



MH-4652

Seat No. _____

First Year M. B. B. S. Examination

July - 2016

Biochemistry : Paper - I

Time : 3 Hours]

[Total Marks : 50

- Instructions :** (1) Each section to be answered in separate answer book.
(2) Answer should be brief and to the point.

SECTION - I

- 1 State true or false with reasons on any six : **1×6=6**
- (a) Phosphatidylinositol is a precursor of second messenger.
 - (b) Plasma proteins maintain blood volume.
 - (c) A single turn of B form of DNA contains 12 base pairs.
 - (d) Choline is a lipotropic substance.
 - (e) Ribosomal-RNA and transfer-RNA are involved in protein synthesis.
 - (f) Denatured proteins are biologically inactive.
 - (g) Immunoglobulin-M is very effective for agglutination of bacteria.
 - (h) Ribozymes play key role in the maturation of messenger RNA.
- 2 (A) Read the following case report and answer the **1×5=5** questions :
- A school going boy was brought to the hospital with puffy face and generalized edema. On examination- slight pallor present, pitting edema present, urine was frothy. Laboratory investigations showed : Urine albumin : +++, serum total protein: 4.2 gm/dl, serum albumin : 1.3 gm/dl. Physician provisionally diagnosed the patient as suffering from "nephrotic syndrome".

- (i) Give normal concentrations of serum albumin along with other serum proteins.
 - (ii) Calculate albumin : globulin ratio in this case.
 - (iii) Why low concentration of serum albumin is associated with pitting edema?
 - (iv) In which organ albumin is synthesized? Name a test by which albumin is detected qualitatively in urine?
 - (v) Enumerate various causes of hypoalbuminemia.
- (B) Discuss the following : 3+2=5
- (i) Diagnostic significance of enzymes
 - (ii) Respiratory distress syndrome in premature babies.

- 3** Write short notes on any three : **3×3=9**
- (i) Classification of lipids
 - (ii) Functions of glycosaminoglycans
 - (iii) Biological functions of eicosanoids
 - (iv) Abnormal hemoglobins
 - (v) Structure and functions of ribosome.

SECTION - II

- 4** Give your comments with justification : (any six) **1×6=6**
- (a) Multiple factors stabilize tertiary and quaternary structure of proteins.
 - (b) Enzymes are effective and highly specific catalysts.
 - (c) High energy phosphates play a central role in energy capture and transfer.
 - (d) Omega 3 fatty acids are anti inflammatory.
 - (e) Coding regions are often interrupted by intervening sequences.
 - (f) Bacterial DNA-dependent RNA polymerase is a multisubunit enzyme.
 - (g) Nutritional disorders can impair collagen maturation.
 - (h) Oxygenation of hemoglobin triggers conformational changes in apoprotein.

5 Discuss any two of the following : **5×2=10**

- (a) Principle, types and applications of chromatography.
- (b) Structure and functions of plasma membrane.
- (c) Enzyme inhibitions.

6 Write short notes on any three : **3×3=9**

- (a) Southern blot technique
- (b) Biologically active nucleotides
- (c) Restriction fragment length polymorphism (RFLP)
- (d) Topoisomerases
- (e) DNA repair mechanisms.
