

21415

3 Hours / 80 Marks

Seat No.

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Instructions : (1) All Questions are *compulsory*.

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

Marks**1. Solve any FIVE of the following :****20**

(a) Define the following :

(i) Metabolism

(ii) Abnormal metabolism

(iii) Catabolism

(iv) Anabolism

(b) What is an active site of an enzyme and explain 'Lock & Key Model' & 'Induced fit Model' ?

(c) Explain acid-base behaviour of amino acids.

(d) Define and classify carbohydrates with examples.

(e) Explain the role of Vitamin-A in vision.

(f) Discuss biochemical role of calcium and diseases caused by calcium deficiency.

(g) Define following terms with examples :

(i) Epimers

(ii) Anomers

P.T.O.

2. Solve any THREE of the following : 12

- (a) Define and classify vitamins with examples. Name the vitamins belongs to B-complex group.
- (b) Explain water balance of normal individual.
- (c) Enlist and explain different protein deficiency diseases.
- (d) Discuss following reactions of monosaccharides :
 - (i) Osazone formation
 - (ii) Oxidation
- (e) Enumerate the factors affecting rate of enzyme catalysed reaction. Discuss in detail effect of enzyme concentration and effect of temperature.

3. Solve any THREE of the following : 12

- (a) Give physiological functions, deficiency symptoms and structure of Niacin.
- (b) Define :
 - (i) Acid value
 - (ii) Saponification value
 - (iii) Iodine number
 - (iv) Reichert-Mieseel number
- (c) What are electrolytes ? Give functions of electrolytes in our body.
- (d) Name the respective vitamin responsible for nutritional deficiency cause :
 - (i) Osteoporosis
 - (ii) Blood clotting disorder
 - (iii) Beri-Beri
 - (iv) Night-blindness
 - (v) Pernicious anaemia
 - (vi) Scurvy
 - (vii) Rickets
 - (viii) Egg white injury
- (e) Draw a neat labelled diagram of typical animal cell. Give functions of Mitochondria and Nucleus.

4. Solve any THREE of the following :**12**

- (a) What are abnormal constituents of urine ? Give their significance in diseases.
- (b) Define and classify amino acids by giving suitable examples.
- (c) Give the structures of following :
 - (i) D-Glucose
 - (ii) Fructose
 - (iii) Galactose
 - (iv) Mannose
- (d) Give structure & colour reactions of cholesterol.
- (e) Differentiate between competitive and non-competitive enzyme inhibition.

5. Solve any THREE of the following :**12**

- (a) Define :
 - (i) Endoenzyme
 - (ii) Exoenzyme
 - (iii) Induced enzyme
 - (iv) Isoenzymes
- (b) Explain biological functions of proteins.
- (c) Define anaemia. Enlist different types of anaemia. Explain aplastic anaemia and megaloblastic anaemia.
- (d) Explain the following :
 - (i) Essential fatty acids
 - (ii) Non-essential fatty acids
- (e) How acetone and sugar are detected in urine ?

6. Solve any THREE of the following :**12**

- (a) Explain in brief reactions involved in TCA cycle.
 - (b) Give an account of metabolism of fats with reference to β -oxidation.
 - (c) Explain formation of urea in body.
 - (d) Explain reactions involved in glycolysis.
 - (e) Describe the following :
 - (i) Benedict's test
 - (ii) Barfoed's test
 - (iii) Fehlings test
 - (iv) Saliwanoff's test
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