

PARUL UNIVERSITY
BACHELOR OF PHARMACY
SEMESTER: I
TEACHING SCHEME

Subject Code	Subject	Teaching Scheme			Marking System			
		Theory (Hrs)	Practical (Hrs)	Total Credits	Theory		Practical	
					Internal	External	Internal	External
08101101	Pharmaceutical Chemistry-I (Inorganic Chemistry-I)	4	3	6	25	75	25	75
08101102	Unit Operation-I	4	3	6	25	75	25	75
08101103	Human Anatomy, Physiology and Health Education-I	3	3	5	25	75	25	75
08101104	Basics of Computer Application	2	3	4	25	75	25	75
08101105	Remedial	3	-	3	25	75	-	-

	Mathematics								
08019310 1	Communication Skills and Personality Development -I	1	3	3	25	75	25	75	
Total Credits		17	+	10	=	27	Note: For theory 1 hour is counted for 1 credit For practical 1 hour 30 min is counted for 1 credit		

DETAILED SYLLABUS FIRST SEMESTER B.PHARM

SUBJECT NAME: PHARMACEUTICAL CHEMISTRY-I (INORGANIC CHEMISTRY)

(Theory & Practical)

Teaching Hours Per Week		Marking System			
Theory	Practical	Theory		Practical	
4	3	Internal	External	Internal	External
		25	75	25	75

Objective of the course:

- The course covers fundamentals of chemistry including pharmacopoeia and monograph, electrolyte, trace ion and element and pharmaceutical aids

Students learning outcomes/objectives:

- By the end of this course, the student should have a good understanding of the history and basic concepts of inorganic chemistry
- Students should understand monograph of various category like protective, adsorbent, gastrointestinal agent.

Instructional methods and pedagogy:

- Using blackboard and one-way communication from a teacher to a student.
- Using an overhead and LCD projector

DETAILED SYLLABUS

(THEORY)

4 HR/WEEK

Chapter. No	Course Contents	Teaching Hours
1	Pharmacopoeia and monograph Different pharmacopoeia and contents of official monograph.	02
2	Purity of Pharmaceuticals and factors affecting purity of pharmaceuticals limit test for chlorides sulphates arsenic, iron, lead, heavy metals as per I.P.	04
3	Hardness of water, methods to remove hardness of water, different official waters and official quality control tests for waters.	02
4	Volumetric calculations: Normality, Molarity, Molality, Various concentration terms(%w/v etc.), Assay calculations, %purity calculations, Primary standards, Secondary standards, Standardization.	04
5	Acid and Bases- Theories of acids & bases, Buffers, Buffer capacity, Buffer action, Official buffers, Physiological buffers.	04
Study Preparations, Uses, Assay and Identification of official compounds of following class.		
6	Important inorganic gases used in pharmacy: Oxygen, Nitrogen, Nitrous Oxide, carbon dioxide, Helium, Ammonia and their compounds as per I.P.	04
7	Electrolytes Extra and intracellular ions: Chlorides, Phosphate, Bicarbonate, Sodium, Potassium, Calcium, Magnesium. Electrolytes used for replacement therapy, Physiological acid base balance Electrolyte used in acid-base therapy, Electrolytes combination therapy. Sodium chloride injection, Ringer solution lactated, Ringer injections, sodium acetate, potassium bicarbonate, sodium citrate, sodium lactate, ammonium chloride.	10

8	Dental products: Anticaries agents, Cleaning agents, Polishing agents, Mouth washes, Cements & Fillers, Desensiting agents- Sodium fluoride, Zinc chloride, Zinc oxide, Stannous fluoride, Calcium carbonate, Sodium perborate.	04
9	Antidotes: Classification, Sodium thiosulphate, Sodium nitrite.	02
10	Gastrointestinal tract agents: i. Acidifying agents- dil HCl ii. Antacids: Sodium bicarbonate, aluminum hydroxide, Aluminum phosphate, Basic aluminum carbonate, Calcium Phosphate, Magnesium carbonate, Milk of magnesia. iii. Protectives and adsorbents-Bismuth compounds, bismuth sub carbonate, Bismuth subgallate, Bismuth sodium tartarate, Kaolin, Activated charcoal, pectin. iv. Saline cathartics – Sodium phosphate, Sodium potassium tartarate, Magnesium carbonate, magnesium oxide.	08
11	Essential and trace ions Absorption, distribution, physiological role. Official compound of Fe, Cu, Zn, Mn, I, Fe-Ferrous sulfate. Iron sorbite injection, ferric ammonium citrate, ferric chloride, Cu- Copper sulfate, 14-Iodine, Potassium iodide, Sodium iodide, Zn-Zinc sulphate.	06
12	Expectorants and emetics: Ammonium chloride, Potassium iodide, Antimony Potassium tartarate. Mode of action of all compounds.	02
13	Topical agents -General introduction and mode of action: a. Protectives- Talc, zinc oxide, Calamine, Zinc stearate, Titanium dioxide, aluminum compounds. b. Antimicrobials and astringents: Hydrogen peroxide solution, Sodium perborate, zinc peroxide, Potassium permanganate, Sodium hydrochloride, Iodine solution and nitrate, Mercuric oxide, Mercuric chloride and sulphate, Boric acid, Selenium sulfide, Zinc sulfate.	08

DETAILED SYLLABUS**(PRACTICAL)****3 HR/WEEK**

Sr. No.	Course contents	Teaching Hours
1	Semi-micro inorganic qualitative analysis of mixtures containing two acidic and two basic radicals	21
2	Limit test for Chlorides, Sulfate, Iron and Lead	12
3	Demonstration of Limit Test of Arsenic	03
4	Standardization of compounds belonging to different categories as per pharmacopoeia	09

Reference Books:

1. Inorganic, Medicinal and Pharmaceutical Chemistry by J. H. Block, E. B. Roche, Indian edition, Varghese Publication.
2. Modern Inorganic Pharmaceutical Chemistry by C. A. Dicher.
3. Concise Inorganic Chemistry – J. D. Lee.
4. Bentley & Driver's Text Book of Pharmaceutical Chemistry Revised by L. M. Atherden, 8th edition, Oxford Medical Publications.
5. Pharmaceutical Inorganic Chemistry by Dhake & Tipnis, 2nd edition.
6. Indian Pharmacopoeia 2008.
7. Remington The Science and Practice of Pharmacy by Remington, 20th edition, Lipincott, William and Wilkins.
8. Advanced Inorganic Chemistry, 18th Edition, Cotton & Wilkinson (Wiley Eastern Ltd., Delhi).
9. Inorganic Pharmaceutical Chemistry (Practical), 2nd Edition, Dhake & Belsare.
10. Vogel's Text Book of Quantitative Analysis, 5th Ed.
11. Vogel's Quantitative Inorganic Analysis.
12. Wilson & Gisvold's Principles of Organic and Medicinal Chemistry
13. Harkishan Singh & A. K. Kapoor – Principles of Inorganic Chemistry

SUBJECT NAME: **UNIT OPERATION-I**

(Theory & Practical)

Teaching Hours Per Week		Marking System			
Theory	Practical	Theory		Practical	
4	3	Internal	External	Internal	External
		25	75	25	75

Objective of the course:

- The course covers importance and principles of basic operations involved in pharmaceutical production along with commonly used equipments.

Students learning outcomes/objectives:

- Students will learn insights of basic operations in a pharmaceutical industry
- By the end of the semester, students will feel easy to select appropriate equipment for different operations.

Instructional methods and pedagogy:

- Using blackboard and LCD projector with the help of few videos wherever applicable
- At the end of session, 10 min. for discussion

DETAILED SYLLABUS

(THEORY)

4 HR/WEEK

Chapter No	Course Contents	Teaching Hours
1.	Size reduction Objectives, importance and theory of size reduction. Factors affecting, energy requirements, mechanisms and methods (dry/wet grinding) of size reductions. Principle, material of construction, applications, advantages and disadvantages of various mills like cutter mill, hammer mill, roller mill, ball mill,	11

	fluid energy mill, colloid mill. Study of latest industrial mills used in manufacturing of various dosage forms and their application.	
2.	<p>Size separation</p> <p>Principles of size separation, screen and its standards as per pharmacopoeia, screening equipments including shaking & vibrating screens, gyratory screens, sedimentation type industrial separators etc. Methods of determining size distribution. Fluid classification methods like sedimentation and elutriation, Principle, material of construction, applications, advantages and disadvantages of cyclone separator, sedimentation tank, etc.</p>	8
3.	<p>Mixing</p> <p>Definition, objectives, mechanism and theory of mixing. Type of mixtures: liquid mixing, powder mixing, semi solids mixing. Principle, material of construction, applications, advantages and disadvantages of shaker mixer, propeller mixer, turbine mixer, paddle mixer, planetary mixer, double cone mixer, V mixer, sigma mixer and colloid mill, ultrasonic mixer, etc.</p>	11
4.	<p>Crystallization</p> <p>Objectives, crystal lattice, types of crystal, crystal form, size and habit, formation of crystals, super saturation theory, factors affecting crystallization process and crystal growth. Study of various types of crystallizers including Swenson walker, tanks, agitated & batch, circulating magma, vacuum and crystal crystallizer etc. Methods for prevention of caking of crystals. Brief study of spherical crystallization process. Numerical problems on crystal yield.</p>	14
5.	<p>Extraction and leaching</p> <p>Principle, theory and types of extraction. Solvents used for extraction, leaching and extraction equipments, small scale and large scale extraction methods, special extraction techniques-</p>	11

	supercritical fluid extraction, applications in pharmaceutical industry.	
6.	Industrial hazards and safety precautions Industrial hazards: mechanical, chemical, electrical, fire and dust hazards. Measures to prevent and combat the hazards. Introduction to waste water system in industry.	5

DETAILED SYLLABUS

(PRACTICAL)

3 HR/WEEK

Sr. No.	Aim of the Practical
1.	To determine the average particle size & to study particle size distribution using standard sieve method for given powder substance.
2.	To determine the average particle size & to study particle size distribution using standard sieve method for given granular mixture.
3.	To determine the average particle size & to study particle size distribution using microscopy method.
4.	To determine the average particle size & to study particle size distribution using sedimentation method.
5.	To carry out particle size reduction by Ball mill.
6.	To determine mixing index for blending given powder using laboratory mixer.
7.	To study the effect of time and speed on solid-liquid mixing.
8.	To generate Mier's supersolubility curve for given substance (2 salts).
9.	To prepare the crystals using various techniques and study the crystal habit.
10.	To study the effect of temperature on % yield of crystallization (2 salts).
11.	To determine the percentage of acetic acid recovered from mixture of Benzene and Acetic acid using water as an extracting agent.
12.	To study the extraction by Percolation method.
13.	To study the efficiency of single and multiple extractions.

Reference Books:

1. Elementary Chemical Engineering - Max S. Peters, Published by McGraw Hill Book Company, New York, 1954
2. Perry's Chemical Engineer's Handbook - Robert H Perry, Green D. W., Maloney J. O. 7th Edition, 1998, McGraw – Hill Inc., New York.
3. Tutorial Pharmacy by Cooper & Gunn, ed. S. J. Carter, CBS Publishers & Distributors, Delhi, 6th Edition, 2000.
4. Unit Operations of Chemical Engineering, 5th edition - McCabe, Smith & Harriott, McGraw – Hill Inc., New York.
5. Pharmaceutics: The Science of Dosage Form Design - M. E. Aulton.
6. The Theory & Practice of Industrial Pharmacy – Lachman L., Lieberman H.A. & Kanjig J. L., 3rd edition, 1990 Varghese Publishing House, Bombay.
7. Alfonso G. Remington: The Science & Practice of Pharmacy. Vol. I & II. Lippincott, Williams & Wilkins Philadelphia.

Text Books:

1. Pharmaceutical Engineering -1 (Unit-operations-1,Pharmaceutics-1) by Dr G K Jani, B S Shah Prakashan, Ahmedabad
2. Pharmaceutics-2 by Dr G K Jani, B S Shah Prakashan, Ahmedabad
3. Unit Operations-I, Dr. Madhabhai M. Patel & Dr. D.M. Patel, Thakur Publishers
4. Unit Operations-II, Dr. Sandipkumar Patel & Dr. Nihar Shah, Thakur Publishers

SUBJECT NAME: HUMAN ANATOMY, PHYSIOLOGY AND HEALTH EDUCATION-I

Teaching Hours Per Week		Marking System			
Theory	Practical	Theory		Practical	
3	3	Internal	External	Internal	External
		25	75	25	75

Objective of the Course:

- To make students familiar with the principles of human anatomy and physiology as well as basic concepts related to health.

Student Learning Outcomes/ objectives:

- At the end of the course, the student will be able to understand the concept of anatomy and physiology of different organ systems which is a prerequisite for understanding the concepts of diseases and pharmacology.

Instructional Methods and pedagogy:

- The faculty shall explain the lectures using black board, over head projector and video based methods.

DETAILED SYLLABUS

(THEORY)

3 HR/WEEK

Chapter No	Topic	Teaching Hours
1	Introduction to Anatomy & Physiology: Fundamental & Scope of Anatomy & Physiology. Anatomical terms in relation to parts of the body system & organs.	2
2	The Cell: Molecular structure & function of cell. Mechanism & electrophysiology of cell membrane including, various transport mechanisms. Cell cycle	5
3	Tissues: Introduction & organization to elements of tissue, Functions of	5

	different tissues (Epithelial, Connective, Muscular & Nervous tissue).	
4	Muscular system: Their gross & molecular level anatomy and physiology of skeletal muscle, Physiology of muscle contraction, Physiological properties of skeletal muscles and their disorders.	5
5	Osseous system: Structure, composition and function of skeleton, classification of joints, Types of movements at joints, disorder of bones and joint.	5
6	Haemopoietic system: Composition and functions of blood and its, components, Blood groups. Mechanism of blood coagulation, Haemopoiesis. Brief information regarding disorders of blood.	6
7	Lymph and lymphatic system: Composition, Formation, and circulation of lymph. Extra-cellular, Tran-cellular and intra-cellular fluids and their composition. Basic physiology of spleen and serosal cavities, Disorders of lymphatic system.	3
8	Cardiovascular system Anatomy of the heart, Circulatory system including Arterial and Venous system with special reference to the names and positions of main arteries and veins, Properties of Cardiac muscle, Electrocardiogram (ECG), Blood pressure and its regulation, Coronary circulation, Basic understanding of Cardiac cycle and Heart sounds, Renin-Angiotensin system and its significance, Cardiac output, Brief introduction to cardiovascular disorders.	9
9	Digestive system; Gross Anatomy of the Gastrointestinal tract, Structure and functions of various organs of alimentary canal and associated organs like Liver, pancreas and gall bladder. Physiology of digestion and absorption. Brief overview of disorders.	5

DETAILED SYLLABUS**(PRACTICAL)****3 HR/WEEK**

Sr. No.	Course contents	Teaching Hours
1	Study of the human skeleton with the help of charts and models	3
2	Study of the human cardiovascular system-Heart with the help of charts and models	3
3	Study of the human cardiovascular system- Arterial & Venous System with the help of charts.	3
4	Study of Digestive System.	3
5	Study of Muscular System.	3
6	Histology of elementary tissues and various organs of above mentioned Systems	3
7	Use & Care of Microscope.	3
8	Estimation of haemoglobin using Sahli's method.	3
9	Determination of total WBC count by haemocytometry.	3
10	Determination of RBC count by haemocytometry.	3
11	Determination of differential WBC count by haemocytometry.	3
12	Determination of clotting time and bleeding time of blood.	3
13	Determination of Erythrocyte sedimentation rate (ESR).	3
14	Determination of Blood Group of own blood.	3
15	Demonstration of Effect of Osmosis on RBC.	3
16	Determination of pulse rate, blood pressure, listening to heart sounds, demonstration of ECG.	3
17	Amphibian Experiments for Study of Properties of Skeletal Muscle using either demonstrations or computer simulated experiments.	3

Recommended Study Materials: (Latest edition)

Text books

1. Tortora G. J. and Anagnodokos N. P. Principles of Anatomy and Physiology (Harper and Colling Publishers, New York)
2. Goyal R. K. & Mehta A.A. Human Anatomy Physiology and Health Education, (B. S. Shah Prakashan)
3. Waugh A. and Grant A.: Ross and Wilson's Anatomy and Physiology in Health & illness -- Churchill Livingstone
4. Goyal R.K. et al.: Practical Anatomy Physiology and Biochemistry (B. S. Shah Prakashan, Ahmedabad)

Reference books

1. Guyton A.C. and Hall J.E. : Textbook of Medical Physiology, W. B. Saunders.
2. Martini, F. Fundamentals of Anatomy and Physiology (Prentice Hall)
3. West, J. B. Best and Taylor's physiological Basis of Medical Practice (Williams and Wilkins, Baltimore)

SUBJECT NAME: BASICS OF COMPUTER APPLICATION**(Theory & Practical)**

Teaching Hours Per Week		Marking System			
Theory	Practical	Theory		Practical	
2	3	Internal	External	Internal	External
		25	75	25	75

Objective of the course:

- The course covers fundamentals of computers and softwares.

Students learning outcomes/objectives:

- By the end of this course, the student should have a good understanding of the history and basic concepts of computer science.

Instructional methods and pedagogy:

- Using blackboard and one-way communication from a teacher to a student.
- Using an overhead and LCD projector
- Use of various language in softwares.

DETAILED SYLLABUS**(THEORY)****3 HR/WEEK**

Chapter. No	Course Contents	Teaching Hours
1	Computer Fundamentals :Introduction, Classification of Computers (Based on all Criteria), Functional Units, Evaluation of Computer Languages, Assembler, Compiler, Interpreter.	4
2	Number Systems: Introduction to Number Systems - Numeric and Non-Numeric Representation of Data, Decimal, Binary (Addition,Subtraction, Multiplication, Division) and Hexadecimal Number Systems.	5
3	Introduction to Networks	5

	<ul style="list-style-type: none"> • Network Topologies - Linear, Ring, Star, Mesh, Hybrid, Types of Network - Lan, Man, Wan • Internet and Intranet, Protocols (TCP, IP, SMTP, FTP, HTTP etc.), • Web pages, Browsers, Search Engines 	
4	Introduction to DBMS : Data and Information, Database Users, Characteristics of the Database Approach, Advantages of using DBMS, Data Models, Schemas and Instances, Database Languages (DML, DDL)	4
5	Introduction to OS : <ul style="list-style-type: none"> • Definition and Types of Operating Systems (Unix, Linux, Windows, Mac OS) • Basic Operating System commands (DOS, Linux) 	4
6	Introduction to Office Packages: Documentation tools, Spreadsheet tools, presentation tools, databases tools , email clients	8
7	Introduction to Free and Open Source softwares	2

DETAILED SYLLABUS

(PRACTICAL)

3 HR/WEEK

Sr. No.	Course contents	Teaching Hours
1	Documenting tool: Creating Document, Letters, Banners, Pamphlets, Newspapers, Alignment of Paragraphs and Fonts, Page Settings, Mail Merge, Creating Tables, Header Footers, Inserting Images, Files.	6
2	Spreadsheet tool: Creating Salary Slips, Creating Marks Cards, Creating Student/Employee Complete Data, Creating Different Graphs with respect to the given data eg. Salary Slip, Employee Performance. Students Marks Cards, Calculating Sum, Average - Manual and Automatic by using tools.	9

3	<u>Presentation tool:</u> Creating Colorful Slides with respect to any given data or to the subject using audio and video files	6
4	<u>Data management tool</u>	9
5	Internet and Email	9
6	Open Source Softwares and ISIS Draw	6

Reference Books

1. Thomas CB. Digital Computer Fundamentals. Tata Mc Graw Hill Publishing.
2. Sinha. Fundamentals of computers.
3. Ramez E, Shamkanth BN. Fundamentals of database systems.
4. IVAN Bayross, SQL, PL/SQL The programming Language of Oracle.

Tools:

- 1) Libre Office
- 2) MS Office
- 3) Open office

SUBJECT NAME: REMEDIAL MATHEMATICS**Type of Course:** Remedial Mathematics**Prerequisite:** Basic knowledge of Mathematics.**Rationale:** Basic knowledge of functions, logarithmic, trigonometric and exponential functions, graph of a function, differentiation and integration, differential equations, simultaneous equations.**Teaching and Examination Scheme:**

Teaching Hours Per Week		Marking System			
Theory	Practical	Theory		Practical	
3	-	Internal	External	Internal	External
		25	75	-	-

Contents:

Sr. No.	Topic	Teaching Hrs.
1.	Algebra: Determinants, properties, Solution of simultaneous equations by Cramer's rule, Matrices, Types of matrices, arithmetic operations on matrices, pharmaceutical applications of determinants & matrices, Permutations & combinations.	06
2.	Trigonometry: Measurement of angles, trigonometry functions, compound angles, trigonometry ratios of multiple angles ($\sin 2\theta$, $\cos 2\theta$, $\tan 2\theta$), Heights and distances (All simple	04

Sr. No.	Topic	Teaching Hrs.
	problems only).	
3.	Analytical Geometry: Point – Distance – Examples. Straight line: - General form of the Equation of a straight line, slope of the line, slope point form. Condition for two lines to be parallel and perpendicular, Perpendicular distance from the point to the line, angle between two lines. Circle: General Equation of a circle, finding centre and radius of the circle.	08
3.	Basic Differential Calculus: Limit and Continuity, Differentiation, derivative of product, derivative of function, derivation of a fraction of functions, Derivatives of trigonometric functions (excluding inverse trigonometric and hyperbolic functions), Derivatives of Logarithmic and exponential functional, Maxima and minima (all simple problems).	08
4.	Basic Integral Calculus : Integration as inverse of differentiation, Indefinite integrals of standard forms, integration by parts, substitution & partial fractions, Formal evaluation of definite integrals.	06
5.	Basic Differential Equations: Differential equation of first order & first degree, Variable Separable method, Homogeneous & Linear differential equation, Pharmaceutical application on Differential equation.	06
6.	Introduction To Probability: Introduction, Some Basic Probability, Explanation of certain terms, Classical Definition of Probability,	10

Sr. No.	Topic	Teaching Hrs.
	Theorems of Probability, Conditional Probability and the multiplication theorems of probability, Bayes theorem Random Variable, Probability Distributions, Bernoulli Trial Experiments, Binomial distributions, Properties of the Binomial Distribution, Poisson Distribution, Normal Distribution, Exponential Distribution and Uniform Distribution.	

Reference Books:

1. Text book of Remedial Mathematics by Dr. A Ramakrishna Prasad Cengage Learning.
2. Pharmaceutical Arithmetic's by Mohd. Ali CBS publishers and distributor, New Delhi.
3. Statistical methods - S P Gupta, Sultan Chand & Sons.
4. Remedial Mathematics by Gupta & Prabhakar; Pragati Prakashan.

Course Outcome:

After learning the course the students shall be able to:

1. Perform basic operations of matrices and solve the equation using determinants
2. Determine derivative and integration and solve differential equations.
3. Calculate probability and apply in their field.

SUBJECT NAME: COMMUNICATION SKILLS & PERSONALITY DEVELOPMENT-I**(Theory and Practical)**

Teaching Hours Per Week		Marking System			
Theory	Practical	Theory		Practical	
1	2	Internal	External	Internal	External
		25	75	25	75

Objective of the course:

- The course covers communication skills and overall development of student.

Students learning outcomes/objectives:

- By the end of this course, the student should have a good understanding of and basic concepts of English language.

Instructional methods and pedagogy:

- Using blackboard and one-way communication from a teacher to a student.
- Using an overhead and LCD projector

DETAILED SYLLABUS**(THEORY)****1 HR/WEEK**

Chapter. No	Course Contents	Teaching Hours
1	Grammar: Sub-Verb-Agreement, Vocabulary (Homophones, Homonyms and Confusables)	2
2	Listening Skills: Importance of Listening, difference between listening and hearing , types of listening	2
3	Speaking Skills & Personality Development: Presentation Skills: Objective, Analyzing Audience, Designing PPT,	7

	Non-Verbal Communication. Personality Development: Self-awareness, SWOT Analysis, Goal Setting.	
4	Reading Skills : Techniques of Reading	1
5	Writing Skills (To be asked in theory paper) Paragraph Development, Email etiquettes and Layouts	3

DETAILED SYLLABUS

(PRACTICAL)

2 HR/WEEK

Sr. No.	Topic	Teaching Hrs
1.	Grammar: Practice & Application	3
2.	Listening Skills: Telephonic Conversation	2
3.	Speaking Skills: Storytelling, Role Play, Presentation, ITEP (International Test of English Proficiency) – Speaking Task 1: To speak on a given topic for 1 minute, IELTS (International English Language Testing System) Task 1: To speak on a given topic for 2 to 3 minutes	14
4.	Reading Skills: Reading Comprehension	2
5.	Writing Skills (To be asked in theory paper): Picture Description, 1 st person description, 3 rd person description, dialogue writing, Note Making, Paragraph writing, ITEP – Writing	9

	Task 1: write a short note to respond to a simple situation or topic (75 to 100 words), Story Writing / Completion (from given points / description / set of pictures), E- mail	
	Total	30

Reference Books:

1. Technical Communication : Principles And Practice by Sangeetha Sharma, Meenakshi Raman, Oxford University Press, New Delhi (Green Cover page 2008)
2. English for Academic Purposes-I by Deeptha Achar, et al, Orient Black Swan
3. Barron's The Leader in Test Preparation by Dr. Lin Lougheed, New Age International (P) Limited Publishers, New Delhi
4. UTS In search English Prepare for IELTS: Academic module 2012, University of Technology, Sydney
5. Developing Reading Skills: A Practical Guide to Reading Comprehension Exercises by Frangoise Grellet, Cambridge University Press
6. Communication Skills for Engineers by Mishra and Murlikrishna, New Delhi: Pearson Education
7. Communication Skills for Technical Students by T.M. Farhathullah, Orient Black Swan
8. Communication Skills by Parul Papat and Kaushal Kotadia,, Pearson Publication