

**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**

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

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

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

**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.