

B.Sc. Part-I (Semester-I) Examination**1S : BIOCHEMISTRY****(Biomolecules and Nutrition)**

Time : Three Hours]

[Maximum Marks : 80

Note :— All questions are compulsory and carry equal marks except question No. 1 carrying 8 marks.1. (A) Fill in the blanks ($\frac{1}{2}$ mark each) :

- (i) The charged molecule which is electrically neutral is known as _____. $\frac{1}{2}$
- (ii) Nucleic acids are polymers of _____. $\frac{1}{2}$
- (iii) The Pyrimidine present in DNA but absent in RNA is _____. $\frac{1}{2}$
- (iv) The vitamin required for carboxylation reaction is _____. $\frac{1}{2}$

(B) Choose the correct alternatives :

- (1) Which one of the following is not a basic amino acid ?
 - (a) Arginine
 - (b) Histidine
 - (c) Lysine
 - (d) Glycine $\frac{1}{2}$
- (2) Deficiency of which one of the following causes Night blindness ?
 - (a) Vitamin A
 - (b) Vitamin K
 - (c) Vitamin C
 - (d) Vitamin D $\frac{1}{2}$
- (3) Number of base pairs present in B-DNA are :
 - (a) 10
 - (b) 11
 - (c) 9
 - (d) 7 $\frac{1}{2}$
- (4) One gram of carbohydrate produces :
 - (a) 4 K cal
 - (b) 9 K cal
 - (c) 10 K cal
 - (d) 3 K cal $\frac{1}{2}$

(C) Answer in one sentence :

- (a) Define essentials of Amino Acids 1
- (b) Define RQ 1
- (c) Define Acid Value 1
- (d) Define Vitamin. 1

2. Describe structure and functions of cellulose, starch and chondroitin sulfate. 12

OR

Describe with examples Mutarotation, Optical Activity and Epimerism in Carbohydrates. 12

- 3. (a) Discuss with examples Saponification value and Iodine number of fats. 4
- (b) Describe structure and functions of sphingomyelin. 4
- (c) Describe structure and functions of Ergosterol. 4

OR

- (p) Discuss Nomenclature and structures of unsaturated fatty acids. www.FirstRanker.com 4
- (q) Discuss the Chemistry and functions of Gangliosides. 4
- (r) Explain Rancidity of fats. 4
4. Describe classification of proteins based on solubility, shape and composition and add a note on Zwitter ionic structure of amino acids. 12

OR

Describe structure and functions of Myoglobin, Keratins and add a note on salting out of Proteins. 12

5. (a) Explain the importance of Iodine and Calcium in human nutrition. 4
- (b) Explain diet for old persons. 4
- (c) Describe in brief nutritional importance of proteins. 4

OR

- (p) Describe Fatty liver. 4
- (q) Explain the concept of SDA and RQ. 4
- (r) Explain Nutritional importance of lipids. 4
6. (a) Draw the structure of ATP, GTP, TTP and CTP. 4
- (b) Describe in brief double Helical Structure of DNA. 4
- (c) Describe Hershey and Chase experiment. 4

OR

- (p) Explain Physiological role of Bile pigments. 4
- (q) Explain chemistry of Cytochromes. 4
- (r) Describe structure and functions of t-RNA. 4
7. (a) Describe structure, functions and deficiency of Vitamin B₆. 4
- (b) Describe Chemistry and functions of Hormones of Adrenal Medulla. 4
- (c) Describe sources, daily allowances and functions of Vitamin B₁₂. 4

OR

- (p) Describe Hormones of Posterior Pituitary Gland. 4
- (q) Describe classification of Hormones. 4
- (r) Describe structure and functions of Vitamin D. 4