

**Rajiv Gandhi University of Health Sciences, Karnataka**  
**4<sup>th</sup> T Block Jayanagar, Bengaluru**

Curriculum delivery design of B. Pharm. course of Semester I & II System  
w.e.f Academic year 2017-18

**SEMESTER-I**

**BP101T: HUMAN ANATOMY AND PHYSIOLOGY-I**

1. Departmental objectives (what the learners will be able to perform after completing the subject):

A. Learning Objectives:

Upon completion of this course the student should be able to

- a. Explain the gross morphology, structure and functions of various organs of the human body.
  - b. Describe the various homeostatic mechanisms and their imbalances.
  - c. Identify the various tissues and organs of different systems of human body.
  - d. Perform the various experiments related to special senses and nervous system.
  - e. Appreciate coordinated working pattern of different organs of each system
2. Content distribution as per the list of topics, time allotted for each topic, distribution for 'Must know', 'Desirable to know' and 'Nice to know' and the probable weightage.

The following table can also be a reference frame for continuous and formative assessment of learning. If the curriculum management is scheduled as per the tabulation, there can be clarity for both learners and teachers to take stock of the mastery achieved in each objective. This will also help for professional excellence that goes beyond the examination process.

<b>UNIT-I</b>	<b>Hours: 10</b>	<b>Weightage: 16 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>	
	<b>Introduction to human body, Cellular level of organization, Tissue level of organization</b>	
<b>Must know</b>	Define anatomy and physiology, basic terminologies, planes, body positions and cavities. Levels of structural organization, body systems, basic life process, Structure and functions of cell, cell junctions, general principle of cell communication,	
<b>Desirable to know</b>	Homeostasis. Cell division (mitosis and meiosis). Intracellular signaling pathways activation by extra cellular molecule. Contact – dependent, paracrine, synaptic and endocrine.	
<b>Nice to know</b>	Receptors, channels, cell membrane enzymes and mitochondrial enzymes. Interrelation with each tissue and organs	

<b>UNIT-II</b>		<b>Hours: 10</b>	<b>Weightage: 16 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>		
	<b>Integumentary system, Skeletal system, Joints</b>		
<b>Must know</b>	Structure and function of skin. Classification of skeletal system, axial and appendicular skeletal bones-structure, composition, characteristics, functions. Physiology of skeletal muscle contraction, neuro-muscular junction. Structural and functional classification of joints, types of joints and its articulations		
<b>Desirable to know</b>	Role of skin in relation with nervous system and defence mechanism (immunity). Dermatitis. Bones disorders and etiology. Disorders of joints and auto immune disorders		
<b>Nice to know</b>	Skin glands, Mineralization of bone, Hyaluronic acid lubrication		

<b>UNIT-III</b>		<b>Hours: 10</b>	<b>Weightage: 22 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>		
	<b>Body fluids and blood, Lymphatic system</b>		
<b>Must know</b>	Composition, functions of blood, haemopoiesis, RBC, WBC-types, function, platelets, blood groupin, Rh factor( erythroblastosis foetalis) transfusions, clotting factors, clotting pathways, coagulation mechanisms. Compostion and function of lymph. Structure and function of lymph node and spleen, formation and composition of tissue fluid		
<b>Desirable to know</b>	Reticulo endothelial system, disorders of blood and clotting disorders. normal value haemoglobin, Normal counts of RBC, different types of WBC and platelets. Lymphatic circulation, vessels		
<b>Nice to know</b>	Bombay blood group, formation of body fluids from blood		

<b>UNIT-IV</b>		<b>Hours: 8</b>	<b>Weightage: 19 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>		
	<b>Peripheral nervous system, Special senses</b>		
<b>Must know</b>	Classification of Peripheral nervous system( cranio-spinal nerves, somatic nervous system and autonomic nervous system), anatomical and physiological differences between sympathetic and para sympathetic nervous syStem, origin and functions of spinal nerves and cranial nerves Structure of eye and physiology of vision. r and physiology of ear (auditory and non auditory)		
<b>Desirable to know</b>	Origin and functions of spinal nerves and cranial nerves. Structure and functions of tongue and nose, Disorders- myopia, hyper metropia, glaucoma, keratitis, cataract, night blindness etc.		
<b>Nice to know</b>	Neurotransmitters, receptors, signalling pathways, Peripheral nervous system Neuroglia.		

<b>UNIT-V</b>	<b>Hours: 7</b>	<b>Weightage: 22 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>	
	<b>Cardio vascular system</b>	
<b>Must know</b>	External and internal anatomy of heart, conduction system , cardiac cycle, waves and segments of ECG, blood pressure and regulation of blood pressure(Renin angiotensin system), factors affecting of regulation.	
<b>Desirable to know</b>	Layers of arterial vessels, structure and functions of arteries, vein and capillaries, blood circulation (systemic, pulmonary, coronary and portal) , pulse, heart sounds, heart rate, heartbeat, junctional tissues of heart. Cardiovascular disorders( atherosclerosis, hypertension, hypotension, myocardial infarction, angina pectoris, cardiac arrhythmias, congestive cardiac failure	
<b>Nice to know</b>	Cerebral circulation, cardiac asthma, atrio natriuritic peptide (ANP).	

Blueprint of question paper, for each QP. This shows the weightage given to each chapter in the summative assessment. This improves the content validity by distributing the assessment of learners in the competencies that are represented by learning objectives under each chapter.

BLUE PRINT OF MODEL QUESTION PAPER								
<b>BP101T: Human Anatomy and Physiology-I</b>								
TIME: 3 HOURS <span style="float: right;">MAX. MARKS: 75</span>								
Unit No	Hours	Must know			Desirable to know			Weightage of marks
		LE (10X3)	SE (5X8)	SA (2X5)	LE (10X0)	SE (5X1)	SA (2X5)	
Unit-I	10		2	1	-		2	16
Unit-II	10	-	1	2	-	1	1	16
Unit-III	10	1	2		-		1	22
Unit-IV	08	1	1	1	-		1	19
Unit-V	07	1	2	1	-	-		22
<b>Total</b>	<b>45</b>	<b>30</b>	<b>40</b>	<b>10</b>	<b>-</b>	<b>5</b>	<b>10</b>	<b>95</b>
		<b>80</b>			<b>15</b>			<b>95</b>

## BP102T. PHARMACEUTICAL ANALYSIS

1. Departmental objectives (what the learners will be able to perform after completing the subject):

A. Learning Objectives:

Upon completion of this course the student should be able to

- a. Understand the principles of volumetric and electro chemical analysis
  - b. Carryout various volumetric and electrochemical titrations
  - c. Develop analytical skills
2. Content distribution as per the list of topics, time allotted for each topic, distribution for 'Must know', 'Desirable to know' and 'Nice to know' and the probable weightage.

The following table can also be a reference frame for continuous and formative assessment of learning. If the curriculum management is scheduled as per the tabulation, there can be clarity for both learners and teachers to take stock of the mastery achieved in each objective. This will also help for professional excellence that goes beyond the examination process.

UNIT-I	Hours: 10	Weightage: 19 Marks
	<b>Topics</b>	
<b>Learning content distribution</b>	a)Pharmaceutical Analysis 1) Definition and scope different technique of analysis 2) Method of expressing concentration 3)Primary and secondary standards 4) Preparation and standardisation of volumetric solutions b) Errors	
<b>Must know</b>	Quantitative analysis, Qualitative analysis Normality, Molarity, Gram equivalent weight, assay, estimation Definition, examples, Ideal requirements of primary and secondary standards Preparation of molar and normal solutions of different concentrations and standardisation Principle and procedures. Sources of errors, types of errors, methods of minimizing errors, accuracy, precision and significant figures	
<b>Desirable to know</b>	Definition of Titration, titrant, titrant or titrate, end point Mole, relative molecular mass, relative atomic mass Standards used in different types of titrations Formulae to calculate Normality, Morality, Preparation of solutions of different concentrations for example 1N, 0.1N, 0.1M etc and different volumes like 1000ml, 500ml, 250ml of different concentrations. Mean, standard deviation, coefficient of variations.	
<b>Nice to know</b>	Requirements of a titration Periodic Table Significance of Statistical methods for Pharmaceutical Analysis	

UNIT-II		Hours: 10	Weightage: 24 Marks
<b>Learning content distribution</b>	<b>Topics</b>		
	1) Acid base titration 2) Non Aqueous titration		
<b>Must know</b>	Concepts of acids and bases, Theories of acid base indicators, classification of acid base titrations, neutralization curves, theory involved in titrations of strong, weak, and very weak acids and bases. Basic principle, Solvents, acidimetry titration and alkalimetry titration, estimation of Sodium benzoate and Ephedrine HCl		
<b>Desirable to know</b>	Arrhenius concept, Bronsted Lowry concept, Lewis acids and bases, Ostwald theory and modified Ostwald theory, Examples of Indicators, Selection of Indicators. Titrants used in non aqueous titrations, levelling effect, differentiating effects, applications, indicators used. Mean, standard deviation, coefficient of variations.		
<b>Nice to know</b>	Equilibrium constant, Strengths of acids and bases, Ionic product of water, pH. Amphoteric nature of water and disadvantage of water as a solvent.		

UNIT-III		Hours: 10	Weightage: 19 Marks
<b>Learning content distribution</b>	<b>Topics</b>		
	a) Precipitation titrations b) Complexometric titrations c) Gravimetry		
<b>Must know</b>	Mohr's method, Volhard's, Modified Volhard's method, Fajans method, estimation of sodium chloride. Basic principles and Classification, metal ion indicators, masking and demasking reagents, estimation of Magnesium sulphate, and calcium gluconate. Principle and steps involved in gravimetric analysis. Purity of the precipitate, Estimation of Barium Sulphate.		
<b>Desirable to know</b>	Indicators used in precipitation titrations. Complexing agents, chelating agents, sequestering agents, ligands and classification, Preparation and standardisation of EDTA. Co precipitation and Post precipitation, Ignition, weighing of precipitate, supersaturation and solubility of precipitate.		
<b>Nice to know</b>	Solubility Product Nature and Structure of complexes of metal ions with EDTA Common Ion Effect		

UNIT-IV		Hours: 8	Weightage: 14 Marks
<b>Learning content distribution</b>	<b>Topics</b>		
	Redox titrations		
<b>Must know</b>	Concepts of oxidation and reduction, Principles of redox titrations, Cerimetry, Iodimetry, Iodometry, Bromatometry, Dichrometry, Titration with Potassium Iodate, Titrations with Potassium Permanganate		
<b>Desirable to</b>	Redox Indicators, strengths and equivalents of oxidising and reducing		

<b>know</b>	agents, Preparation and standardisation of Potassium Permanganate.
<b>Nice to know</b>	Oxidation numbers, Redox potential

<b>UNIT-V</b>	<b>Hours: 7</b>	<b>Weightage: 19 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>	
	Electrochemical methods of analysis a) Conductometry b) Potentiometry c) Polarography	
<b>Must know</b>	Introduction and Conductivity cell, Conductometric titrations and application. Electrochemical cell, construction and working of reference and indicator electrodes methods to determine end point of potentiometric titrations and applications. Principle, Ilkovic equation, construction and working of dropping mercury electrode and rotating platinum electrode and applications.	
<b>Desirable to know</b>	Conductance and Resistance, Molar Conductance and Specific Conductance, Cell constant. Standard hydrogen, silver chloride electrode and calomel electrode, metal electrodes and glass electrode. Different types of currents and significance.	
<b>Nice to know</b>	Cathodes and Anodes Amperometry	

3. Blueprint of question paper, for each QP. This shows the weightage given to each chapter in the summative assessment. This improves the content validity by distributing the assessment of learners in the competencies that are represented by learning objectives under each chapter. State the number of QPs for the subject.

BLUE PRINT OF MODEL QUESTION PAPER								
<b>BP102T. Pharmaceutical Analysis</b>								
TIME: 3 HOURS			MAX. MARKS: 75					
Unit No	Hours	Must know			Desirable to know			Weightage of marks
		LE (10X3)	SE (5X7)	SA (2X6)	LE (10X0)	SE (5X2)	SA (2X4)	
Unit-I	10	1	1	1			1	<b>19</b>
Unit-II	10	1	2	1			1	<b>24</b>
Unit-III	10		2	1		1	1	<b>19</b>
Unit-IV	08	1		1			1	<b>14</b>
Unit-V	07		2	2		1		<b>19</b>
<b>Total</b>	<b>45</b>	<b>30</b>	<b>35</b>	<b>12</b>	<b>--</b>	<b>10</b>	<b>08</b>	<b>95</b>
		<b>77</b>			<b>18</b>			<b>95</b>

## BP103T. PHARMACEUTICS- I

1. Departmental objectives (what the learners will be able to perform after completing the subject):
  - A. Learning Objectives:

Upon completion of this course the student should be able to:

- a. Know the history of profession of pharmacy
- b. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
- c. Understand the professional way of handling the prescription
- d. Preparation of various conventional dosage forms

2. Content distribution as per the list of topics, time allotted for each topic, distribution for 'Must know', 'Desirable to know' and 'Nice to know' and the probable weightage.

The following table can also be a reference frame for continuous and formative assessment of learning. If the curriculum management is scheduled as per the tabulation, there can be clarity for both learners and teachers to take stock of the mastery achieved in each objective. This will also help for professional excellence that goes beyond the examination process.

UNIT-I	Hours: 10	Weightage: 16 Marks
<b>Learning content distribution</b>	<b>Topics</b>	
	a. Historical background and development of profession of pharmacy b. Dosage forms. c. Prescription.	
<b>Must know</b>	<b>Historical background and development of profession of pharmacy:</b> History of profession of Pharmacy in India in relation to pharmacy education, industry and organization, Pharmacy as a career, Pharmacopoeias: <b>Dosage forms:</b> Introduction to dosage forms, classification and definitions <b>Prescription:</b> Definition, Parts of prescription, handling of Prescription and Errors in prescription. <b>Posology:</b> Definition, Factors affecting posology. Pediatric dose calculations based on age, body weight and body surface area	
<b>Desirable to know</b>	Introduction to IP, BP, USP and Extra Pharmacopoeia	
<b>Nice to know</b>	Marketed examples of dosage forms and Novel dosage forms. Telepharmacy	

UNIT-II	Hours: 10	Weightage: 18 Marks
<b>Learning content distribution</b>	<b>Topics</b>	
	a. Pharmaceutical calculations b. Powders: c. Liquid dosage forms:	

<b>Must know</b>	<p><b>Pharmaceutical calculations:</b> Calculations involving percentage solutions, allegation, proof spirit and isotonic solutions based on freezing point and molecular weight.</p> <p><b>Powders:</b> Definition, classification, advantages and disadvantages, Simple &amp; compound powders – official preparations, dusting powders, effervescent, and hygroscopic powders, eutectic mixtures. Geometric dilutions.</p> <p><b>Liquid dosage forms:</b> Advantages and disadvantages of liquid dosage forms. Excipients used in formulation of liquid dosage forms. Solubility enhancement techniques</p>
<b>Desirable to know</b>	<p>Weights and measures – Imperial &amp; Metric system</p> <p>Define proof spirit, isotonic solution</p> <p>Definition of different powders with examples</p> <p>Definition and Examples of excipients</p>
<b>Nice to know</b>	<p>Marketed powder dosage forms</p> <p>Grades of excipients</p>

UNIT-III	Hours: 10	Weightage: 26 Marks
<b>Learning content distribution</b>	<b>Topics</b>	
	<p>a. Monophasic liquids</p> <p>b. Biphasic liquids</p> <p>c. Suspensions</p> <p>d. Emulsions</p>	
<b>Must know</b>	<p><b>Monophasic liquids:</b> Preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.</p> <p><b>Biphasic liquids:</b></p> <p><b>Suspensions:</b> advantages and disadvantages, classifications, Preparation of suspensions; Flocculated and Deflocculated suspension &amp; stability problems and methods to overcome.</p> <p><b>Emulsions:</b> Test for the identification of type of Emulsion, Methods of preparation &amp; stability problems and methods to overcome.</p>	
<b>Desirable to know</b>	<p>Definitions with formula</p> <p>Definition Classification of suspending agents</p> <p>Advantages, disadvantages and classification of suspensions</p> <p>Definition Classification of emulsifying agents</p>	
<b>Nice to know</b>	<p>Marketed monophasic liquid dosage forms.</p> <p>Marketed suspensions.</p> <p>Marketed emulsions.</p>	

UNIT-IV	Hours: 8	Weightage: 17 Marks
<b>Learning content distribution</b>	<b>Topics</b>	
	<p>a. Suppositories:</p> <p>b. Pharmaceutical incompatibilities</p>	
<b>Must know</b>	<p><b>Suppositories:</b> Definition, types, advantages and disadvantages, types of bases <b>Pharmaceutical</b>, methods of preparations. Evaluation of suppositories.</p> <p><b>Incompatibilities:</b> Definition, classification, chemical and therapeutic incompatibilities with examples.</p>	



<b>Desirable to know</b>	Displacement values and its calculations Physical incompatibility with examples
<b>Nice to know</b>	Examples of Marketed suppositories Drug interactions in prescriptions

<b>UNIT-V</b>	<b>Hours: 7</b>	<b>Weightage: 12 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>	
	<b>Semisolid dosage forms</b>	
<b>Must know</b>	<b>Semisolid dosage forms:</b> Definitions, classification, mechanisms and factors influencing dermal penetration of drugs. Preparation of ointments, pastes, creams and gels. Evaluation of semi solid dosages forms.	
<b>Desirable to know</b>	Excipients used in semi solid dosage forms	
<b>Nice to know</b>	Examples of marketed semisolid dosage forms	

3. Blueprint of question paper, for each QP. This shows the weightage given to each chapter in the summative assessment. This improves the content validity by distributing the assessment of learners in the competencies that are represented by learning objectives under each chapter. State the number of QPs for the subject.

BLUE PRINT OF MODEL QUESTION PAPER								
<b>BP103T-Pharmaceutics-I</b>								
TIME: 3 HOURS								
MAX. MARKS: 75								
Unit No	Hours	Must know			Desirable to know			Weightage of marks
		LE (10X3)	SE (5X7)	SA (2X6)	LE (10X0)	SE (5X2)	SA (2X4)	
Unit-I	10	1	1	-	-	-	1	<b>17</b>
Unit-II	10	-	2	2	-	-	2	<b>18</b>
Unit-III	10	1	2	2	-	1	1	<b>26</b>
Unit-IV	08	1	1	-	-	1	1	<b>22</b>
Unit-V	07	-	2	1	-	-		<b>12</b>
<b>Total</b>	<b>45</b>	<b>30</b>	<b>35</b>	<b>10</b>	<b>-</b>	<b>10</b>	<b>10</b>	<b>95</b>
		<b>75</b>			<b>20</b>			<b>95</b>

## BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY

1. Departmental objectives (what the learners will be able to perform after completing the subject):

B. Learning Objectives:

Upon completion of this course the student should be able to:

- i. Know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals
- ii. Understand the medicinal and pharmaceutical importance of inorganic compounds.

2. Content distribution as per the list of topics, time allotted for each topic, distribution for 'Must know', 'Desirable to know' and 'Nice to know' and the probable weightage.

The following table can also be a reference frame for continuous and formative assessment of learning. If the curriculum management is scheduled as per the tabulation, there can be clarity for both learners and teachers to take stock of the mastery achieved in each objective. This will also help for professional excellence that goes beyond the examination process.

UNIT-I		Hours: 10	Weightage: 26 Marks
Learning content distribution	Topics		
	Impurities in Pharmaceutical substances		
Must know	Sources and types of impurities, principle and procedure involved in limit test, definition- limit test, modified limit test.		
Desirable to know	History of Pharmacopeia, Indian pharmacopeia, Importance of limit test effects of impurities in drug substances		
Nice to know	Test for purity, permissible limits of impurities in pharmaceuticals,		

UNIT-II		Hours: 10	Weightage: 19 Marks
Learning content distribution	Topics		
	a. Acids, Bases and Buffers b. Major intra and extracellular electrolyte c. Dental products		
Must know	a. Definition and types of buffers, Buffers equations, mechanism behind maintaining the pH by buffer solutions, acidic and basic buffer solution preparations, isotonicity measurement of buffer solutions. b. Functions of major physiological ions, combinations of electrolytes replacement therapy (ORS), physiological acid base balance, preparation, properties and uses of sodium chlorides, potassium chloride, calcium gluconate, ORS. Assay of sodium chloride and calcium gluconate.		

	c. Role of fluorides in treatment of dental caries, dentifrices, desensitizing agent, dental cement, method of preparation , properties uses of sodium fluoride, calcium carbonate, Zinc eugenol cement
<b>Desirable to know</b>	1.Buffer capacity, stability 2.Classification of physiological ions, their daily requirements, disease occurs due the deficiency of ions, 3. Classification of dental products, abrasive properties of dentifrices
<b>Nice to know</b>	1.Buffers in pharmaceutical systems 2. Respiratory and circulatory system helps in maintaining the pH in various b body compartments 3. Mouthwash, types of dental disorders

<b>UNIT-III</b>	<b>Hours: 10</b>	<b>Weightage: 24 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>	
	<b>a. Gastrointestinal agents b. Antimicrobials</b>	
<b>Must know</b>	a. Classification of gastrointestinal agents, gastrointestinal disorders, acidifiers, antacids and ideal properties of antacids, combination of antacids, cathartics, gastrointestinal protective agents, synonym, molecular formula, method of preparation, properties, uses, storage conditions of ammonium chlorides, HCl, sodium bicarbonate, aluminium hydroxide, magnesium hydroxide mixture, magnesium sulphate, sodium orthophosphate, kaolin, bentonite. b. Definition, classification and mechanism of action of antimicrobials, synonym, molecular formula, method of preparation, properties, uses, storage conditions of potassium permanganate, boric acid, hydrogen peroxide, chlorinated lime, iodine and its preparations, Assay of hydrogen peroxide, chlorinated lime	
<b>Desirable to know</b>	a. Mechanism of saline cathartics, mechanism of gastrointestinal protective agents, classification of laxatives b. Definition and examples of antiseptic, disinfectant, bacteriostatic, bactericidal	
<b>Nice to know</b>	1. Preparation of HCl, peptic ulcer, doses and adverse effects of antacids 2. Importance of iodine ,	

<b>UNIT-IV</b>	<b>Hours: 8</b>	<b>Weightage: 19 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>	
	<b>a) Expectorants, b) Emetics, c) Haematinics, d) Poison and antidotes, e) Astringent</b>	
<b>Must know</b>	a. Definition and classification of expectorants, synonym, molecular formula, method of preparation, properties, uses, storage conditions of Ammonium chloride, potassium iodide, Assay of ammonium chloride. b. Definition of emetics , synonym, molecular formula, method of preparation, properties, uses, storage conditions of copper sulphate, sodium potassium tartarate. Assay of copper sulphate,	

	<p>c. Definition of Haematinics , synonym, molecular formula, method of preparation, properties, uses, storage conditions of ferrous sulphate, ferrous gluconate</p> <p>d. Definition and classification of antidotes , synonym, molecular formula, method of preparation, properties, uses, storage conditions of sodium thiosulphate, activated charcoal sodium nitrite, Assay of sodium thiosulphahte.</p> <p>e. Definition of astringents , synonym, molecular formula, method of preparation, properties, uses, storage conditions of zinc sulphate, potash alum</p>
<b>Desirable to know</b>	<p>c. Mechanism of saline cathartics, mechanism of gastrointestinal protective agents, classification of laxatives</p> <p>d. Definition and examples of antiseptic, disinfectant, bacteriostatic, bactericidal</p>
<b>Nice to know</b>	Doses of expectorants, Doses of emetics, Doses and importance of haemantinnics, Poisoning effect of inorganic compounds, Importance of Astringents

<b>UNIT-V</b>	<b>Hours: 7</b>	<b>Weightage: 07 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>	
	<b>Radiopharmaceuticals</b>	
<b>Must know</b>	Isotopes, properties of $\alpha$ , $\beta$ , $\gamma$ , radiations, measurement of radio activity, pharmaceutical applications storage conditions and precautions of sodium iodide $I^{131}$ and other important radioactive substances	
<b>Desirable to know</b>	Radio activity, half life	
<b>Nice to know</b>	Importance of radioactive substances in other field.	

3. Blueprint of question paper, for each QP. This shows the weightage given to each chapter in the summative assessment. This improves the content validity by distributing the assessment of learners in the competencies that are represented by learning objectives under each chapter. State the number of QPs for the subject.

<b>BLUE PRINT OF MODEL QUESTION PAPER</b> <b>BP104T. Pharmaceutical Inorganic Chemistry</b> TIME: 3 HOURS <span style="float: right;">MAX. MARKS: 75</span>								
Unit No	Hours	Must know			Desirable to know			Weightage of marks
		LE (10X3)	SE (5X8)	SA (2X6)	LE (10X0)	SE (5X2)	SA (2X4)	
Unit-I	10	1	1	2	-	1	1	<b>26</b>
Unit-II	10	1	1	2	-	-	2	<b>19</b>
Unit-III	10	1	2	2	-	-	1	<b>24</b>
Unit-IV	08	-	3	2	-	-	1	<b>19</b>
Unit-V	07	-	1	1	-	-	-	<b>07</b>
<b>Total</b>	<b>45</b>	<b>30</b>	<b>40</b>	<b>18</b>	<b>-</b>	<b>5</b>	<b>10</b>	<b>95</b>
		<b>88</b>			<b>15</b>			<b>95</b>

**BP105T: Communication skills**

<b>UNIT-I</b>		<b>Hours: 7</b>	<b>Weightage: 15 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>		
	<b>Communication skills</b>		
<b>Must know</b>	<ul style="list-style-type: none"> <li>• Importance of communication</li> <li>• Classification of barriers</li> <li>• To understand various perspectives</li> </ul>		
<b>Desirable to know</b>	<ul style="list-style-type: none"> <li>• Methodologies of communication</li> <li>• History of barriers</li> <li>• Feelings or beliefs</li> </ul>		
<b>Nice to know</b>	<ul style="list-style-type: none"> <li>• Feedback, context</li> <li>• World culture</li> <li>• Cultural ethos</li> </ul>		

<b>UNIT-II</b>		<b>Hours: 7</b>	<b>Weightage: 15 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>		
	<b>Elements of communication</b>		
<b>Must know</b>	<ul style="list-style-type: none"> <li>• Types of communication</li> <li>• Types of communication styles</li> </ul>		
<b>Desirable to know</b>	<ul style="list-style-type: none"> <li>• Looks and attitude</li> <li>• Capacity to assess the strength of the listeners</li> </ul>		
<b>Nice to know</b>	<ul style="list-style-type: none"> <li>• Efficacies, styles, clothing, protocol and gestures</li> </ul>		

<b>UNIT-III</b>		<b>Hours: 7</b>	<b>Weightage: 7 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>		
	<b>Basic listening skills</b>		
<b>Must know</b>	<ul style="list-style-type: none"> <li>• Various basic listening skills</li> <li>• Various aspects of effective writing</li> <li>• Writing skills</li> </ul>		
<b>Desirable to know</b>	<ul style="list-style-type: none"> <li>• Meditation techniques, consciousness</li> <li>• Hash tag communication</li> </ul>		
<b>Nice to know</b>	<ul style="list-style-type: none"> <li>• Sensitization and relaxation techniques</li> <li>• Value addition with quotes and slogans</li> <li>• Handwriting and signature analysis</li> </ul>		

<b>UNIT-IV</b>		<b>Hours: 5</b>	<b>Weightage: 7 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>		
	<b>Interview skills</b>		

<b>Must know</b>	<ul style="list-style-type: none"> <li>• Purpose, Do's and Don'ts</li> <li>• Planning and structuring presentation delivery</li> </ul>
<b>Desirable to know</b>	<ul style="list-style-type: none"> <li>• Know your employer</li> <li>• Preparing interesting visual aids, etc</li> </ul>
<b>Nice to know</b>	<ul style="list-style-type: none"> <li>• Concept of tele-interviews</li> <li>• Knowledge of software skills, etc</li> </ul>

<b>UNIT-V</b>	<b>Hours: 4</b>	<b>Weightage: 6 Marks</b>
<b>Learning content distribution</b>	<b>Topics</b>	
	<b>Interview skills</b>	
<b>Must know</b>	<ul style="list-style-type: none"> <li>• Purpose, Do's and Don'ts</li> <li>• Planning and structuring presentation delivery</li> </ul>	
<b>Desirable to know</b>	<ul style="list-style-type: none"> <li>• Know your employer</li> <li>• Preparing interesting visual aids, etc</li> </ul>	
<b>Nice to know</b>	<ul style="list-style-type: none"> <li>• Concept of tele-interviews</li> <li>• Knowledge of software skills, etc</li> </ul>	

3. Blueprint of question paper, for each QP. This shows the weightage given to each chapter in the summative assessment. This improves the content validity by distributing the assessment of learners in the competencies that are represented by learning objectives under each chapter. State the number of QPs for the subject.

BLUE PRINT OF MODEL QUESTION PAPER <b>BP105T: Communication skills*</b>				
<b>Unit (Hrs)</b>	<b>Long Essays</b>	<b>Short Essays</b>	<b>Short Answers</b>	<b>Total Marks</b>
Unit I (7 hrs)	10	5	-	15
Unit II (7 hrs)	10	5	-	15
Unit III (7 hrs)	-	5	2	7
Unit IV (5 hrs)	-	5	2	7
Unit V (4 hrs)	-	-	2 + 2 + 2	6
<b>TOTAL</b>				<b>50</b>

\* Non University Examination (NUE)