

**Units of Syllabus to be included in Section - A and Section – B Question Papers of
UTU Examination as per INC & UTU Syllabus.**

I Year P.B.B.Sc. (N)

Paper – Biochemistry and Biophysics (030150103)

Section – I

Unit	Learning Objectives	Hrs.	Marks	Remark
I	<ul style="list-style-type: none"> - Introduction : Importance of biochemistry in nursing - Study of cell and its various components. - Water and Electrolytes: water sources, property & functions in human body. - Water and fluid balance. - Electrolyte of human body, functions, sources. - Enzymes - Mechanism of action - Factors affecting enzyme activity - Diagnosis and its applications - Precautions for handling specimens for enzyme estimation - Digestion and absorption of carbohydrates, proteins and fats - Various factors influencing the digestion and absorption, mal absorption syndrome. 	09	12	
II	<ul style="list-style-type: none"> - Carbohydrates: Catabolism of Carbohydrates for energy purpose. - Mitochondrial oxidation and oxidation phosphorylation. - Fats of glucose in the body. Storage of glucose in the body gluconeogenesis, glycogenesis and neoglucogenesis, blood glucose and its regulation. - Glucose Tolerance test (GTT) hyperglycemia, hypoglycemia and glycemia. - Protein: Amino acids, hormones. - Essential amino acids. Biosynthesis of protein in the cells. - Role of nucleic acid in protein synthesis. - Nitrogenous constituents of urine, blood, their origin-urea cycle, uric acid formation, gout. - Plasma proteins and their functions. 	10	12	
III	<ul style="list-style-type: none"> - Fat: Biosynthesis of fats and storage of fats in the body. - Role of liver in fat metabolism. - Biological importance of important lipids and their functions. - Cholesterol and lipoprotein. <ul style="list-style-type: none"> - Sources, Occurrence and distribution. - Blood level and metabolism. - Ketone bodies and utilization. - Inter – relationship in metabolism and cellular control of metabolic processes. 	11	14	
Total		30	38	

Note:

Unit I – Includes Unit – I, II & III of INC Syllabus.

Unit II - Includes Unit –IV & V of INC Syllabus.

Unit III - Includes Unit –VI of INC Syllabus.

Section – II

Unit	Learning Objectives	Hrs.	Marks	Remark
I	<ul style="list-style-type: none"> - Introduction :Concepts of unit and measurements. - Fundamental and derived units. - Units of length, weight, mass, time. <ul style="list-style-type: none"> - Vector and scalar motion, speed, velocity and acceleration Gravity: Specific gravity, centre of gravity, principles of gravity. - Effect of gravitational forces on human body. - Application of principles of gravity in nursing. - Force, work, Energy: Their units of measurement. - Type and transformation of energy, forces of the body, static forces. - Principles of machines, friction and body mechanics. - Simple mechanics – lever and body mechanics, pulley and traction, incline plane, screw. <ul style="list-style-type: none"> - Application of these principles in nursing. 	10	14	
II	<ul style="list-style-type: none"> - Heat Nature, measurement, transfer of heat - Effects of heat on matter - Relative humidity, specific heat - Temperature scales - Regulation of body temperature - Use of heat for sterilization - Application of these principles in nursing - Light: Laws of reflection - Focusing elements of the eye, defective vision and its correction, use of lenses. - Relationship between energy, frequency and wavelength of light - Biological effects of light. - Use of light in therapy. - Application of these principles in Nursing. - Pressures: Atmospheric pressure, hydrostatic pressure, osmotic pressure. - Measurements of pressures in the body <ul style="list-style-type: none"> - Arterial and venous blood pressures - Ocular pressure - Intracranial pressure - Applications of these principles in nursing. 	09	12	
III	<ul style="list-style-type: none"> - Sound: Frequency, Velocity and intensity - Vocalization and hearing - Use of ultrasound. Noise pollution and its prevention - Application of these principles in nursing. - Electricity and Electromagnetism: Name of electricity. Voltage, current, resistance and their units. - Flow of electricity in solids, electrolytes, gases and vacuum. - Electricity and human body. - ECG, EEG, EMG, ECT - Pace makers and defibrillation 	11	11	

	<ul style="list-style-type: none"> - Magnetism and electricity. - M.R.I Scanning, CAT Scan - Atomic Energy: Structure of Atom, Isotopes and Isobars. - Radioactivity: Use of radioactive isotopes. - Radiation protection units and limits, instruments used for detection of ionising radiation. X-rays. - Principles of Electronics: Common electronic equipments used in patient care. 			
Total		30	37	

Note:

Unit I – Includes Unit – I , II, III & IV of INC Syllabus.

Unit II - Includes Unit – V, VI, & VII of INC Syllabus.

Unit III - Includes Unit – VIII, IX, X & XI of INC Syllabus.