## Kanya Maha Vidyalaya, Jalandhar (Autonomous)

### SCHEME AND CURRICULUM OF EXAMINATIONS OF ONE YEAR DIPLOMA PROGRAMME Post Graduate Diploma in Nutrition and Dietetics (Session 2023-2024)

## (Credit Based Continuous Evaluation Grading System)

Semester IV								
Course code	Course type	Course Titles	Credits L-T-P	Max Marks				Evamination
				T-4-1	Ext.		CA	time(in
				Total	L	Р	CA	Hours)
PNDM - 1284	C	Nutritional Biochemistry	2-0-2	100	60	20	20	3+3

# Post Graduate Diploma in Nutrition and Dietetics (Semester-I) Session: 2023-2024 NUTRITIONAL BIOCHEMISTRY COURSE CODE: PNDM – 1284

#### **COURSE OUTCOMES:**

CO (1): To Understand the knowledge of classification and properties of bio molecules. CO (2): To Understand the concept of intermediary metabolism of carbohydrates, proteins and lipids

CO (3): To review the knowledge of enzymes, hormones and inborn errors of metabolism CO (4): To understand the concept of vitamins, minerals and antioxidant

# Post Graduate Diploma in Nutrition and Dietetics (Semester-I) Session 2023-2024 NUTRITIONAL BIOCHEMISTRY (Theory) COURSE CODE: PNDM - 1284

Time:3 Hours L-T-P 2-0-2 Max.Marks:100 Practical: 20 CA: 20 Theory: 60

#### **Instructions for the Paper Setter**

- Eight questions of equal marks are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four).
- Candidates are required to attempt five questions, selecting at least one question from each section.
- The fifth question may be attempted from any Section.
- Each question carries 1 mark.

#### UNIT I

1 Classification and properties of bio molecules:

• Carbohydrates- Classification and importance of monosaccharides, disaccharides, and polysaccharides (without structures)

• Classification of lipids (without structures)

• Classification of amino acids and proteins- Essential and non-essential amino acids (without structures)

### UNIT II

- 2. Intermediary metabolism: Overview (no structures)
- Carbohydrates- Glycolysis, gluconeogenesis, TCA cycle, Blood sugar regulation
- Proteins- Urea cycle
- Lipids- β-oxidation and de novo synthesis of fatty acids, ketone bodies

### UNIT III

- 3. Enzymes:
- Definition and classification of enzymes; coenzymes
- Factors affecting enzyme catalysis
- 4. Hormones:
- Introduction to hormones
- Mechanism of hormone action; Biological role of insulin and glucagon
- 5. Inborn errors of metabolism

#### UNIT IV

#### 6. Vitamins: Vitamins- Biochemical role

- Fat soluble vitamins A, D, E & K
- Water soluble vitamins- (B1 and B2 only) and C
- 7. Minerals (elementary aspects):
- Macro minerals- Calcium, Sodium, Potassium, Magnesium
- Microminerals- Iron, Copper, Zinc, Iodine.

8. Antioxidants

### **References:**

- Textbook of Biochemistry IGNOU
- Berg JM, Tymoczko JL and Stryer L. (2002) Biochemistry 5th ed. W.H. Freeman.
- West ES, Todd WR, Mason HS and Van Bruggen JT: Textbook of Biochemistry, 4th Ed. Amerind Publishing Co. Pvt. Ltd.

• Murray RK, Granner DK, Mayes PA and Rodwell VW, (2003) Harper's Illustrated biochemistry, 26th ed. McGraw- Hill (Asia).

• Nelson DL and Cox MM. (2005) Principles of Biochemistry, 4th ed. Freeman and Company.

- Voet D and Voet JG. (2004) Biochemistry 3rd ed. John Wiley and Sons.
- Principles of Biochemistry by Lehninger
- Biochemistry by U. Satyanarayana and U. Chakrapani

# Post Graduate Diploma in Nutrition and Dietetics (Semester-I) Session 2023-2024 NUTRITIONAL BIOCHEMISTRY (Practical) COURSE CODE: PNDM – 1284

#### **COURSE OUTCOMES:**

CO (1): Qualitative analysis of monosaccharide, disaccharide and polysaccharide.

CO (2): Quantitative estimation of glucose.

CO (3): To test the reaction of protein fats and carbohydrate in bread, milk and egg

# Post Graduate Diploma in Nutrition and Dietetics (Semester-I) Session 2023-2024 NUTRITIONAL BIOCHEMISTRY (Practical) COURSE CODE: PNDM-1284

Time:3 Hours

Max. Marks: 20

### CONTENTS:

1. Qualitative analysis of monosaccharide, disaccharide and polysaccharide.

2. Quantitative estimation of glucose.

3. To test the reaction of protein fats and carbohydrate in bread, milk and egg.