



# ANDHRA UNIVERSITY

## TRANS-DISCIPLINARY RESEARCH HUB

### PAPER-I: BIOCHEMISTRY AND METABOLIC REGULATION

#### Unit – I

Carbohydrates: Glycolysis and its regulation. TCA cycle and regulation, Gluconeogenesis and its regulation, pentose phosphate pathway, Glycogen metabolism and its regulation. In born errors of carbohydrate metabolism.

#### Unit – II

Fatty acids: Oxidation and Biosynthesis of fatty acids and regulation. Biosynthesis of cholesterol and its regulation, formation of bile acids. Role of liver and adipose tissue in lipid metabolism. In born errors of lipid metabolism

#### Unit – III

Proteins turn over – Role of ubiquitin. General metabolic reactions of amino acids, Ketogenic and glucogenic amino acids. Urea cycle and its regulation. In born errors of amino acid metabolism. Protein calorie malnutrition - Kwashiorkar and Marasmus.

#### Unit – IV

Gastrointestinal hormones - Gastrin, secretin and cholecystokinin.

Pancreatic hormones – insulin and glucagon, Endocrine disorders of pancreas – Diabetes mellitus,

Thyroidal hormones – Chemistry, function and metabolism of T3 and T4. Hypo and hyper thyroidism, Parathyroid hormones – Parathormone and calcitonin,

#### Unit – V

Hypothalamic, Adeno hypophysial and neurohypophysial hormones, Hormones of adrenal cortex and adrenal medulla, Chemistry, biosynthesis and role of androgens, estrogens and progesterone.

#### Reference Books

1. Text Book of Biochemistry with clinical correlations-Thomas M. Devlin, 7<sup>th</sup> ed
2. Chemical chemistry -W.J.Marshall&S.K.Bangert, 5<sup>th</sup> ed
3. General Endocrinology –Turner C.D, J.T.Bagnara, 6<sup>th</sup> ed
4. Text book of Biochemistry –E.S.West, W.R.Todd et al., 4<sup>th</sup> ed
5. Principles of Biochemistry by Lehninger –D.L.Nelson, M.M.Cox7<sup>th</sup> ed



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**Time: 3 hours**

**Max. Marks: 100**

**Answer 5 questions. Each question carries equal marks.**

1. a) Justify why the TCA cycle is the final common oxidative pathway for foodstuffs.

Or

b) Describe the Pentose Phosphate pathway and its significance.

2. a) Discuss the biosynthesis and regulation of fatty acids.

Or

b) Give a detailed account on in born errors of lipid metabolism.

3. a) Write the general reactions of amino acid metabolism

Or

b) Explain the Urea cycle and its regulation.

4. a) Discuss the endocrine disorders of Pancreas.

Or

b) Describe the chemistry, functions and metabolic defects of T3 and T4

5. a) Explain the biosynthesis, metabolic functions and disorders of adrenal cortex hormones.

Or

b) Describe the Chemistry, biosynthesis and role of androgens

6. a) Explain the biosynthesis, metabolic functions and disorders of adrenal cortex hormones.

Or

b) Describe the Chemistry, biosynthesis and role of androgens

7. a) Explain the biosynthesis, metabolic functions and disorders of adrenal cortex

hormones.

Or

`b) Describe the Chemistry, biosynthesis and role of androgens

8. a) Explain the biosynthesis, metabolic functions and disorders of adrenal cortex hormones.

Or

`b) Describe the Chemistry, biosynthesis and role of androgens