitamers of Vitamin -A
b) Draw the structure of 'plasmalogen' and 'cardiolipin'
c) List any four function of proteins.
d) Categorize water soluble and fat-soluble vitamins with examples. Explain the basic difference between them.
e) Explain the terms 'induction' and 'repression' citing suitable examples.
f) What is the basic difference between glycoprotein and proteoglycans?
g) List any four classes of enzyme with suitable examples
h) Explain optical specificity with suitable examples.
i) Define 'Epimer' and 'Enantiomers'

Q.3 **(A)** Discuss the role of vitamin A in visual cycle. **6**

(B) Enlist different tests to check the purity of fats and oils and describe them in detail. **6**

OR

(B) What are steroids? Describe the structure and functions of cholesterol. **6**

Q.4 **(A)** Describe the primary structure of protein in detail. **6**

(B) Give structure and function of hemoglobin and its coordinate chemistry involved in it. **6**

OR

(B) Classify amino acids based on their polarity and nutritional value. **6**

Q.5 **(A)** What are isomers. Draw the possible isomers of glucose. **6**

(B) Write short notes on hyaluronic acid and Heparin **6**

OR

(B) Write a short note on: **6**
(i) Ionization of water (ii) Solubility of polar solutes in water

Q.6 **(A)** Explain the Watson and Crick's model of DNA. Add a note on the types of DNA. **6**

(B) Discuss 'Enzyme inhibition' **6**

OR

(B) Describe the mechanism of action of enolase enzyme. **6**