



CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Course of study and scheme of Examination
Diploma (2005-06) in Pharmacy (Part-I) Examination

FIRST YEAR

S. No	Subject Code	Board of Study	Subject	Periods Per Week			Scheme of Examination				Total Marks
				L	T	P	Theory		Practical		
							EYE	SESSIONAL	EYE	SESSIONAL	
1	241111 (41)	Pharmacy	Pharmaceutics-I	3	-	-	80	20	-	-	100
2	241112 (41)	Pharmacy	Pharm. Chem-I	3	-	-	80	20	-	-	100
3	241113 (41)	Pharmacy	Pharmacognosy	3	-	-	80	20	-	-	100
4	241114 (41)	Pharmacy	Biochemistry & clinical Pathology	2	-	-	80	20	-	-	100
5	241115 (41)	Pharmacy	Human Anatomy & Physiology	3	-	-	80	20	-	-	100
6	241116 (41)	Pharmacy	Health Education & Community Pharmacy	2	-	-	80	20	-	-	100
7	241121 (41)	Pharmacy	Pharmaceutics-I Lab	-	-	4	-	-	80	20	100
8	241122 (41)	Pharmacy	Pharm. Chem-I Lab	-	-	3	-	-	80	20	100
9	241123 v	Pharmacy	Pharmacognosy Lab	-	-	3	-	-	80	20	100
10	241124 (41)	Pharmacy	Biochemistry & clinical Pathology Lab	-	-	3	-	-	80	20	100
11	241125 (41)	Pharmacy	Human Anatomy & Physiology Lab	-	-	2	-	-	80	20	100
Total				16	-	15	480	120	400	100	1100

L - Lecturer,

T - Tutorial,

P - Practical,

EYE - End Year Exam,

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester - 1st Year (Diploma)

SUBJECT - PHARMACEUTICS - I

Theory Code 241111

Branch/Discipline - Pharmacy

Minimum Number of class tests to be conducted - 2

Theory (75 hours)

Course Contents -

1. Introduction of different dosage forms. Their classification with examples-their relative Applications. Familiarization with new drug delivery systems.
2. Introduction to Pharmacopoeias with new drug delivery systems.
3. Metrology-Systems of weights and measures. Calculations including conversion from one to another system, Percentage calculations and adjustment of products. Use of allegation method in calculations. Isotonic solutions.
4. Packaging of pharmaceuticals-Desirable features of a container-types of containers. Study of glass and plastics as materials for containers and rubber as a material for closures their merits and demerits. Introduction to aerosol packaging.
5. Size reduction- Objectives, and factors affecting size reduction, methods of size reduction-Study of hammer mill, ball mill, Fluid energy Mill and Disintegrator.
6. Size separation-Size separation by sifting. Official standards for powders. Sedimentation Methods of size separation. Construction and working of Cyclone separator.
7. Mixing and Homogenization- Liquid mixing and power mixing, Mixing of semisolids. Study of silvers on Mixer-Homogeniser, Planetary Mixer Agitated Powder mixer, Triple roller Mill, Propeller Mixer, Colloid mill and hand Homeniser. Double cone mixer.
8. Clarification and Filtration-Theory of filtration, Filter media: Filter aids and selection of filters. Study of the following.
9. Extraction and Galenicals (a) Study of percolation and maceration and their modifications, continuous hot retraction-
10. Heat Processes:- Evaporation, Definition, factor's affecting evaporation - Study of evaporating Still and evaporating Pan.
11. Distillation:- Simple Distillation and fractional distillation, Steam distillation and vaccum distillation Study vaccum Still, Preparation of Puri fied water I.P. and water fpr Injection I.P. Construction and working of The Still used for the same.
12. Introduction to drying processes - Study of Tray Dryers: Fluidized Bed Dryer, Vacuum Dryer and Freeze Dryer.

13. Sterilization - Concept of sterilization and its differences from disinfections - Thermal resistance of microorganisms. Detailed study of the following sterilization processes.
 - (i) Sterilization with moist heat,
 - (ii) Dry heat sterilization,
 - (iii) Sterilization by radiation,
 - (iv) Sterilization filtration and
 - (v) Gaseous sterilization

Aseptic techniques - Application of sterilization processes in hospitals particularly with reference to surgical dressings and intravenous fluids. Precautions for safe and effective handling of sterilization equipment.
14. Processing of Tablets- Definition, Different types of compressed tablets and their properties. Process involved in the production of tablets: Tablets excipients; Defects in tablets; Evaluation Tablets; Physical standards including Disintegration and dissolution. Tablet coating-Sugar Coating, film coating, enteric coating and micro encapsulation (Tablet coating may be dealt in an elementary manner)
15. Processing of Capsules-Hard and soft gelatin capsules different sizes of capsules; filling of capsules; handling and storage of capsules. Special applications of capsules.
16. Study of immunological products like sera, vaccines, toxoids and their preparations.

Practical Code 241121

PRACTICAL (100 hours)

Preparation (minimum number stated against each) of the following categories illustrating different techniques involved.

1.	Aromatic waters	3
2.	Solutions	4
3.	Spirits	2
4.	Tinctures	4
5.	Extracts	2
6.	Creams	2
7.	Cosmetic Preparations	3
8.	Capsules	2
9.	Tablets	2
10.	Preparations involving sterilization	2
11.	Ophthalmic preparations	2
12.	Preparations involving aseptic techniques	2

Books Recommended: (Latest editions)

1. Remington's Pharmaceutical Science
2. The Extra Pharmacopoeia- Martindale

Chhattisgarh Swami Vivekanand Technical University, Bilai

Semester - 1st Year (Diploma)

**SUBJECT - PHARMACEUTICAL CHEMISTRY-I
241112**

Theory Code

Branch/Discipline - Pharmacy

Minimum Number of class tests to be conducted - 2

Theory (75 hours)

Course Contents -

1. General discussion on the following inorganic compounds including important physical & chemical properties: medicinal & Pharmaceutical uses, storage conditions & chemical in compatibility.
 - (A) Acids, bases & buffers-Boric acid*, Hydrochloric acid, storage ammonium hydroxide, Calcium hydroxide, Sodium hydroxide & official buffers.
 - (B) Antioxidants-Hypo phosphorous acid, Sulphur dioxide, Sodium bisulphate, Sodium meta-bisulphate, Sodium thiosulphate, Nitrogen & Sodium Nitrite.
 - (C) Gastrointestinal agents-
 - i. Acidifying agents-Dilute hydrochloric acid
 - ii. Antacids-Sodium bicarbonate, Aluminium hydroxide gel, Aluminium Phosphate, Calcium carbonate, Magnesium carbonate, Magnesium trisilicate, Magnesium oxide, combinations of antacid preparations.
 - iii. Protectives and Adsorbents-Bismuth sub-carbonate and Kaolin.
 - iv. Saline cathartics-Sodium Potassium tartrate and Magnesium sulphate.
 - (D) Topical Agents-
 - (E) Dental Products-Sodium fluoride, stannous fluoride, Calcium carbonate, Sodium Meta phosphate, Dicalcium phosphate, Strontium chloride, Zinc chloride.
 - (F) Inhalants-Oxygen, Carbon dioxide, Nitrous oxide.
 - (G) Respiratory stimulants-Ammonium chloride.
 - (H) Expectorants & Emetics-Ammonium chloride*, Potassium iodide, Antimony Potassium tartrate.
 - (I) Antidotes-Sodium nitrite.
2. Major Intra & Extra cellular electrolytes
 - (A) Electrolytes used for replacement therapy-Sodium Chloride & its preparations, Potassium chloride & its preparations.

- (B) Physiological acid-base balance & electrolytes used-Sodium acetate, Potassium acetate, Sodium bicarbonate injection, Sodium citrate, Potassium citrate, Sodium lactate injections, Ammonium chloride and its injection.
- (C) Combination of oral electrolyte powders & solutions.
3. Inorganic Official compounds of Iron, Iodine, & Calcium Ferrous Sulphate & Calcium gluconate.
 4. Radio pharmaceuticals & Contrast media-Radio activity-Alpha, Beta & Gamma Radiations, Biological effects of radiations, Measurement of radioactivity G.M. Counter-Radio isotopes-their uses, storage & precautions with special reference to the official preparations Radio opaque Contrast Media-Barium sulphates.
 5. Quality control of Drugs & Pharmaceuticals-Importance of quality control, significant errors, methods used for quality control, sources of impurities in Pharmaceuticals. Limit tests for Arsenic chloride, sulphate, iron & Heavy metals.
 6. Identification tests for cations & anions as per Indian Pharmacopoeia.

Practical Code - 241122

PRACTICAL (75 Hours)

1. Identification tests for inorganic compounds particularly drugs & pharmaceuticals.
2. Limit test for chloride, sulphate, Arsenic, Iron & Heavy metals.
3. Assay of inorganic Pharmaceuticals involving each of the following methods of compounds marked with (*) under theory.
 - a. Acid-base titrations (at least 3)
 - b. Redox titrations (One each of Permanganometry and iodimetry).
 - c. Precipitation titration (at least 2)
 - d. Complexometric titrations (Calcium and Magnesium).

Book recommended (Latest editions)

1. Indian Pharmacopoeia.

Chhattisgarh Swami Vivekanand Technical University, Bilai

Semester - 1st Year (Diploma)

**SUBJECT - PHARMACOGNOSY
241113**

Theory Code

Branch/Discipline - Pharmacy

Minimum Number of class tests to be conducted - 2

Theory (75 hours)

Course Contents -

1. Definition, history & scope of Pharmacognosy including indigenous system of medicine.
2. Various systems of classification of drugs of natural origin.
3. Adulteration & drug evaluation; significance of Pharmacopoeial standards.
4. Brief outline of occurrence, distribution outline of isolation, identification tests, therapeutic effects & pharmaceutical applications of alkaloids, terpenoids, glycosides, volatile oils, tannins & resins.
5. Occurrence, distribution, Organoleptic evaluation, chemical constituents including tests wherever applicable & therapeutic efficacy of following categories of drugs:
 - a. Laxatives: Aloes, Rhuburb, Castor oil Ispaghula, Senna.
 - b. Cardiotonics-Digitalis, Arjuna.
 - c. Carminatives & G.I. regulators-Umbelliferous fruits. Coriander, Fennel Ajowan, Cardamom. Ginger, Black pepper Asafoetida, Nutmeg, Cinnamon, Clove.
 - d. Astringents-Catechu.
 - e. Drugs acting on nervous system-Hyoscyamus, Belladonna, Aconite, Ashwagandha, Ephedra, opium, Cannabis, Nux vomia.
 - f. Antihypertensives-Rauwolfia.
 - g. Ntitussives-Vasaka, Tolu balsam, Tulsi.
 - h. Antirheumatics-Guggul, Colchicum.
 - i. Antitumour-Vinca.
 - j. Antileprotics-Chaulmoogra oil.
 - k. Antidiabetics-Pterocarpus, Gymnema, Sylvestro.
 - l. Diuretics-Gokhru, Punarnava.
 - m. Antidysenterics-Ipecacuanha.
 - n. Antiseptics & disinfectants Benzoin, Myrrh, Nim, Curcuma.
 - o. Antimalarials-Cinchona.
 - p. Oxytocics-Ergot.
 - q. Vitamines-Shark liver oil & Amla.

- r. Enzymes-Papaya, Diastase, yeast.
 - s. Perfumes & flavouring agents-Peppermint Oil, Lemon Oil Orange Oil, lemon grass Oil Sandalwood.
 - t. Pharmaceutical aids-Honey, Arachis Oil, Starch, Kaolin, Pectin, Olive Oil, Lanolin, Beeswax, Acacia, Tragacanth, Sodium alginate Agar, Guar gum, Gelatin.
 - u. Miscellaneous- Liquorice, Garlic, Picrorhiza, Dioscorea, Linseed, Shatavari, Shankhpushpi, Pyrethrum, Tabacco.
6. Collection & preparation of crude drugs for the market as exemplified by Ergot, opium, Rauwolfia, Digitalis, Senna.
 7. Study of source, preparation & identification of fibres used in sutures & surgical dressings-cotton, silk, wool & regenerated fibres.
 8. Gross anatomical studies of-Senna, Datura, Cinnamon, Cinchona, Fennel, Clove, Ginger, Nuxvomica & ipecacuanha.

Practical Code - 241123

PRACTICAL (75 Hours)

1. Identification of drugs by morphological characters.
2. Physical & chemical tests for evaluations of drugs wherever applicable.
3. Gross anatomical studies (t.s.) of the following drugs Senna, Datura, Cinnamon, Cinchona, Coriander, Fennel, Clove Ginger, Nuxvomica, Ipecacuanha.
4. Identification of fibers & surgical dressings.

Chhattisgarh Swami Vivekanand Technical University, Bilai

Semester - 1st Year (Diploma)

**SUBJECT - BIOCHEMISTRY AND CLINICAL PATHOLOGY Theory Code
241114**

Branch/Discipline - Pharmacy

Minimum Number of class tests to be conducted - 2

Theory (50 hours)

Course Contents -

1. Introduction to Biochemistry.
2. Brief chemistry & role of proteins, polypeptides & amino acids, classification, Qualitative tests, Biological value, Deficiency diseases.
3. Brief chemistry & role of Carbohydrates, Classification, qualitative tests. Diseases related to carbohydrate metabolism.
4. Brief chemistry & role of Lipids, Classification, qualitative tests. Diseases related to lipids metabolism.
5. Brief chemistry & role of Vitamins & Coenzymes.
6. role of minerals & water in life processes.
7. Enzymes: Brief concept of enzyme action. Factors affecting it. Therapeutic & pharmaceutical importance.
8. Brief concept of normal & abnormal metabolism of proteins, carbohydrates & lipids.
9. Introduction to pathology of blood & urine.
 - a. Lymphocytes & Platelets, their role in health & disease.
 - b. Erythrocytes-Abnormal cells & their significance.
 - c. Abnormal constituents of urine & their significance in diseases.

Practical Code - 241124

PRACTICAL (75 Hours)

1. Detection and identification of Proteins, Amino acid, Carbohydrates & Lipids.
2. Analysis of normal and abnormal constituents of blood & urine (Glucose, Urea, Creatine Creatinine Cholesterol, alkaline phosphates, acid phosphates, Bilirubin, SGPT, SGOT, Calcium, Diastase, Lipase.)
3. Examination of sputum and faeces (microscope staining).
4. Practice in injecting drugs by intramuscular and intravenous routes. Withdrawal of blood.....

Chhattisgarh Swami Vivekanand Technical University, Bilai

Semester - 1st Year (Diploma)

**SUBJECT - HUMAN ANATOMY AND PHYSIOLOGY
241115**

Theory Code

Branch/Discipline - Pharmacy

Minimum Number of class tests to be conducted - 2

Theory (75 hours)

Course Contents -

1. Scope of Anatomy and Physiology.
Definition of various terms used in Anatomy.
2. Structure of cell, function of its components with special reference to mitochondria and microsomes.
3. Elementary tissues of the body, i.e. epithelial tissue, muscular tissue, Connective tissue and nervous tissue.
4. Structure and function of skeleton. Classification of joints and their function, joint disorders.
5. Composition of blood, functions of blood elements. Blood group and Coagulation of blood. BRIEF information regarding disorders of blood.
6. Name & functions of lymph glands.
7. Structure & functions of various parts of the heart. Arterial & venous system with special reference to the names & positions of main arteries & veins. Blood pressure & its recording. Brief information about cardiovascular disorders.
8. Various parts of respiratory system & their functions. Physiology of respiration.
9. Various parts of urinary systems & their functions, structure & functions of kidney. Physiology of Urine formation. Pathophysiology of renal diseases & oedema.
10. Structure of skeletal muscle. Physiology of muscle contraction. Names, positions, attachments & functions of various skeletal muscles. Physiology of neuromuscular junction.
11. Various parts of central nervous system, brain & parts, functions & reflex action. Anatomy & Physiology autonomic nervous system.
12. Elementary knowledge of structure & functions of organs of taste, smell, ear, eye & skin. Physiology of part.

13. Digestive system: Names of the various parts of dig system & their functions. Structure & functions of liver physiology of digestion & absorption.
14. Endocrine glands & Hormones. Location of the gland their hormones & functions.
Pituitary, THYROID, adrenal & Pancreas.
15. Reproductive system-Physiology &Anatomy of Reproductive system.

Practical Code - 241125

PRACTICAL (50 Hours)

1. Study of the human skeleton.
2. Study with the help of charts & models of the following systems & organs: following systems & organs:
3. Microscopic examination of epithelial tissue, cardiac muscle, smooth muscle, skeletal muscle. Connective tissue & nervous tissues.
4. Examination of blood films for TDC, DLC & malarial parasite.
5. Determination of clotting time of blood, erythrocyte sedimentation rate & Hemoglobin value.
6. Recording of body temperature, pulse, heart rate, blood pressure & ECG.

Chhattisgarh Swami Vivekanand Technical University, Bilai

Semester - 1st Year (Diploma)

SUBJECT - HEALTH EDUCATION AND COMMUNITY PHARMACY

Theory Code 241116

Branch/Discipline - Pharmacy

Minimum Number of class tests to be conducted - 2

Theory (50 hours)

Course Contents -

1. Concept of health-Definition of physical health, mental health, social health, spiritual health determinates of heath, indicators of health, concept of disease, natural history of diseases, the disease agents, concept of prevention of diseases.
2. Nutrition & health-Classification of foods, requirements, diseases induced due to deficiency of proteins, vitamins, & minerals-treatment & prevention.
3. Demography & family planning - Demography cycle, fertility, family planning, contraceptive methods, behavioral methods, natural family planning method, chemical method, mechanical methods, hormonal contraceptives, population problem of India.
4. First aid-Emergency treatment in shock, snake-bite, burns, poisoning, heart disease, fractures & resuscitation methods. Elements of minor surgery & dressings.
5. Environment & health-Sources of water supply, water pollution, purification of water, health & air, noise, light-solid waste disposal & control medical entomology, arthropod borne disease & their control, rodents, animals & diseases.
6. Fundamental principles of microbiology - Classification of microbes, isolation, techniques of organisms of common diseases.

7. Communicable diseases-Causative agents, mode of transmission & prevention.
 - a. Respiratory infections- Chicken pox, measles, influenza, diphtheria, whooping cough & tuberculosis.
 - b. Intestinal infections: Poliomyelitis, Malaria, Filariasis.
 - c. Arthropod borne infections-Plague, Malaria, Filariasis.
 - d. Surface infections-Rabies, Thachoma, Tetanus, Laprosy.
 - e. Sexually transmit ion diseases-Syphilis, Conorrhoea, AIDS.
8. Non-communicable diseases-Causative agents, prevention, care & control. Cancer, Diabetes, Blindness, Cardiovascular diseases.
9. Epidemiology-Its scope, methods, uses, dynamics of disease transmission. Immunity & immunizations Immunological products & their does schedule. Principles of disease control & prevention, hospital acquired infection, prevention & control. Disinfection, types of disinfection procedures, for faeces, urine, cu room, liron, dead-bodies, instruments.
