ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS) , VISAKHAPATNAM

Time: 4 hrs./week **BIO CHEMISTRY** Max. Marks : 100

OBJECTIVES : To enable the student to

- Understand the relationship between Biochemistry and Nutrition.
- Understand the chemistry , digestion, absorption and metabolism of nutrients in health.

COURSE :

UNIT I : a. **Enzyme** – definition, classification (I.U.B) , properties mode of action, specificity of enzyme action. Factors affecting rate of enzyme activity. Different methods of inhibition Michaelis – Menton model .

b. **Coenzyme** - List and one major function of each coenzyme.

UNIT II : CARBOHYDRATES – a. Definition and classification , occurrence, structure and properties. HMP Shunt – No reactions and pathways

b. **METABOLISM : Catabolism** : Glycolytic pathway, Kreb's Tricarboxylic Acid cycle and glycogenolysis. **Anabolism** : Glycogenesis ; Gluconeogenesis.

UNIT III : LIPIDS : a. Definition and classification according to Bloor. Structure and properties.

b. **Metabolism – Catabolism :** oxidation of fatty acids ; Ketone bodies and their oxidation. **Anabolism** : Biosynthesis of fatty acids, triglycerides.

UNIT IV : Biological oxidation, Electron transport system , Names and function of high energy compounds.

UNIT V : PROTEIN : a. Definition , composition, classification and conformation (Primary, secondary, tertiary and quaternary,) properties and denaturation.

b. Amino acids : General structure, classification, properties, colour reactions.

c. Protein metabolism : Transmination, transmidation, deamination and decarboxylation of amino acids , glycogenic and ketogenic amino acids Urea cycle.

d. Role of Nucleic acid in protein synthesis.

REFERENCES :

1. Rama Rao, A.V.S.S (1989) Text Book of Biochemistry, L.K.& S Publishers, Visakhapatnam.
2. Comn, E.E and Stump, P.K. (1989) Outline of Biochemistry. Wiley Eastern Ltd. New Delhi.
3. Kleiner, I.S. and Orten, J.M. (1979) Biochemistry. C.V. Mosby & Co., St.Louis .
4. Swaminathan, M (1981) Biochemistry For Medical Students, Geeta Book House Publishers Mysore.
5. Kuchel, P.W. and Ralston, G.B. (1988) Theory And Problems of Biochemistry, Mc Graw Hill Book Co., New York.
6. Berry A.K. (1989) , Elementary Biochemistry, Emkay Publishers, New Delhi (Text book) .

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ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS) , VISAKHAPATNAM

Time:3 Hrs/Week **NUTRITIONAL BIO CHEMISTRY** Max. Marks : 100

Practicals

OBJECTIVES : To enable the student to –

- Understand the chemistry of nutrients.
- Learn the principles and procedure of food and biochemical analysis.

COURSE :

UNIT I **:** Introduction to glassware and common laboratory techniques like pipetting, titrating and weighing with chemical balance.

UNIT II **: CARBOHYDRATES :**

a. Qualitative Analysis : Molisch's Benedict's . Bafoed's Selvinoff's , Bial's, Solubility, Phenylhydrazine tests and test for galactose. Hydrolysis with enzyme and acids and demonstration of osmosis.
b. Estimation of reducing sugars – Benedict's quantitative method.

UNIT III **: PROTEIN :**

a. Qualitative Analysis : Bluret, Millon's Ninhydrin, Hopkin Cole, Lead Sulphide, Xanthoproteic and Sakaguchi tests. Precipitation by alakaloidal agents, heavy metals and denaturation by acids and alcohol. Precipitation of albumin and globulin by saturated solutions of ammonium sulphate.
b. Estimation of proteins in serum (Demonstration)
c. Estimation of protein by Format Titration.

UNIT IV **: LIPIDS :**

a. Qualitative Analysis : Solubility, Acroiein, and Fiske – Subbarao, tests and tests for cholesterol and unsaturation.
b. Analysis of oil an fats; Iodine number.

UNIT V **:** Determination of Ascorbic acid in suitable food

UNIT VI **:** Estimation of Urinary Creatinine (demonstration)

UNIT VII **:** Estimation of Fat by Soxhlet extraction method (optional)

REFERENCES :

1. Plummer, D.T. (1979) An Introduction to Practical Biochemistry, Tata MC Graw Hill Book Co., Bombay.
2. Oser, B.L. (1961) Hawk's Physiological Chemistry , Tata MC Graw Hill Book Co. Bombay.

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