GOVERNMENT OF JAMMU AND KASHMIR
JAMMU & KASHMIR SERVICES SELECTION BOARD
CPO Chowk Panjtirthi, Jammu/ Zamzam Complex Rambagh Srinagar
www.jkssb.nic.in

NOTICE

Subject: Syllabi for various posts of Health & Medical Education Department advertised vide Notification No. 07 of 2025 dated 29.07.2025.

The Jammu and Kashmir Services Selection Board advertised the below mentioned posts of Health and Medical Education Department vide Advertisement Notification No. 07 of 2025 dated 29.07.2025. The syllabi for these posts are hereby notified as **Annexures "A" to "V"** to this notice, for information of the concerned candidates.

S. No.	Name of the post	Syllabus Annexure
1.	Attendant General Cadre (AGC) G-II	"A"
2.	Barber G-III	
3.	CSSD Attendant	"B"
4.	Nursing Aid G-III	
5.	Insect Collector	
6.	BCG Technician	"C"
7.	Female MPHW	"D"
8.	Male Multi-Purpose Health Worker	
9.	Barber	"E"
10.	Dhobi/Jr.Dhobi	
11.	Junior Store Clerk	"F"
12.	Dresser	"G"
13.	Junior Pharmacist	
14.	Junior Dental Technician	"H"
15.	Junior Health Inspector (FW)	"I"
16.	Junior Laboratory Technician	"J"

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17.	Junior Ophthalmic Technician	**"K"**
18.	Junior Staff Nurse/Junior male Nurse	**"L"**
19.	Staff Nurse G-II	
20.	Junior Theatre Technician	**"M"**
21.	Junior X-ray Technician	**"N"**
22.	Para Medical Assistant	**"O"**
23.	Technician G-II	**"P"**
24.	Refrigerator Mechanic	**"Q"**
25.	Extension Educator	**"R"**
26.	Health Educator	
27.	Sanitary Inspector	**"S"**
28.	Service Engineer	**"T"**
29.	Warden	**"U"**
30.	Prosthetic/Orthetic Tech.	**"V"**

30.08.2025

(Reyaz Ahmad Malik) JKAS
Controller of Examinations
J&K Services Selection Board

No. JKSSB-COE0EXAM(UT)/47/2023-03(7202120) Dated:30.08.2025

Copy to the: -

1. Commissioner/Secretary to the Government, General Administration Department, Civil Secretariat, J&K, Jammu/Srinagar.
2. Director, Information & Public Relations, J&K Government with the request to get the said notification published in at least two leading local newspapers of Jammu/Srinagar for three consecutive days.
3. Member(s) ALL, J&K Services Selection Board.
4. Secretary, J&K Services Selection Board.
5. P.S. to Chairperson, J&K Services Selection Board for the information of Chairperson.
6. In-charge Website, Services Selection Board, Jammu.
7. Office record.

Annexure "A"

Syllabus for the post of Attendant General Cadre (AGC) G-II/ Barber G-III

Marks: 120
Time: 02hours

1) Basis Mathematics **24 Marks**

- Percentage
- Average
- Time, Work and Distance
- Ration and Proportions
- Problem of Age
- Probability
- LCM, HCF
- Mensuration

2) Basis Reasoning **24 Marks**

- Analogies
- Relationship concepts
- Figure odd one out
- Direct Sense
- Figure Series completion
- Venn Diagram
- Number series
- Coding/Decoding

3) Basis English **24 Marks**

- Articles
- Synonyms
- Antonyms
- Preposition
- Verbs
- Reading comprehension
- Determiners
- Spellings
- Sentences

4) General Awareness and Science **48 Marks**

- General current events (National Level)
- Sports
- India culture
- India history
- Indian geography
- Capital/State
- General Science
- Health, Hygiene and Sanitation
- Geography of Jammu and Kashmir
- Culture of Jammu and Kashmir
- History of Jammu and Kashmir

Annexure "B"

Syllabus for the post of CSSD Attendant/ Nursing Aid G-III/ Insect Collector

Time: 02 Hrs.
Marks: 120

Unit-I GENERAL ENGLISH 20 Marks

(I) Paragraph writing / Comprehension
(II) Editing / Proof Reading.
(III) Rearranging of jumbled sentences
(IV) Dialogue
(V) Narration
(VI) Models
(VII) Articles
(VIII) Paragraph writing with blanks to be filled in with the following Phrases, Pronouns, Homonyms / homophones, Tenses.
(IX) Clauses
(X) Punctuation
(XI) Synonyms and antonyms
(XII) Pairs of words and their use in meaningful sentences.
(XIII) Idioms and phrases.
(XIV) Uses of Prepositions

Unit-II MATHEMATICS 17 Marks

(i) Problems on finding Surface areas and volumes of combinations of any two of the following cubes, cubiods, spheres, hemispheres and right circular cylinders / cones. Frustum of a cone.
(ii) Problems involving converting one type of metalic solid into another and other mixed problems.
(iii) Profit and loss
(iv) Simple / Compound interest.
(v) Linear equations with two variables.
(vi) Progression / BODMAS
(vii) Probability: Simple problems on Single event.

Unit-III HISTORY 10 Marks

(i) Revolt of 1857 - Causes and Effects.
(ii) Rise of National Movement - Factors.
(iii) Formation of the Indian National Congress in 1885 and Role of Moderates.
(iv) Factors leading to the rise of Exremism in the Congress with special reference to the Partition of Bengal.
(v) Important dates and historical events with reference to India
(vi) Boycott and Swadeshi Movement.
(vii) Rise of Muslim League in 1906 : Cause.
(viii) Khilafat Movement and the Non-Cooperation Movement.
(ix) Quit India Movement.
(x) Independence and Partition of India.

Unit-IV CIVICS 10 Marks

(i) Fundamental Rights.
(ii) Fundamental duties.
(iii) Directive Principles.
(iv) Origin of democracy and its types. Direct and Indirect Democracy, Hindrance to Democracy.
(v) Public opinion.
(vi) Representaion.
(vii) Franchise.

(viii) Secret Ballot.
(ix) Nomination.
(x) Symbol.
(xi) The Campaign
(xii) Presidential elections.
(xiii) Languages
(xiv) Cities and Villages.
(xv) The United Nations.

Unit-V GEOGRAPHY 10 Marks

(i) Change of Seasons/ Planets/ Solar System/ Longitude - Latitude.
Types of forests (with special reference of J&K State)
(ii) Conservation and protection of forests.
(iii) National / Zoological Parks and wildlife sanctuaries (Reference of J&K Sanctuaries and National Parks).
(iv) Water resources. Sources of Water (with special reference of J&K State), Uses of water Resources. Conservation and management of water resources.
(v) Rainwater Harvesting.
(vi) Transport.
(vii) Roads (Different routes of J&K State)

Unit-VI GENERAL SCIENCE 17 Marks

(i) Gravitation / Heat / Light / Matter / Acids / Salts / Elements / Cells.
(ii) Various sources of energy; conventional sources of energy; improvement in technology for using conventional source of energy (Biomass and wind energy)
(iii) Non-conventional sources of energy (Solar energy, Energy from sea).
(iv) Physical properties of metals and non-metals.
(v) Chemical properties of metals like action of water, air, acids, salts; Reactivity series of metals.
(vi) Occurance of metals; their extraction, enrichment of ores. Extraction of metals in accordance with activity series; refining of metals.
(vii) Life processes: Nutrition and its types, Respiration, Transportation of water, food and minerals in plants, Excretion with reference to plants and animals.
(viii) Environmental pollution.
(ix) Ecosystem – Its components, Food chains and Food webs.
(x) Ozone layer, its depletion, Green House Effect.
(xi) Mendal's contribution and experiments on pea plant.
(xii) Types of reproduction in Plants and Animals.
(xiii) Classification of Plants and Animals.

Unit-VII (A) GENERAL KNOWLEDGE AND CURRENT AFFAIRS 13 Marks

Abbreviations, Important Dates, Popular Personalities, Geographical Discoveries, Books and Authors, Principal Languages of India, Capitals and Currencies of Countries, United Nations Organisation, Members of United Nations Organisation (UNO), Other International Organisations and Groups, Members of SSARC, ASEAN, BRICS AND G-7, Space Programme of India, India's Automic Research Programme, Awards, Honours and Prizes, Seven Wonders. The World of Sports, Exports and Imports, India GDP, Per capita Income, Thermal / Nuclear/ Hydro Power Plants in India.

(B) GENERAL KNOWLEDGE WITH SPECIAL REFERENCE TO J&K 10 Marks

(I) Important dates, Popular names of personalities and their achievements / contribution.
(II) Constitution of J&K with reference to constituent Assembly.
(III) Centre-State relationship.
(IV) Weather, Climate, Crops, Means of Transport.
(V) Important projects and their impact on State Economy.
(VI) Rivers and Lakes.
(VII) Important Tourist Destinations.

(VIII) History of J&K State.
(IX) Historical places and their importance.
(X) Flora and Fauna of J&K State.

Unit-VIII **MENTAL ABILITY TEST** **13 Marks**

(I) Number series
(II) Letter series
(III) Coding decoding
(IV) Direction sense
(V) Blood relations
(VI) Mathematical reasoning
(VII) Speed, Distance and Time
(VIII) Statements and conclusions.

Annexure "C"

Marks: 120
Time: 02 hours

SYLLABUS

BCG TECHNICIAN

- Anatomy, Physiology & Biochemistry **(Marks :10)**
- Tuberculosis – Demography **(Marks :10)**
- Tuberculosis Epidemiology, Natural History of Tuberculosis, Diagnosis (Sputum Examination, Tuberculin test), Management (Curative and Preventive), Drugs of Tuberculosis, complication. **(Marks :15)**
- Basic of relevant pathology **(Marks :10)**
- Bacteria, Immunization its Hazard, national Immunization Schedule, Cold Chain equipment handling. **(Marks :15)**

- National programme & Policies on control of tuberculosis, DTP, RNTCP, DOTS. **(Marks :15)**

- B.C.G Vaccine, Route of administration of injection, Mechanism of action, Storage & Transport. **(Marks :15)**

- Diagnosis, Management & Complication of Tuberculosis. **(Marks :10)**

- HIV & Tuberculosis coordination. **(Marks :10)**

- Biomedical waste disposal. **(Marks :10)**

Annexure "D"

Syllabus for the post of Female MPHW/ Male MPHW

Marks :-120
Time :- 2.00 Hours

Science –I ***20 Marks***

- *Anatomy and Physiology*
- *Microbiology*
- *Psychology*
- *Sociology*
- *Hygiene*
- *Nutrition.*

Fundamentals of Nursing-I ***20 Marks***

- *Section "A" introduction to Nursing and Nursing procedures.*
- *Section "B" Nursing techniques*
- *Section "C" First aid and emergency nursing.*

Fundamentals of Nursing-II ***20 Marks***

- *Section A introduction to Child Health.*
- *Section B introduction to Maternal Health.*
- *Section C introduction to Family Health and Community Health.*

Community Health Nursing-I ***20 Marks***

- *Section A Domiciliary Midwifery.*
- *Section B Midwifery and Hepernitoy Nursing.*
- *Section C Family planning and family welfare.*

Community Health Nursing-II ***20 Marks***

- *Section A Nutrition Education.*
- *Section B Health Education.*
- *Section C Communication skills and Audio-visual aids.*

Community Health Nursing-III ***20 Marks***

- *Section A Basic Medicine and Pharmacology.*
- *Section B Health Problems and Plans.*
- *Section C Communicable Diseases.*
- *Section D Mental Diseases.*

ANATOMY

i) Introduction.

ii) Skeletal system over view of skeletal system, Bones, bone development and the repair, axial skeleton, appendicular Skeleton, surface anatomy and land-marks.

iii) Structure and function of joints, types of joints, muscular system introduction over vies of skeletal muscles chief muscles and group of muscles.

iv) Heart, Structure.

v) *Respiratory system structure*

vi) *Human Reproductive System structure and Embryology (Prenatal).*

PHYSIOLOGY

i) *Introduction.*

ii) *Organization of living things.*

iii) *Cells, tissues, organs, cavities and body system.*

iv) *Typical cell structure, properties of cell, living processes, tissues, types, structure and functions, the skin.*

v) *Muscular system-Structure.*

vi) *Muscle contraction and properties of muscle.*

vii) *Nervous System –division of the nervous system, brain and its functions, oriental nerves, spinal nerves.*

viii) *Special senses structure function and location of organs of special senses, eye structure and function of visual apparatus, ear structure and function of auditory apparatus.*

ix) *Maintaining the metabolism of the body circulatory system-blood composition, blood cells and plasma, hemoglobin , blood coagulation bleeding time, blood grouping and cross-matching physiological structure of heart and function, heart sounds and heart rates, circulation – systematic and pulmonary, blood vessels, pulse, venous and capillary system.*

x) *Digestive system the alimentary tract oral cavity stomach, small and large intestines peristalsis digestion salivary glands. Liver pancreas and gallbladder enzymes absorption and assimilation of food.*

xi) ***ECRETORY*** *system –Excretory organs location, structure and function. The urinary tract, urine formation composition of urine, micturition . Water and salt balance.*

xii) *Endocrine system-overview of the endocrine system, endocrine glands location, structure and function body temperature regulation.*

xiii) *Human Reproduction*

Embryology, parental Development, maturation of *reproduction Organs.*

The male reproductive tract external, organs. The Female reproductive tract external organs, menstrual cycle, hamones and reproduction.

Principles of organizing care according to head of the patient. *(Seriously ill, Chronically ill)*

Moderately ill, terminally.

Principles of organizing care according at patient group.

Maintenance of supplies, equipments and other facilities.

Records and Reports*.*

Health records, family care records, medical records, use of diaries by health workers understanding the system of reporting and recording referral system.

Maintaining a Healthy environment cleanliness of unit and sick room cleanliness of furniture, floors, space and surfaces doors and windows disposal of waste, garbage.

NURSING PROCEDURES AND TECHNIQUES

i) *Meeting hygienic and comfort needs care of skin , care of hair, care of hands, care of eyes, nutrition mouth care elimination, exercise , body.*

ii) *Maternal heath factors.*

Socio-economic factors affecting maternal health.

Section C- Introduction to family health and Community health.

a) *Family health care.*

The family as integral unit of the health services,

- *Preventation and control of communicable diseases.*

- *Home visiting and domiciliary health.*

b) Introduction to Community health.
c) Environmental Health and Sanitation.
d) School health Services.

COMMUNITY HEALTH NURSING - (I)

Domidiloary Midwifery

i) Contacting antenatal mothers.
ii) Conducting a delivery in the home.
iii) Post –Natal care.
Records to be maintained.

Midwifery and maternity nursing

i) The reproductive system
ii) Growth and development of foetus
iii) Pregnancy
iv) Labour
v) Normal puerperium
vi) Complication of pregnancy
vii) Complication of labour.
viii) Obstetric operations.
ix) Drugs used in obstetrics

Family planning and welfare.

i) Introduction.
ii) National family welfare programme.
iii) Organizing family welfare work.
iv) Family planning methods.

COMMUNITY HEALTH NURSING

Nutrition Education:

i) Introduction to nutrition education.
ii) Nutrition education for material and cold health.
iii) Nutrition education (method and media)

Health Education:

i) Introduction
ii) The Teaching (Learning Proceed)
iii) Approaches used in health education.
iv) Planning health education activites.
v) Community resources for health education.

Communication Skills & Audio –Visual AIDS :

i) Introduction to communication.
ii) Communication skill for health work.
iii) Introduction to Audio-visual aids.
iv) Selection and utilization of audio-visual aids selecting suitable aids for health work.
v) Preparation of audio- visual aids for health work basic skill/competencies.

Health Problems and Plans :

i) Health problems.
ii) Organization and structure of health services and related welfare services.
iii) Health planning and programme.

Communicable Diseases:

i) Inroduction to communicable diseases.
ii) Immunity and immunization.
iii) Care and treatment of patients with infection.
iv) Specific Communicable diseases and infections, symptoms, prevention and control and care in specific communicable diseases and infections.
Malaria, filarial, dengue, typhoid, cholera infections hepatitis, other gastrage intestinal infections-acute waste enteritis, dysenteries small-pox, chicken pox mumps, measles, diphtheria. Trachoma, conjunctivitis, worm infestations hoolworm rouun worn. Threadworm, amoebiasis, rabies, tuberculosis, pertustis.

Mental diseases:

i) Introduction
ii) Resources and facilities for prevention and early delection of mental illness, use of family health care services.
iii) Maternal and child health services.
- *School health services.*
- *Primary health centre facilities.*
- *Community, health worker as a resource.*

iv) Preventation of mental illness.
v) Early direction of mental disorders.
vi) Mental diseases.

COMMUNITY HEALTH NURSING I (II)

Environmental sanitation:

i) Basic sanitation needs all village level towns and sen:- Urban areas.
ii) Disinfection and disinfectants, sterilization, antiseptics, disinfectants acodorant, etergent, sterilization.
iii) Environmental sanitation aspects of communicable diseases communicable diseases control.
iv) Venereal diseases.

Microbiology:

i) Introduction
Classification of micro-organisms, characteristic, of bacteria, viruses, conditions affecting and growth of bacteria, parasites, fungi yeasts and mold.
ii) Universal presence of Micro-organisms useful bacteria and micro-organism in the environment. Micro-organism in the human body normal flora, Micro-organism in water food and mild.
iii) Sources and mode of infection.
Sources of infection, mode of transmission infectin-factors which favour and hinder infection immunity, vicunas.
iv) Pathogenic Micro-organism.
Transmitted from, respiratory tract. Alimentary tract, food, food poisoning blood-borne pathogenic organism.
v) Collection of speciments for bacteriological examination.

Sociology:

i) Introduction.
Group-primary and secondary, in group and out groups, structure, activities of groups organization of groups Urban and rural administrative pattern pattern panchyats and corporations, crowd public and audience.
ii) Social process.

iii) *Social controls.*
iv) *Social stratifaction.*
v) *Marriage and family.*
vi) *Community rural and urban community.*

Psycholoogy:

i) *Factors influencing human behavior.*
ii) *Life stages and behavioral patterns.*
iii) *Emotions and behavior.*
iv) *Defence mechanism and behavior.*
v) *Social behavior and interpersonal relations.*
vi) *Learning, motivation and change in behavior.*

Hygiene:

i) *Introduction to hygiene and healthful living, consents of health and disease. Factors influencing health and healthful living. Health habits and practice. Scientific principles related to maintenance of normal circulation, respiration, digestion sensory functions, normal skeletal alignment joint function and motor function.*
ii) *Physical health:- Skin care, cleanliness clothing care of the hair, prevention of prediculosis. Dental care and oral hygiene, care of hands, hygiene of elimination and menstrual hygiene, mental hygiene.*
iii) *Mental hygiene and health in childhood ensuring mentally healthy growth in later childhood, need for friendship, games and plays, affection and recognition. Mental hygiene, approach to some problems speed problems, reading difficulties, learning problems, day dreaming.*
iv) *Mental hygiene and health in adolescence. Preparation of girls for menstruation, sex-education.*
v) *Mental hygiene and health in adulthood. Ensuring mental health in adulthood satisfaction on the job, marriage, marital life, parental responsibilities.*
vi) *Mental hygiene and health in old age ensuring health in old age and need for preparation for retirement.*
vii) *Physical health, feature, exercise, rest relazation and sleep care of the fact, foot wear, care of eyes, ear more and throat food values.*
viii) *Periodic Health Examination.*
Health records, delection and correction of defects. Preventation and early treatments of common ailments, common could, indigestion constipation, headache.
ix) *Health in home.*
- *Disposal of refuse, waste.*
- *Latrines and sanitation, ventilation.*
- *Safety in the home.*
- *Sanitation in animal sheds.*

x) *Mental hygience and health.*
In adults, in-infancy and early childhood. Like, feeding weaving, thumbsucking, toilet-training, need for security, affection, love, adventure.

Nutrition:

i) *Introduction to the study of nutrition, definition, relation of nutrition of health classification and functions of food-body building, energy yielding and protective foods*
Nutrients- Carbohydrates, protein, fats, Eatmine.
Mineral- functions, sources and daily requirements of each caloric requirements, water and cellulose.
ii) *Nutritive valve of foodstuffs*

Cereals	*Fruits*	*Fats and oils*
Pluses	*Milk and Milk products*	*Sugars condiments*
VegetablesEgg, meat and Fish		*Spices and beverages*

iii) *The balance diet.*

Definition, factors to be considered in planning meals, improvement of diars, selection of foods, cultural factors improving maternal nutrition and child nutrition. Modified diets- liquid bland, soft, full.

iv) Preparation and preservation of foods general.
General principles of cooking.
Methods of cooking.
Effects of cooking on nutrients and common foodstuffs, preservations of food– house-hold methods.
Food hygiene simple household measures.

v) Malnutrition.
- *Malnutrition and ;under nutrition.*
- *Deficiency diseases in the country.*
- *Cultural factors in nutrition, food fats, food habits, food adulteration practive injurious to health.*

Nutrition education-principles of imparting nutrition knowledge.

Annexure "E"

Syllabus for the post of Barber/Dhobi/Jr.Dhobi

Marks:120
Time: 02 Hours

1) Basis Mathematics **24 Marks**

- Percentage
- Average
- Time, Work and Distance
- Ration and Proportions
- Problem of Age
- Probability
- LCM, HCF
- Mensuration

2) Basis Reasoning **24 Marks**

- Analogies
- Relationship concepts
- Figure odd one out
- Direct Sense
- Figure Series completion
- Venn Diagram
- Number series
- Coding/Decoding

3) Basis English **24 Marks**

- Articles
- Synonyms
- Antonyms
- Preposition
- Verbs
- Reading comprehension
- Determiners
- Spellings
- Sentences

4) General Awareness and Science **48 Marks**

- General current events (National Level)
- Sports
- India culture
- India history
- Indian geography

- Capital/State
- General Science
- Health, Hygiene and Sanitation
- Geography of Jammu and Kashmir
- Culture of Jammu and Kashmir
- History of Jammu and Kashmir

Annexure"F"

Syllabus for the post of Junior Store Clerk

Duration: 2 Hours
Total Marks: 120
The marks are categorised as under:

Section 1: Commerce & Business	**Marks: 30**
Section 2: Computer Knowledge	**Marks: 30**
Section 3: Quantitative Aptitude	**Marks: 30**
Section 4: General Awareness & Reasoning	**Marks: 30**

Section 1: Commerce & Business **Marks: 30**

Objective: Assessment of basic knowledge in key areas such as Accounting, Management, Business Economics, and business laws.

Topics:

Principles of Management (8 marks)
Functions of management: Planning, Organizing, Staffing, Directing, ControllingLeadership styles and theoriesOrganizational behavior and motivation theories.

Financial Accounting (10 marks)
Accounting Cycle: Recording of transactions with appropriate rules, Principal & Subsidiary books, and trial balance. Financial statements: Profit & loss account, and Balance sheet. Methods of Depreciation. Inventory: Recording and Valuation Methods.

Business Economics (7 marks)
Demand and supply, Elasticity, Market structures: Perfect competition, monopoly, oligopoly Basic macroeconomics: GDP, inflation, fiscal and monetary policy

Business Laws (5 marks)
Basics of contract law, sale of goods act, and Consumer protection laws.

Section 2: Computer Knowledge **Marks: 30**

Objective: Assess proficiency in basic computer skills acquired during the 6-month computer course.

Topics:

Fundamentals of Computer (8 Marks)
Computer Hardware and Software, Operating Systems (including basics of Windows and Linux), Input and Output Devices, Storage Devices and Systems.

MS Office Suite (10 marks)
MS Word: Document creation, formatting, tables, mail merge MS Excel: Spreadsheets, formulas (e.g., SUM, VLOOKUP), charts, pivot tables, MS PowerPoint: Slide creation, transitions, and presentations.

Internet & Digital Tools (7 marks)
Basics of internet, browsers, email etiquette, Cloud computing basics (e.g., Google Drive, Drop box) Cyber security: Password management, phishing awareness.

Basic Data Management (5 marks)

Introduction to databases, tables, and queries,File managementand data backup

Section 3: Quantitative Aptitude **Marks: 30**

Objective: Test numerical and analytical skills relevant to business-related roles.

Topics:

Arithmetic's (15 marks)

Percentages, Profit & loss, Simple and Compound Interest, Ratio & Proportion, Time & Work, and Time & Distance.

Data Interpretation (10 marks)

Tables, bar graphs, pie charts, line graphs, and Data sufficiency.

Basic Statistics (5 marks)

Mean, median, mode, Basic probability concepts

Section 4: General Awareness & Reasoning **Marks: 30**

Objective: Evaluate general knowledge and logical thinking relevant to the job environment.

Topics:

General Awareness (15 marks)

Current affairs (last 6 months, business and economy focus), Indian History, Indian National Movement. Banking and financial awareness (e.g. RBI, SEBI, banking terms). Fundamental knowledge of Indian economy.

Reasoning (15 marks)

Verbal reasoning: Analogies, series, coding-decoding, Non-verbal reasoning: Patterns, figure-based problemsCritical thinking: Decision-making, problem-solving scenarios.

Annexure "G"

Syllabus for the post of Dresser/Jr. Pharmacist

- **Marks :-120**
- **Time :- 2.00 Hours**

➢ **Anatomy and Physiology, Public Health & Hygiene, Diseases.** **(Marks 20)**

- Elementary Physics and Chemistry
- Characteristics of living matter
- The structure of living matter
- The Tissues
- Systems and various parts of Human Body
- Development and types of Bones
- Bones of Head and Trunk
- Bones of the limb
- Joints and Articulations
- Structure and action of Muscles.
- The Chief Muscles of the Body
- The Blood
- The Heart and Blood vessels
- The Circulatory System
- The Lymphatic System
- The Respiratory System
- The Digestive System
- The Liver, Biliary System and Pancreas
- Nutrition and Metabolism
- Endocrine Glands and Exocrine Glands
- The Urinary System
- The Nervous System
- The Ear
- The Eye
- The Skin
- The Reproductive System etc.

National Health Programmes :- These should be practical internship training for six months as recommended by PCI 1080 hours, after two years successful by course before Diploma Pharmacy is awarded.

➢ **Public Health and Hygiene.** **(Marks 20)**

Public Health :-

- History and Development
- Modern concept of public health and comprehensive health care
- Various Health Committees and their recommendations.
- Five Year plans priorities.
- Allocation for medical and Health services.
- Cost analysis of Medial and Health care.
- Health and Family Planning Organisations setup at the National
  The State, The District and Block levels functions of Primary Health Centre

Diseases :-

- Definition
- Concept and Practice.
- Measures and disease frequency investigation of an outbreak and control field trials.
- Insecticides and resistance, sterilization and disinfection, epidemiological methods and approaches.

- **Basic Medical Information Drugs & Antibiotics Basic Medical informations, Drugs & Antibiotics their preparation & Uses. :-** **Marks 20)**
  - Kinds of drugs, characteristics of drugs, Balsems, Gums etc.
  - Pharmaceutical Process and Methods
  - General directions on dispensing, weighing and measuring. How prescriptions are written, prescription reading. How to calculate doses weights and measures, formulae for converting from one scale to other abbreviations used in prescriptions.
  - Doses of drugs, pharmacoepial preparation and their doses, incompatibility, physical, chemical physiological and therapeutical.
  - **Suppositories :-** How to prepare suppositories of special medicines pessaries, bougies, plasters etc.
  - Ointments, Spray solutions or Nebulas, Inhalations, General rule about preparation of Mixtures.
  - Ordinary bazaar medicines, their recognition, doses and uses.

- **Records Keeping:** **(Marks 05)**

  Stores Records & Procedures :- Clerical procedure in the good inward section. Records and procedures in main stores, classification and codification, keeping of stocks books, preparation of indents and methods of storing drugs.

- **First –AID & Home Nursing : Health Education including different types of Bandages, Emergency Health Care Services, Sterilization process & Disinfection procedures.** **(Marks 15)**

  - Outline of the First –Aid
  - Structure and Functions of the body.
  - Dressing and Bandages (Use of Triangular Bandages and Cotton Roller Bandage, Rubber Bandage and different types of Dressing.
  - Cardio- pulmonary resusciration.
  - Wounds.
  - Haemorrhage.
  - Shock
  - Electric Stock
  - Different methods of artificial respiration
  - Asphyxia
  - Fractures and Dislocation
  - Unconsciousness and Fainting
  - Epilepsy and Hysteria
  - Poisons including food poisoning
    - **Common Conditions :**
      - Foreign body in ear, eye and nose
      - Cramps
      - Frost – Bite
      - Bites and Stings
      - Epistaxis
      - Snake Bite
      - Dog Bite
  - Transport of injured persons
    - **Use of Common medicines.**

- **Home Nursing** **(Marks 10)**
  - **Introduction to Home Nursing :-**
  - Nurse

- Sick Room
- Bed Making
- Patient's Toilet
- Observation of the Sick
- Infection
- Surgical Techniques
- Diet
- Medicines
- Special Conditions & Treatments
- Bandaging
- Further Observations
- Immunity & Infectious Diseases
- Care of the Aged and Long term patient Person
- Care of the Mentally Ill Healthy Patient
- Special Drugs their Control & Administration
- Preparation of the Patient for Operation and the after care
- Shock and Blood Transfusion
- Special Treatment
- Nursing in Special Diseases
- The Hospital Services
- Preparation for Special Treatment
- Child Birth and Its Management.

➢ **Health Education** **(Marks 05)**

- Health Education Principles, Ethics, Attributes of health educator, essential steps and introduction to the main methods in health education. History development and growth of health education in India. Various methods of Health Education.

➢ **Sterilization & Disinfection** **(Marks 10)**

- Physical, Chemical and Mechanical Methods etc. Disposal of contaminated Media, Sterilization of Syringes, Glass Wares, apparatus etc.

➢ **Surgical Instruments, their names & uses, Preparation of patient for Operation, Pre & Post Operative patient care:** **(Marks 15)**

Surgical Instruments (Their Names & Uses):-

- Instruments for general surgery.
- Operation of the face and Neck
- Operations of the Nose, Throat and Ear
- Opthalmic Surgery
- Operations on the chest
- Operations on the Genito – Urinary Tract
- Gynecological and Obstetric Operations
- Orthopaedic Operations
- Neuro-Surgical Operations
- Operations on the Cascular System
- Trauma Surgery

Preaparation of Instruments Tray :-

- Major Procedures Tray
- Basic / Minor procedures tray
- Limited procedures tray

- Thyroid Tray
- Long Instruments tray
- Biliary Tract Procedures tray
- Choledochoscopy tray
- Basic rigid Signoidoscopy tray
- Gastrointestinal procedures tray
- Rectal Procedures tray

Gynecologic and Obstetric Trays :-

- Dilatation of the Cervix and Curettagge of the Uterus (D&C) tray
- Cervical Cone Tray
- Laparoscopy tray
- Abdominal Hystrectomy tray
- Caesarian Section tray
- Vaginal Hysterectomy tray

Genitourinary Trays :-

- Vasectomy tray
- Open Prostatectomy tray
- Kidney tray
- Thoracic Trays
- Mediastinoscopy tray
- Thoractomy tray
- Pcemaker tray

Cardiovascular Trays :-

- Vascular procedures tray
- Vascular shunt tray
- Cardiac procedures tray

Orthospaedic Trays :-

- Basic Orthopaedic procedure tray
- Minor Orthopaedic procedures tray
- Hip replacement tray
- Knee or Ankle Anthroscopy tray

Neurologic Procedures Tray :-

- Craniotomy tray
- Laminectomy tray

Otorhinolarngologic (ENT Trays) :-

- Basic Ear procedures tray
- Nasal procedures tray
- Myringotomy tray
- Tonsillectomy and Adenoidectomy Tray
- Trachestomy tray
- Antral Puncture tray

Opthalmic Trays :-

- Basic eye procedures tray
- Eyelid and Conjunctional procedures tray
- Basic Eye Muscle procedures tray
- Dacryocystrohinostomy tray
- Corneal Procedures tray
- Cataract Extraction and Lens procedures tray
- Glaucoma procedure tray
- Basic Eye procedures Microscope tray
- Retinal procedures tray

Pediatric Trays :-

- Pediatric major procedures trays
- Pediatric minor procedures trays
- Pediatric Gastrointestinal procedure trays

➢ **Preparation of Patient for Operation, Pre & Post Operative Patient Care:-**

Pre-Operative Considerations :-

Psychological support of the Surgical patient.

Protection of the Patient in Surgery :-

- Admission Procedure
- Transfer Procedure Position
- Environmental Controls
- Electro Surgery
- Operative Recores
- Counting Procedure
- Sterilization
- Emergencies and Disasters

Safety for Medical Assistant, Pharmacist in a Operation Theatre :-

- In Service Education.
- Body Mechanic
- Fatique factors
- Radiation Safety
- Infection Control
- Chemical Hazards.

Annexure "H"

Syllabus for the post of Junior Dental Technician

Marks :-120
Time :- 2.00 Hours

- **General Human Biology & Disease** **(Marks 10)**
  - Elementary Physics and Chemistry.
  - Characteristics of living matter.
  - The Structure of living matter.
  - The Tissues
  - Systems and various parts of human body.
  - Development and types of Bones.
  - Bones of Head & trunk.
  - Bones of the Limb.
  - Joints and Articulations
  - Structure and Action of muscles
  - The Chief Muscles of the Body
  - The Blood
  - The heart and Blood Vessels
  - The Circulatory system
  - The Respiratory System
  - The Digestive System
  - The Liver , Billary system and Pancreas
  - Nutrition and Metabolism
  - Endocrine Glands and Exocrine
  - The Urinary System
  - The Nervous system.
  - The Ear.
  - The Eye
  - The Skin
  - The Reproductive System etc.

- **Dental Anatomy & Physiology Pharmacology, Pathology including Microbiology**
  - ✓ **General & Dental Anatomy** **(Marks 10)**
    - Elementary Knowledge of the jaws and teeth, Important between deciduous and permanent teeth. Chronology of eruption , elementary knowledge of occlusion of teeth. Relationship of teeth with investing tissues, muscles of mastication facial expressions and elementary knowledge of temporary mandibular joints.

- **General & Dental Physiology and Histology** **(Marks 10)**
  - Elementary knowledge of the structure and function of various dental and oral tissues e.g. gingival, peridontial membrance, alveollan process , cementum, enamel,dentine, mucous-membrance , pulp.
  - Salivary glands and functions of saliya, mastication.

- **General and Dental Pharmacology** **(Marks 05)**

- The Therapeutics drugs commonly used in density and their effects. Practical diagnosis, dispensing of drugs.

✓ **Dental Radiology** **(Marks 05)**

- Technical aspect of Dental Radiograph i.e. the taking processing and mounting of Dental Radiographs , Radiation Hazards and protection against radiation.

➢ **General Dentistry including Oral Surgery** **(Marks 30)**

General knowledge of various materials used in Dentistry such as impression material, Gypsum products, waxes investing materials and various filling materials temporary and permanent.

✓ **Chairside Assistants**

- Reception of Patient.
- Lay –out of reception room and Dental Surgery and Hygienist Clinic.
- Chairside Assistance and Techniques
- Local anesthesia and equipment.
- Methods of Sterilization and care of Dental Instruments.
- Basic principles in surgery.
- The use of instruments in Dental practice.
- Examination of Oral Cavity and Charting of teeth etc.
- Instructions to patients and recalls.
- Maintenance of Dental Unit / Instrument.

➢ **Prosthodontics with Cosmetology** **(Marks 15)**

- Introduction and applied anatomy.
- History taking and Examination.
- Simple surgical preparation, impression taking.
- Selection of patient.
- Phonetics and anatomical articulation.
- Clasp retained partial denture-plan , treatment, design and management.
- Partially edentulous arches.
- Cennectors- major and minor and functions.
- Retainers direct and indirect.
- Dentures functions, biomechancis, Survery, diagnosis, planning , partial and temporary relining, resilient lining , aids to retention and relief.
- Cosmetology and appearance.
- Dental Materials and its manipulation.

➢ **Orthodontics** **(Marks 10)**

- Etiology, Classification and malocclusion.
- Skeletal maturation, growth, dentition with special reference to endocrines.
- Classification of dentofacial abnormalties , anthropometrics, cephalometrics.

- Examination of patient, differential diagnosis and treatment planning .
- Principle of mechanotherapy
    - Basics about tweed method, twin wire appliance, activators , plates appliances including tissue reaction and evaluation of treatment.

➢ **General Hygiene, Nutrition, Community welfare, Conservative & Preventive Dentistry :**

✓ **Dental Hygiene and Oral Prophlaxix – (Marks 15)**

- Definition of Hygiene.
- Objective of Dental Hygiene.
- Oral prohlyaxis-various methods.
- Stains on teeth-and their management.
- Dental Plague, Dental calculus.
- Brief description and the role of oral Prophylaxis in Gingivitis, Peritonitis etc.

✓ **Clinicals –**

- Instruments, technique of Oral Prophylaxix.
- Polishing of teeth.
- Topical application of fluorides.
- Care of Oral Cavity and appliances during treatment of Maxillo-facial cases.

➢ **Conservative & Preventive Surgery (Marks 10)**

- Dental Caries-Prevalence and Prevention.
- Peridontial Diseases, saliva in relation to Dental Health and diseases.
- Dental Health &Diseases.
- Dietary habits and dental Health , Maiocclusion , Oral Cancer.

Anneuxre "I"

Marks: 120
Time: 02.00 Hours

SYLLABUS

JUNIOR HEALTH INSPECTOR

1. Anatomy (Marks 05)

- Basic Concepts
- Organ Systems Elementary Knowledge

2. Physiology (Marks 05)

- Basic concepts
- Various systems Elementary Knowledge.

3. Community Medicine (Marks 40)

i) History of Community Medicine and Public Health

ii) Basic concepts

- Concept of health
- Concept of disease
- Concept of prevention

iii) Epidemiology – Basic concepts

iv) Infectious Disease.

- Dynamics of transmission
- Concept of control
- Immunity and Immunization
- Disinfection

Selected Infectious Disease:

Influenza, Measles, Mumps, Diptheria, Pertusis, Tetanus, Hepatitis, Polio, Rabies, Typhoid, Cholera, STD's, AIDS

v) Essentials of Outbreak Investigation

vi) Non Communicable Disease

- General concepts
- Prevention of Hypertension, Diabetes, Stroke, Blindness

v) Environmental Health

- Basic Concepts
- Water – Physical , Chemical and Biological standards for potable water sources and nature of pollution of water, hazards of water pollution, purification of water on large and small scale, sanitary well and tube well, water supply and storage system at community and household level.
- Air-sources of air pollution, estimation of level of pollutants, green house effect, thermal comfort, radiation.
- Noise pollution.
- Housing – standards for healthy housing.
- Athropods of public Health Importance.
- **Solid Waste management** – classification of solid waste, harmful effect of solid waste system of collection and disposal of solid waste.
- **Liquid Waste management** – classification, quality of different type of waste, hazards, sanitary sewerage system.
- **Night Soil Disposal** – Hazards of insanitary disposal, types of latrines in use, Bore hole, dug well, RCA and Septic tank latrines, sanitation of trenching ground.

vi) Disaster Management

- Basics

vii) Bio Medical Waste Management

- Basics

4. Health Communication (Marks 05)

- Basics
- Approaches in Health Education
- Methods
- Contents
- Planning an IEC

5. Nutrition (Marks 05)

- Food components
- Nutritional Assessment

- Deficiency diseases
- Food adulteration
- Food borne diseases
- Food hygiene
- Nutritional Programs

6. Sanitation and Hygiene (Marks 15)

- Sanitation of Public places and Hospitals
- Slaughter House
- Eating Establishment
- Food Inspection and adulteration.
- Sample collection and Preservation.
- Bacteriological Examination of Water.
- Food Poising and preventive measures.

7. Health Administration (Marks 15)

- Health Care delivery System
- National Health Programs (Selected)
- Health Statistics
- Public Health Act
- Epidemic Diseases Act.
- Food Safety and Standards Act
- Environmental Protection Act.
- Municipal Acts regarding Cleanliness and Health.
- Organization and functioning of Municipal Corporations

8. MCH and Family Planning (Marks 05)

- Ante Natal Care
- INC, PNC, Under five Care
- Family and Demography
- Methods of FP

9. Occupational Health (Marks 05)

- Hazards
- Diseases

10. **International Health** **(Marks 05)**

11. **Drug Therapy** **(Marks 05)**

- Basic concepts
- Classification of drugs
- Brief description of common drugs at primary level

12. **First Aid during** **(Marks 05)**

- Common Ailments
- Injuries, Fractures, RTA
- Burns, Drowning, Bites, Poisoning

13. **Store Keeping- Basics** **(Marks 05)**

Annexure "J"

Syllabus for the post of Junior Laboratory Technician

Marks :-120
Time :- 2.00 Hours

Unit – 1: Body Structure & Function (28 Marks)

1. **Anatomy**
   - Different Parts of the human body, Common Anatomical Terms, Anatomical Positions and important planes, Tissue of the body, classification and function.
   - Structure, function mechanism - Skeletal System, Gastro-Intestinal System, Genito-Urinary System, Respiratory System, Cardio-Vascular System, Nervous System, Loco-Motor System.
2. **Physiology**
   - Blood- Composition and General function, Blood group, ABO and Rh, basis for classification, basis for determination, importance of Blood Groups.
   - Structure, function mechanism - Cardo-vascular System, Respiratory System, Excretory System, Skin, Digestive System, Endocrine Glands, Reproductive System, Cerebrospinal fluid, Formation, composition and functions.

Unit - 2: Basic Laboratory Techniques (42 Marks)

1. **Laboratory Management & Ethics**
   - Role of the Laboratory in the Health Care Delivery System, Types of Diseases, Process of Diagnosis, Laboratory at different levels, Duties and responsibilities of Laboratory personnel.
   - Laboratory Service in the Health care Delivery System in India, Voluntary Health Organizations in India.
   - Laboratory Planning, Guiding Principles for planning Hospital laboratory Services, Laboratory Organisation, Components and functions of a laboratory.

2. **Cytology & Microbiology**
   - Description of cytology in detail, Fixation used in cytology, Dry Fixation and Wet Fixation, Stains used in Cytology, BLF Cytology, Sex Chormatin staining in Cytology.
   - Microscope, Classification and Morphology of Bacteria, Staining of Bacteria, Cultivation of Micro-Organisms, Identification of Bacteria, Gram Negative Bacilli, Gram Positive Bacilli,Antibiotic Sensitivity test.

3. **Histo-Pathology**
   - Sections of Pathology, Chemical used in Tissue Processing, Decalcification, Methods of Decalcification & Decalcification of Bones, Procedure of Embedding tissue in Paraffin Wax, Procedure of Paraffin Wax Tissue Block, Various Instruments used in Microtomy.
   - Tissue Processing in Histopathology, Automatic Tissue Processor and its uses in detail, Tissue Staining, Steps of Tissue Staining, Tissue Grossing.
   - Autopsy Technique, Assisting in Autopsy, Preservation of organs & Processing of Tissues.
   - Waste disposal and safety in Laboratory
   -

4. **Blood Banking**
    - Types of Blood Banking, Process of Coagulation, Rh – Factor, Erythroblastosis Foetalis, MN – Group System.
    - Human Blood Group Antigens, their inheritance and antibodies
    - ABO Blood Group System , Rh Blood Group System
    - Techniques of Grouping and Cross Matching
    - Blood Collection, Blood Transfusion, Coomb's Test
    - Blood Donor/Receptor, Procedure of Blood Collection from a donor
    - Precautions to be taken before Blood Collection, Storage of Blood, Anticoagulants used is Blood banks

5. **Clinical Pathology**
    - Collection of Blood, Composition of Blood, Types of Anti – Coagulant Tubes and their Uses, RBC's and various process of counting, Erythropoiesis, Haemocytometer and its uses, Types of WBC's and process of counting, PBF (Peripheral Blood Film) its preparation, Staining.
    - Various Types of Romansky Stains and Uses, Leishman's Stains, Platelet Count. Process of counting manually, Absolute Eosinophil count & its estimation, ESR and various methods of estimation, PCV and its procedure for conducting.
    - Microscope, Parts and Functions in Laboratory, Haemoglobin in detail, Centrifuge and its uses, Haemometer Set.

6. **Blood & Urine Examination**
    - Urine, composition of Urine in detail, Urine Examination under Microscope, Various methods of sampling Urine for conducting various examinations likeAlbumin, Sugar, Acetone, Bile pigmentation, Bile Salt, Urobilinogen, Occult Blood, KFT etc, Physical Examination – Colour, Reaction, Odour, Specific gravity Urinary Volume.

    - Composition of Blood ,Blood and cerebrospinal Fluid functions of Blood & CSF, Complete blood count, Blood sugar test, Various methods of sampling blood for conducting various examinations.

Unit – 3: Basics of Patient Care & Health Assistance (10 Marks)

1. **Public Health &Hygiene**
    - Concept of public health, Various Health Committees, Health and Family Planning Organisations setup at the National, the State, the District and Block, Levels.

2. **Home Nursing & Health Education**
    - Introduction to Nurse, Sick Room, Bed Making, Patient's Toilet, Diet, Medicines, Special Conditions & Treatments.
    - Care of the Aged and Long-term Patient, Care of the Mentally ill Healthy Patient, Nursing in Special Diseases.
    - Immunity & Infectious Diseases, Special Drugs-their Control & Administration, Shock and Blood Transfusion, The Hospital Services, Childbirth and its Management.
    - Principles, ethics, attributes of health educator, essential steps and introduction to the main methods in health education. History development and growth of health education in India, Various methods of Health Education.

3. **Community Pharmacy and Management**
    - Community Pharmacy Practice,Prescription and prescription handling, Patient counselling, Communication skills, Medication Adherence, Health Screening Services, Over the Counter (OTC) medications, Responding to symptoms/minor ailments, Community Pharmacy Management.

Unit – 4: Clinical Duties (23 Marks)

1. **Sterilization & Disinfection**
    - Physical, Chemical and Mechanical Methods, Disposal of Contaminated Media, sterilization of syringes, glass wares, apparatus.

2. **Examination and Surgical Procedures**
    - Procedures - urinalysis, strep tests, blood pressure checks, weight checks, electrocardiograms, venipuncture and injections. Pap smear, mammography, ECG, placing IV's, educating patient about procedure

3. **First Aid**
    - Introduction and history of the Red-Cross, Dressing and Bandages, Cardio-pulmonary resusciration, Different methods of artificial respiration, Transport of injured persons.
    - Procedures during common conditions - Fractures and Dislocation, Epilepsy and Hysteria, Poisons including food, Cramps, Frost – Bite, Bites and Stings, Snake Bite, Dog Bite, Unconsciousness and Fainting.
4. **Pharmacotherapeutics**
    - Drug therapy of various diseases, Medication counselling points, etiopathogenesis, disease management.
    - Pharmacological management of the diseases associated withCardiovascular System, Respiratory System, Endocrine System, CNS, GI Disorders, Hematological disorders, Infectious diseases, Musculoskeletal disorders, Dermatology, Disorders related to Women's Health.

Unit – 5: Technical Duties / Administrative Duties (17 Marks)

1. **Surgical Instruments**
    - Surgical Instruments – name & uses, Instruments forgeneral surgery, Ophthalmic Surgery, Operations on the chest, Gynecological and Obstetric Operations, Orthopaedic Operations, Neuro-Surgical Operations, on the Vascular System, Trauma Surgery.

2. **Preparation of Instrument Trays**
    - Major procedures tray, Basic / Minor procedures tray, Thyroid tray, Long instruments tray, Genitourinary trays, Thoracic trays, Cardiovascular trays, Orthopaedic trays, neurologic procedure trays, ENT trays, Opthalmic trays, Pediatric trays,

3. **Protection of patient in surgery**
    - Preparation of patient for operation, Pre and Post-operative patient care, Psychological support of the surgical patient.

- Admission Procedure, Transfer Procedure, Environmental Controls, Electro surgery, Operative Records, Counting Procedure, Emergencies and Disasters.

4. **Safety measures in Operation theatre**
    - Body mechanic, Fatigue factors, Safety measures – Radiation safety, Infection control, Chemical hazards,Chemotherapy
    - Waste disposal and safety in operation theatre.

5. **Record Keeping**
    - Introduction to store records, Clerical procedure, Inward section Records and procedures in main stores, classification and codifications, keeping of stocks books, preparation of indent and methods of storing drugs.

    - Different types of health care information system, Electronic medical records, Electronic health records, filling patients' medical records, filling insurance form, arranging for hospital admission/ laboratory services, scheduling appointments, bill handling.

Annexure "K"

Syllabus for the post of Junior Opthalmic Technician

Marks :-120
Time :- 2.00 Hours

➢ GENERAL HUMAN BIOLOGY & DISEASES

✓ HUMAN BIOLOGY & DISEASE (Marks 10)

a) Infectious Diseases : General account, causes and control, immunity and chemotherapy.
b) Diseases of man
(Definition of Disease, different type of pathogens such as bacteria, viruses and virus like organisms, fungl, helminths, protozoa), sources of Infections, Infection and contagious economic importance of diseases, methods of prevention and biology control.
c) Introduction : Micoroscopic structure of lissues and organs of a manual lissue-Connective lissues, epithelium, cartilage, bone, blood, muscular lissue and nervous lissue.
d) Basic knowledge of Systems.
e) Organs : Stomach, small intestine, liver pancereas lungs, spleen, kidney, skin, testis and ovary.
f) Functional anatomy and physiology of the digestive system, Respiratory System, Circulatory System (with reference to immunity) Nervous System with special reference to transmission of the nerve impulse, sense organ, functions of muscles, Reproductive System, Endocrine System.
g) Basic Pathology as applicable to above Systems.

✓ CELLBIOLOGY & GENETICS INTRODUCTION:

Cell theory, cell as a unit of life. Tools and techniques of cell studies, Microscopy (Use of Microscope and Calibration), elements of microscopic techniques histo and cytochemistry, Electron microscope.

Elementary Knowledge of principles of X-ray definition. Instruments and diffraction paltern.

Molecular building in cellular system simple to complex macromolecules, structure and properties, Biomembrance-Transport mechanism, cellular respiration cell organelles structure and their functions. Enzymes, Vitamins and Hormones their functions chemical and physical structure, mode of action. Role of regulation of cellular activities.

Nucleus, Chromosomes, DNA structure including events in replication and Transcription, genetic code, translation and protein synthesis and details of neiosis, gene interaction, linkage and crossing over, mutation, elaboration of Mendel's laws of inheritance, elementary concepts of quatitive inheritance human genetics, sex linked inheritance, genetics and society.

➢ ANATOMY & PHYSIOLOGY OF EYE (Marks 20)

✓ **ANATOMY OF THE EYE**

- **a.** Muscles of Eye.
- **b.** Conjuctiva, comea, sclera, iris.
- **c.** Ciliary body, choroid and retina.
- **d.** Lens, vitreous and optic nerve.
- **e.** Circulation of the Eye.
- **f.** Orbit its relations and vascular communication.
- **g.** Lacrimal & lid glands.
- **h.** Visual Pathway.
- **i.** Cranial Nerves II, III
- **j.** Cranial Nerves IV, V, VI & VII.
- **k.** Pituitary Gland and Caverous Sinus.
- **l.** Parasympathetic, sympathetic nerves in relation to eye.

✓ **PHYSIOLOGY OF THE EYE**

- **a.** Eye lid, lacrimal gland and lid gland.
- **b.** Functions of the eye ball and its parts.
- **c.** Pupillary reflexes.
- **d.** Convergence and accommodation (Pathway)
- **e.** Convergence and accommodation (Theory & Mechanism)
- **f.** Visual Pathways and fields.
- **g.** Light sense, colour sense and night vision.
- **h.** Form sense, visual acuity and testing.
- **i.** Unilocular and binocular vision.
- **j.** Eye movements (conjugate and Disconjugate) and laws governing them.
- **k.** Visual cortex.
- **l.** Vision

➢ **PHYSICS, CHEMISTRY, PHARMACOLOGY & PATHOLOGY**

(Marks 20)

➢ **RELATED TO EYE**

✓ **PHYSICS**

a. Measurements : Concept of length and time, Covnersation of some practical units. Equations of mechanicals quantity, area, volume, velocity, acceleration, momenutum, force moment, energy and work (Their definition).

b. Wave Motion : Simple Harmonic motion, waves and wave propagation, wave motion (including phase). Reflection, Dispersion, Polarization. Interference and differaction etc.

c. Condensed State : nature of liquids, surface tension, capillarity.

d. Electricity : Moving charges, electric current, thermal effect. Jourle's law, galvano meter, cyclotron (Basics) etc.

e. Electromangetic Induction : Lenz's law, Eddy currents, Faraday's laws of electro magnetic induction, elementary ideas of electro magnetic wages, rotating coil in a magnetic fields, alternating current, transformers, long distance transimission meters, phase relationship between voltage and current etc.

✓ **CHEMISTRY**

a. Periodicity : Periodic law and periodic table.

b. Chemical handling and Molecular Shape : Concept of orbital overlap in bond formation, hydridization and long electron pair repulsion concept or resonance bond energy and bond length, properties of convalent compounds in relation to electro negativity. Shape of the simple moelecules, co ordinate bond formation with a few examples. Lonic bounds & definition, factor inlluencing the formation of lonic bond, general properties of ionic compounds, metallic bond, an explanation for properties of metals. Hydrogen bonding etc.

c. State of Matter : Discuss in terms of order and kinetic energy, properties of gas, liquids& elementary introduction to solid state.

d. Energetics, Energy Changes Chemical Reactions : Exothermic and Endothemic reactions, solutions, fusions, vaporization and sublimation, Ness's Law, Calori values of food and fuels.

e. Chemical Equilibrium : Law of mass action and its application to chemical equilibrium, Le Chaterlier Braun principle, factors, Ionic equilibrium aquecus solution products, common lon effect. Modern concept of acid and acid base equilibrium, hydrolysis of salt, buffer solution etc.

f. Electro-Chemistry (Basic) : Electrolysis, Farady's and calculation based on them. Application of electrolysis to electroplating and electro chemical preparation, Electrolytic conduction.

g. General Treatment of a block elements : General trends of properties of the elements boron family, important minerals of boron, borax and orthoboric acid test, boron nitrates and boron, hydrides (only an elementary idea to show as an electron deficient molecule). Aluminium Its minerals, extraction, properties an uses. Some important compounds like alumina, aluminium and alums and alloys. (Especially boron, borox, aluminium group, including alums, carbon and nitrogen family).

h. The Carbon Family : General trends in properties, important mineral of tin and lead, various compounds, alloys of tin and lead.

i. The Nitrogen Family : General trends in properties of the family, important mine of phosphorus, ammonia, its manufacture, oxide and oxy-acids of nitrogen and phosphorus. Uses of metaphosphate, super phosphates and chemical fertilizers.

j. Organic chemistry as chemistry of carbon compounds hydrocarbons, simplest organic compounds types of hydrocarbons, homologour series.

a. Physical properties to be based on nature of bonding. Size and nature of the carbon chain and the general non-plar character.
b. Chemical Properties : Combustion and controlled oxidation : Free halogenations and cracking in alkanes, Catatylic hydrogenation and electro philic addition in alkanes and alkynes. Markwnikoff's rule.
c. Some simple transformations in benzene and aliphatic compounds
d. Sources of hydrocarbons : Petroleum and coal for treatment from industrialpoint of view.

k. Galvanic Cells and cell potential I, electrochemical series.

✓ **PHARMACOLOGY.**

1. Basic Phamacology, Pharmacy Etc.
2. Antiseptics.
3. Local anaesthetics, analgesics
4. Anti-glaucoms drugs.
5. Sedative and tranquilizers
6. Mydratics and Miotics.

7. Antipyretics
8. Sterolds
9. Chemotheapy agents including antibiotic.

✓ **PATHOLOGY TELATED TO EYE**

a. Common eye Diseases.
b. Diseases of Eye lids.
c. Diseases of Orbit.
d. Diseases of Adenexa.
e. Diseases of Cornea.
f. Diseases of conjunctiva
g. Diseases of Lens.
h. Injuries of the Eye.

➢ **OPTICS INCLUDING MECHANICAL OPTICS (Marks 25)**

✓ **OPTICS**

- Huygens construction (geometrical). Young's double slit experiments (idia of path difference). Loyd's Morror, colour of the films (qualitative), single slit, diffraction, applications of lesser beams, spectrometer, production of different types of spectraline, continuous and absorption.
  - **a.** Nomenciature of prisins and their uses.
  - **b.** Ophthalmic glass and physical for of lenses of ophthalmic lenses.
  - **c.** Transmission density and opacity of a refracting glass and glass coating
  - **d.** Cylindrical lenses, stum's coniod.
  - **e.** Lens combination.
  - **f.** Aberration of lenses.
  - **g.** Principle of fabricating various types of special lenses.
  - **h.** Ophthalmic plastic lens.
  - **i.** Refractive media of eye and principles of visual imagery.
  - **j.** Corneal system and lenticular system.
  - **k.** Reduced eye and images formation including gauss theorem.
  - **l.** Aberration of Eye.
  - **m.** Principles, mathematical deviation and utility of Punkinie images.
  - **n.** Pachometer.
  - **o.** Keralometer.
  - **p.** Accomodation and convergence.
  - **q.** Optical defects in genesis of refractive arrears (Presbyopia, Aphakia and principles of their treatment with lens).
  - **r.** Instruments concerning opthatmic glass testing.
  - **s.** Physiological basis of visual acuity and retinal images sizes.
  - **t.** Human eye and spectacles.
  - **u.** Effects of lens of the retinal image.
  - **v.** Field of view and magnification.
  - **w.** Refractive errors.
  - **x.** Retinoscopy & its principles.
  - **y.** Surface reflection.

✓ **MECHANICAL OPTICS**

a. Power of lens.
b. Transposition of spectable lenses, shapes and sizes.
c. Grinding Machines
d. Grinding Materials.
e. Tools and gauge and their testing.
f. Spherical lenses.
g. Cylindrical lenses.
h. Bifocals and Multifocals.
i. Ophthalmic peisms.
j. Prism effect.
k. Oblique cylinders.
l. Protective lenses.
m. Plastic lenses.
n. Special lenses-Miscellaneous lenses & appliances.
o. Speciality lenses:

➢ **MAINTANCE OF EQUIPMENT & INSTRUMENTS, ROUTINE& SPECIAL EYE INVESTIGATIONS & RELATED SURGICAL PROCEDURES**
(Marks 25)

✓ **MAINTENANCE OF EQUIPMNETS & INSTRUMENTS**

- Understanding of ophthalmic equipments.
- Optical equipments: Ophthalmoscope, slit lamps keratomcters Torches etc.
- Maintenance of Surgical Instruments.
- Diathermy machine.
- Microscope (laboratory) 7 eye bank equipments.
- Perimeter.
- Trial sets.
- Orthoptic equipments.

✓ **ROUTINE OPTHALMIC INVESTIGATION**

- Conjunctival Swab & smear taking for cytology & culture.
- Syringing and lacrimal function test.
- Tension taking.
- Colour vision.
- Visual fields.
- Various instruments, their principles.
- Dark adaptometry.
- Keratometery.
- Pachometery.

- Anaesthesiometry.
- PH. Testing.
- Othocalor.
- Refractionometer.
- Measurement of spectacle lense, power of focimeter.
- Fluorescein staining and techniques.

✓ **SPECIAL OPTHALMIC INVESTIGATIONS**

- E.R.G.
- E.C.G.
- Electro oculomyography.
- Ultrasonography.
- Tomography.
- Burrnan's Locater.
- Fluorescse in Angiography.
- Oculo- Nystagmography
- Ocular Photography anterior segment.
- Gonioscopy and 3 mirror C.L Examination.

✓ **ORTHOPTICS, PLEOPTICS AND MUSCULAR IMBLANCE**

a. Normal Binocular function.
b. Grades of binocular vision.
c. Fusion and stabismus stereopis (SMP).
d. Etiology of strabismus.
- Surgery.
- Motor.
- Central.

- **Methods of examination of strabismus.**
  - History.
  - Visual acuity.
  - Cover test.
- **Ocular Movement and their testing.**
  - Measurement of angle of squint
  - Testing of Binocular functions
  - Reterophoira
    - Classification
    - Clinical picture
    - Investigations
- **Esophoria**
  - Classification, Investigations.
  - Treatment
- **Pheria (Cent.)**
  - Hyperphoria
  - Cyclophoria & Hyphoria
- **Abnormalities of Monocular Vision**
  - Diploia
  - Confussion Supression

- **Abnormal Retinal Correspondance**
    - Definition
    - Aetiology
    - Classification

Methods of detection of A.R.C. with their relatives importance of A.R.C. (Conti.)

- Prognosis
- Classification
- Investigations
- A.C./A. Ration
- Its importance
- Methods of testing

Concomitant Squint (accommodative)

- **Aetiopathogenesis**
    - Classification
    - Special investigations
- **Treatemt of Accommodative Squint**
    - Optical
    - Orthoptics
    - Miotics
        - Surgery
- **Subject**
    - Non – Accomodative Squint
    - Classification
    - Investigations
    - Treatment
- **Divergent Squint**
    - Classification
    - Investigations
- **Vertical Squint**
    - Aetiology
    - Classification
    - Investigations

- **Primary Vertical**
- **Secondary Vertical**

a. Differential Diagnosis of Primary and secondary

- **Alternating Circumducdtion**
    - Aetiology
    - Classification
    - Clinical Picture
    - Investigation & Management
- **Torsional Squints**
    - Cyelotopia
    - Aetiology
    - Classification
    - Clinical Picture & Management
- **Suppression**

- Defection& treatment

- **Amolyopia**
  - Definition
  - Aetilogy
  - Development
  - Classification
  - Detection
  - Management with occasional therapy after images
  - Definition
  - Description
  - Usage of after images in the treatement of Amoblyopia and pleoptic therapy
  - Haldinger brushes
  - Bangerter methos of pleoptic therapy
  - Indication of Orthoptic and surgical treatment
  - Latent strabismus
  - Manifest Stabisumus
  - Post-operative Othoptic Management.

✓ **INTRODUCTION TO TECHNIQUES AND PREPARATION OF THE PATIENT**

- Asepris-How to achieve?
- Anaesthetic agents and where indicated.
- Pre-operative Instructions.
- Cauterisation of Ulcers.
- Spilation and Electrolysis.
- Bandging of Eye.
- Syringing.
- Scraping.
- Taking samples for conjunctival and culture examinations.

➢ **NUTRITION, INDUSTRIAL INCLUDING HILOLOGY, STATISTICS & COMMUNITY WELFAARE (Marks 20)**

✓ **Indusstrial Hazards & Their Protection Hilology, Statistics & Nutrition**

a. Concept, Importance, classification food, dietry requirements (in context with eye,) balanced Dieet, Community Nutrition, Nutritional education : definition, scope, principles ect.
b. Nutrition and Eye Diseases.
c. Introduction, Concurrence, methods of cultivation of important crop plants and related diseases.

✓ **STATISTICS AND CLAULUS**

a. Statistics & Probability

- Population and sample
- Measures of central lendency and dispersion.
- Point and interval estimation (of mean only)
- Scatter diagrams and a Pearson Correlation co-efficient) probality:
- Random experiments and sample space. Events.
- Probility on a sample.
- Conditional probility, multiplication theorem.
- Independent events.
- Random variables (disscsrete), Binomial and poisson probility distr

- Expected value (Mean) and variance. Calculations for probability distribution.
- Normal distribution.

Fundamental principles and basic knowledge.

- ✓ **VISIONAIDS, CONTACAT LENS & PROTECTIVE GALSSES**
  - Contact lens basic concepts.
  - Lense designing.
  - Manufacturing principles and low vision aid.
  - Causes of visual impairment and blindness.
  - Classification of low vision aids and special optical features of groups and child mode action.
  - Introduction to visual prosthesis.
  - Visual requirement in industries.
  - lluminations.
  - Prevention of industrial injury and special services to aid this.
  - First Aid to eye injury.

- **Entrepreneurship**: Introduction to entrepreneurship meaning, importance and persons qualities needed, scope, employment opportunities, Introduction to small business, production Marketing, managerial and financial, selection of business and preparation of Project Report. Financing Agencies, Financial facilities how and where to get procedural details in starting a new industry, investment, decision, market study, production, planning and scheduling budgeting, man power planning.

- ✓ **COMMUNITY WELFARE**
  - Eye Screening Programmes, (with special emphasis on National Blindness Control Programme), School Clinics and Surveys.
  - Functioning of Mobile Eye Health Units including eye camps and practical participation in the same.
  - Determination of refractive errors and prescription of glasses.
  - Blind and its problems and rehabilitation for the blind.
  - Health Education in the field of eye care.
  - Medical Secretarial Assistance.
  - Appointments.
  - Drafting and correspondence.
  - Records Maintenance
  - Coping.

Annexure "L"

Syllabus for the post of Jr. Staff Nurse/Jr. Male Nurse/Staff Nurse G-II

- Marks =120 120 Minutes
- Anatomy and Physiology (Marks 10)

  - UNIT-1 Introduction to anatomical terms
  - UNIT-II Organization of body cells tissues .organs. systems membranes and glands
  - UNIT-III Skeletal system
  - UNIT –IV Muscular system
  - UNIT-V Cardio-vascular system
  - UNIT-VI Respiratory system
  - UNIT-VII Digestive system
  - UNIT-VIII Excretory system
  - UNIT-IX Nervous system
  - UNIT-X Endocrine system
  - UNIT-XI Sense organs
  - UNIT –XII Reproductive system

- Community Health Nursing - I (Marks 10)

  - Unit- I Introduction to community Health and community Health Nursing
  - Unit-II community health nursing process
  - Unit- III Health Assessment
  - Unit- IV Principles of Epidemiology and Epidemiological methods
  - Unit- V Family Health Nursing care
  - Unit-VI Family health care settings
  - Unit- VII Referral systems
  - Unit – VIII Records and Reports
  - Unit-IX Minor Ailments

- Fundamentals of Nursing (Marks 25)

  - Unit-I Introduction to Nursing
  - Unit – II Nursing care of the patient / Client
    - Bed and Bed Making
    - Maintenance of therapeutic environment Temperature, Light, noise and humidity. Psycho Social Environment
    - Nursing Process and Nursing Care Plan
    - Discharging a patient
  - Unit – III Basic Nursing Care and Needs of the patient
    - Nutritional needs.
    - Elimination needs
    - Safety needs
    - Activity and Exercises
    - Physical Comforts
    - Moving, shifting and Lifting of patient
  - Unit – IV Assessment of patient / Client
    - Physical Assessment
    - Physiological Assessment

- Unit – V Therapeutic Nursing Care and Procedures Asepsis
  - Care and Sterilization of:
  - Care of Respiratory System
  - Care of Gastro Intestinal Treact
  - Care of Genito Urinary System
  - Care of Skin and Mucous Membranes
- Unit – IV Basic Needs and Care in Special conditions
  - Dying patient
  - Unit – VII Introduction to Pharmacology

➢ Nutrition (Marks 05)

- Unit – I Introduction
- Unit – II Classification of food

➢ Medical Surgical Nursing - I (Marks 10)

- Unit – I Introduction
- Unit – II Nursing Assessment
- Unit – III Patho Physiological Mechanism of Disease
- Unit – IV Altered Immune Response
- Unit – V Clinical Pharmacology
- Unit – VI Nurse's role in Management of Fluids, Electrolyte and Acid Based Balance
- Unit – VII Management of patients in pain
- Unit – VIII Operation Theater Technique Physical Environment
  - Theatre Technique
  - Preparation of Theatre equipment & Supplies
- Unit – IX Management of patient undergoing surgery
  - Intra operative Management
  - Post- operative management – Immediate and Routine
- Unit – X Nursing management of patient with impaired respiratory function and gaseous exchange
- Unit – XI Nursing Management of Patients with Digestive and Gastro-Intestinal Disorders
- Unit – XII Nursing Management of Patients with Metabolic and Endocrine Disorders
- Unit – XIII Nursing Management of patients with renal and urinary disorders
- Unit – XIV Nursing Management of patient with Neurological disorders
- Unit – XV Nursing Management of patients with disorders of connective tissue collagen disorders.
- Unit – XVI Nursing Management of the Elderly
- Unit – XVII Emergency Management

➢ Paediatric Nursing (Marks 10)

- Unit – I Introduction
- Unit – II The Newborn
- Unit – III The Healthy Child
  - The Infant

- Health Promotion during infancy
- The Toddler
- The Pre-Schooler
- The School ager
- The Adolescent

- Unit – IV The Sick Child
  - Nursing interventions adaptations in nursing care of sick child
- Unit – V Behavioral Disorders and common Health Problems during Childhood, their prevention, Medical and Nursing Management.
  - Infancy
  - Early Childhood
  - Middle Childhood
  - Later Childhood
- Unit – VI Children with congenital Defects / Mal formations
- Unit – VII Children with various disorders and diseases
- Unit – VIII Welfare of Children

➢ Mental Health and Psychiatric Nursing (Marks 10)

- Unit – I Introduction
- Unit – II History of Psychiatry
- Unit – III Mental Health Assessment
- Unit – IV Community Mental Health
- Unit – V Psychiatric Nursing Management
- Unit – VI Mental disorders and Nursing Interventions.
  - Functional Mental Disorders
  - Definition, etiology, signs, symptoms, medical and nursing management of:
- Unit – VII Bio-Psychosocial Therapies
  - Psychopharmacology
  - Somatic therapy
- Unit – VIII Forensic Psychiatry / Legal Aspects.
- Unit – IX Psychiatric Emergencies and Crisis Intervention

➢ Medical Surgical Nursing - 2 (Marks 10)

- Unit -1 oncology nursing
  - Nursing management of patients receving:
- Unit-2 Nursing Management of patients with diseases of male genitor-urinary tract.
- Unit-3 Nursing management of patients with disorders of breast.
- Unit -4 Nursing management of patients with diseases and disorders of integumentary system.
- Unit -5 Nursing management of patients with opthalamic disorders and diseases
  - Hospital cornea retrieval:
- Unit -6 Nursing management of patients with disorders and diseases of ear, nose, and throat.
- Unit -7 Nursing management of patients with cardio vascular ,circulatory and haemotological disorders.
- Unit -8 Nursing management of patient with communicable diseases
  - Diseases caused by:

- Unit – 9 Nursing Management of patients with sexually transmitted diseases
- Unit – 10 Nursing Management of patients with Musculo-skeletal Disorders and diseases.
- Unit – 11 Emergency and disaster Nursing.

➢ Community Health Nursing - 2 (Marks 10)

- Unit – I Health system in India (Organizational set-up)
- Unit – II Health care services in India
- Unit – III Health Planning in India
- Unit – IV Specialized community Health Services and nurse's role
- Unit – V Nurse's Role in National Health Programmes
- Unit – VI Demography and family welfare demography
  - Family Welfare
- Unit – VII Health Team
  - Role of nursing personnel at various levels
- Unit – VIII Vital Health Statistics

➢ Midwifery (Marks 20)

- Unit – I Introduction
- Unit – II Reproductive system
- Unit – III Embryology and foetal development
- Unit - IV Nursing Management of Pregnant Women
  - Investigations.
- Unit – V Nursing Management of women in Labour
  - A. First Stage of Labour
  - B. Second Stage of Labour
  - C. Third Stage of Labour
  - D. Conduct of Home Delivery
- Unit – VI Nursing Management of Baby at birth
- Unit – VII Nursing management of Mother during puerperium
- Unit – VIII Complications of pregnancy and its management
- Unit – IX High Risk pregnancy and its management
  - Ostemalacia, Sexually Transmitted Diseases, AIDS.
- Unit – X High Risk Labour and its management
- Unit – XI Complications of Puerperium and its management
- Unit – XII Obstetric operations
- Unit – XIII Drugs used in obstetrics
- Unit – XIV Ethical and legal aspects related to Midwifery and Gynecological Nursing.
  - Clinical Experience

Annexure "M"

Syllabus for the post of Jr. Theatre Technician

Marks :-120
Time :- 2.00 Hours

- **Anatomy and Physiology** **(Marks 20)**

  - ✓ Elementary Physics and Chemistry
  - ✓ Characteristic of living matter
  - ✓ The structure of living matter
  - ✓ The Tissues
  - ✓ Systems and various parts of human body
  - ✓ Development and types of Bones
  - ✓ Bones of head & trunk
  - ✓ Bones of the limb
  - ✓ Joints or Articulations
  - ✓ Structure and action of Muscles.
  - ✓ The Chief Muscles of the Body
  - ✓ The Blood
  - ✓ The heart and Blood Vessels
  - ✓ The Circulation System
  - ✓ The Lymphatic System
  - ✓ The Respiratory System
  - ✓ The Digestive System
  - ✓ The Liver, Billiary System and Pancreas
  - ✓ Nutrition and Metabolism
  - ✓ Endocrine Glands and Exocrine Glands
  - ✓ The Urinary System
  - ✓ The Nervous System
  - ✓ The Ear
  - ✓ The Eye
  - ✓ The Skin
  - ✓ The Reproductive System etc.

Surgical Instruments and Surgical Procedures **(Marks 50)**

- **Pre – Operative Consideration**
  - Psychological support of the surgical patient.

- ✓ **Protection of the Patient in Surgery**
  - Admission Procedure
  - Transfer Procedure Position
  - Environmental Controls
  - Electro-Surgery
  - Operative Records
  - Counting Procedure
  - Sterilization
  - Emergencies and Disasters.

- **Surgical Instruments**
  - Instruments for General Surgery
  - Operation of the face and neck
  - Operations of the Nose, Throat and : Accessory Nasal Sinuses
  - Ophthalmic surgery
  - Sinuses, Ear & throat
    - Operations of the Chest, Operations on the Genito-Urinary Tract
    - Gynecological and Obstetric Operations
    - Orthopedic Operations
    - Neuro-surgical Operations
  - Radium Insertion
    - Traumatic Surgery

✓ **Surgical Procedures**

✓ **Neck Surgery**

- Thyroidectomy
- Parathyroidectomy
- Thyroglossal Cystectomy

✓ **Preast Procedures**

- Beast Biopsy
- Mastectomy

✓ **Abdominal Extraintestinal Surgery**

- Abdominal laprotomy
- Abdominal Hernlography
- Cholecystectomy
- Drainage of Pancreatic Cyst (Pseudocyst)
- Pancreaticoduodectomy (Whipples procedure)
- Pancreatectomy
- Dranage of Abscess (es) in the region of liver
- Hepatic Resection
- Spleenectomy.

➢ **Gastriubtestinal Surgery**

- Esopghagoscopy
- Gastroscopy
- Colonoscopy
- Sigmoidoscopy
- Vagotomy and Pyloroplasty
- Gastrostomy
- Gastrectomy
- Small Bowel Resection
- Cutaneous illeostomy
- Appendectomy
- Colostomy

- Closure of colostomy
- Right Hemincolectomy
- Transverse Coplectomy
- Anterlor Resection of the Sigmold Colon and Rectum
- Haemorrhoidectomy
- Pilonidal Cystectomy and Sinusectomy
- Theirsch Procedure
- Ripstein Procedure (Prosacral Rectopexy)

✓ Gynaecologic and Obstetric Surgery

- Dilatation of the Cervix and Curettage of the Uterus (D&C)
- Conization of the Uterine Cervix
- Therapeutic Abortion by suction Currettage
- Marsupialization of Bartholin's Duct Cyst
- Abdominal Ligabion (Different Procedures)
- Culdoscopy
- Anterior and /or Posterior Colporraphy
- Laparoscopy
- Total Abdominal Hysterectomy
- Slpingo-Oophorectomy
- Tuboplasty of the Fallopian Tubes
- Pelvic Exenteration
- Caesarian Section.

✓ Genitourinary Surgery

- Hypospadias repair
- Epispadias repair
- Penile Implant
- Marshall-Marchetti-Krantz Procedure
- Hydrocolectomy
- Vasectomy
- Vasovasostomy
- Cutaneous Vasostomy
- Spermatocolectomy
- Orchectomy
- Gystoscopy
- Cystosdopy
- Transurethral Resetion of the Prostate
- (TURP) and /or Lesions of the Bladder or Bladder Nech (TURB)
- Open Prostatectomy
- Nephrectomy
- Upper Tract Urolithotomy(Ureterolithotomy, Pheloothotomy, Nephrolithotomy) cutaneous vresterstomy
- Llegal conduit
- Extracproeal shock wave Lithotrpsy (ESWL)
- Ultrasonic Lithortripsy
- Electrohydraulic Lithotripsy

✓ Thoracic Procedures

- Bronchosopy

- Mediastioscopy
- Segmental Resection of the Lung
- Wedge Resection of the Lung
- Pulmonarty Lobectomy
- Pneumonectomy
- Decortication of the Lung
- Insertion of Transvenous Endocardial Pacemaker
- Correction of Pectus
- Excavatum
- Thymectomy

✓ Cardiovascular Surgery

- Carotid Endarterectomy
- Abdominal Aortic Procedures(Abdominal Aortic Abneurysmectomy, Abdominal Aortic Endaertectomy) with Astroilliac Graft
- Femoropopliteal Bypass
- Greater Saphenous vein Ligation and Stripping
- Portasystemic Shunt
- Artheriovenous Shunt
- Arteriovenous Fistula
- Cardiac procedures
- BY pass Surgery(Different Procedures)

✓ Orthopaedic Surgery

- Open reduction of a carpal Bone Fracture
- Excision of a Gaglion
- Carpal tunnel Release
- Open rduction of the Humerus
- Open reduction of the Radius and /or Ulna
- Open reduction of an Olecranon process Fracture
- Repair of recurrent Anterior Dislocationm of the Shoulder
- Open reduction of Fracture of the Humeral Head (including Humeral Head Prosthesis)
- Internal Fixation of the Hip
- Femoral head Prosthethic Replacement
- Total Hip replacement
- Openreduction of the femoral Shaft
- Triple Arthrodesis of the Ankle
- Total Ankle joint Replacement
- Open reduction of ankle
- Arthrotomy of the Knee
- Excision of Popliteal(Baker's Cyst)
- Total knee replacement
- Open reduction of the Tibial shaft
- Bunionectomy
- Correction of hammer toe Defrmity with interphalabngeal Fusion
- Metarsal Head Resection
- Procedure for correction of scoliosis
- Amputation of lower Extremity

✓ Neurological Surgery

- Craniotomy
- Cranioplasty
- Transphenoidal Hypophysectomy
- Ventricular Shunts

- Laminectomy
- Excision of a Cervical Intervetebral Disc with fusion, AntoriorApproach.

✓ Plastic Surgery

- Cleft Lip repair
- Cleft Palate repair
- Reduction of Nasal Fracture
- Reduction of Mandibular Fracture
- Reduction of a Zygomatic Fracture
- Open reduction of an Orbital Floor Fracture
- Rhinoplasty
- Mentoplasty Augmentation
- Blepgharoplasty
- Rhytidectomy
- Dermabrasion
- Otoplasty
- Repair of Syndactyly
- Digital Flexor Tendon repair
- Peripheral Nerve repair
- Palmar Fascoectomy
- Reduction Mammoplasty
- Abdominoplasty /Abdominal Liposuction
- Liposuction

✓ Otorhinolarynogologic (ENT) Surgery

- Myringotomy
- Mastoidectomy
- Tympanoplasty
- Stapedectomy
- Submucous Resection of the Nasal Septum(SMR) / Septoplasty
- Intranasal Antrosstomy / Intranasal Fenestration of the Nasoantal Wall.
- Caldwell-Luo procedure(Radial Drainage of the antrum of the Maxillary Sinuses)
- Nasal Polypectomy
- Drainage of the Frontal Sinus
- Tonsillectomy and Adenoidectomy (T and A)
- Laryngoscopy
- Traheostomy
- Excision of the Submaxillary (Submandibular Gland)
- Parotidectomy
- Laryngectomy
- Radial Neck Dissection
- Excision of lesions of the oral cavity
- (Partial Glossectomy with Margyinal Rsection of the Mandible)

✓ Opthalmic Surgery

- General Information
- Excision of a Chalazion
- Canthotomy
- Corection of Ectroplon
- Blepharoptosis repair
- Lacrimal Duct Probing

- Dacryocystothinostomy
- Correction of Strabismus
- Esyiscertation of the Globe
- Orbital Exenteration
- Corneal Transplant /Ekeratoplasty
- Cataract Extraction
- Iridectomy
- Trabeculectomy
- Excision of a pterygium
- Repair of Retinal Detachment /Scieral Bucking
- Vitrectomty
- Refractive keratoplasty

✓ **Pediatric Procedures**

- Pediatric General Information
- Pediatric Tracheostomy
- Branchial sinusectomy
- Reparir of Congenital Diaphragmatic Hernia
- Omphalocele Repair
- Pediatric Umblical Herniography
- Reparia of congenital Atrersia of the Esophagus
- Insertion of a central Venous Catheter(Padiatric)
- Pyloromyotomy for congenital Hypertrophic Pyloric Stenosis
- Pediatric Gastrostomy
- Reduction of pediatric intususception
- Pediatric Colostomy
- Pediatric Colorctal Resection for Aganglionic Megacalon/Hirschsprung's Disease
- Repair of Imperforate Anus

ANAESTHESIA

Anaesthesia : **(Marks 10)**

- General Information
- General Anaesthesia
- Conduction

✓ **General Anaesthesia :**

✓ **Conduction Anaesthesia** :

- Spinal
- Epidural
- Caudal
- Regional
- Local
- Topical

✓ **Methods for Preparation of the Patients for Anaesthesia**

- Methods and Procedures (during after operation)

➢ **Surgical Procedures and Monitoring:** **(Marks 40)**

✓ **Safety for operation room personnel**

- In Service education
- Body mechanic
- Fatigue Factors
- Radiation Safety

- Infection control
- Chemical Hazzards

✓ Preparation of Instruments Tray

- Major procedures tray
- Basic /Minor procedures tray
- Limited procedures tray
- Thyroid tray
- Long instruments tray
- Biliary tract procedures tray
- Choledochoscopy tray
- Basic rigid sigmoidoscopy tray
- Gastrointestinal procedures tray
- Rectal procedures tray

✓ Gynaecologic and Obstetric Trays

- Dilatation of the Cervix and Curettagge of the Uterus (D&C) Tray
- Cervical Cone Tray
- Laparoscopy
- Abdominal Hystrectomy
- Caesarian Section tray
- Vaginal Hysterectomy tray

✓ Genitourinary Trays :

- Vasectomy tray
- Open Prostatectomy
- Kidney tray

✓ Thoracic Trays :

- Mediastinoscopy tray
- Thoractomy Tray
- Pacemaker tray

✓ **Cardiovascular Trays :-**

- Vascular Procedures tray
- Vascular Shunt Tray
- Cardiac procedures tray

✓ **Orthopaedic Trays :-**

- Basic orthopaedi procedures tray
- Minor orthopaedic procedures tray
- Bone holding instruments tray
- Hip retractor tray
- Knee Arthtotomy tray
- Knee or Ankle Anthroscopy tray

✓ Neurologic Procedures Tray :

- Craniotomy tray
- Laminectomy Tray
- Kerrison Rongeurs and Pituitary Coreps tray

✓ **Otorhinolaryngologic (ENT) Trays :-**

- Basic Ear procedures tray
- Nasal procedures tray
- Myringotomy tray
- Tonsiliectomy and Adenoidectomy tray
- Tracheostomy tray
- Antral Puncture tray

✓ **Opthalmic Trays :-**

- Basic Eye procedures tray
- Eyelid and Conjunctional procedures tray
- Basic Eye Muscle procedures tray
- Cataract Extractionand Lense procedures tray
- Glaucoma Procedures tray
- Basic Eye procedures Microscope tray
- Retinal procedures tray

✓ **Pediatric Tray :-**

- Pediatric major procedures tray
- Pediatric minor Procedures tray
- Pediatric Gastrointestinal Procedures trays.

Annexure "N"

Syllabus for the post of Junior X-Ray Technician

Marks :-120
Time :- 2.00 Hours

Semester - I

- **Anatomy and Physiology** **(Marks : 15)**
  - ✓ **General:**

    Introduction to the Human body. Terms used in Anatomy, (Surface anatomy, markings and locations of different body parts and important body planes.Planes and Regions of Thoracic, Abdominal and pelvic Cavities.
  - ✓ **Animal Cell :**

    Structure of cell, function and cell divisions.
  - ✓ **Tissue System:**

    Definition, structure & S function of epithelium, connective, Muscular, Fluid and nervous tissues.
  - ✓ **Cardiovascular System.**

    Heart, pericardium, Arterial system, Venous system, Capilary, systemic circulation.
  - ✓ **Digestive System:**

    Mouth , oesophagus, stomach, small intestine, large intestine, spleen, liver, Salivary Gland , Gall Bladder, pancreas, Physiology and Digestion Absorption and Assimilation of Food.
  - ✓ **Respiratory System:**

    Noise , pharynx, larynx, trachea, Bronchi, lungs, pleura, physiology of Respiration-Expiration and Ins;piration, Internal and External Respiration, Breathing control, vital capacity . Tidal volume and Dead space.
  - ✓ **Reproductive system:**
    - Male Reproductive system: Male Reprodutive organs,
    - Spermatogenesis, Testosterone and Secondary sexual characters.

Female Reproductive System: Vulva, internal reproductive organs menstrual cycle, ovarian hormones & Female breast.

- ✓ **Excretory System:**

Introduction to Excretory body organs, structure of kidneys , ureters, Urinary, Bladder, Urethra, Physiology of filteration Reabsorption and secretion.

- ✓ **Nervous System:**

Brain Meninges , ventricles spinal cord nerves and cerobro spinal fluids.

- ✓ **Lymphatic System:**

Lymph Glands, Thoracic Ducts. Composition & Circulation of Lymph.

- ✓ **Endocrine system –**

Definition, Pituitary Gland, Pineal gland.Thymus Gland Adreneal Glands Thyroid, Parathyroid Glands.

- ✓ **Sense Organs-**

Structure and function of Eye , Skin , Ear and Tongue.

- ✓ **Musculoskeletal System-**

Skull, vertebral column, shoulder girdle, Thoracic cage. Bones upper limbs, Bones of lower limbs, type of bony joints and movements.

- ➢ **General Physics** **(Marks : 10)**

Unit, Measurements, Motion, Newton's Law of Gravitation Work energy, Properties of matter & Archimedics principle.

- ✓ **Heat -**

Thermometry & Kinetic Molecular Picture of Heat, Thermal Expansion Transference of heat, heat energics, Calorimeter and hygrometery Practical points of heat in X-Ray equipment.

- ✓ **Light -**

Rectilinear propogation, Photometery reflection lawas. Spectroscope optical instruments, velocity of Light X-Ray spectroscope.

- ✓ **Magnetism -**

Properties of Magnetism, Molecular Theory of Magnetism, magnetic field, Lines of Force, Magnetic forces and Territorial magnetism, Hysteresis.

- ✓ **Electricity -**

Simple electronic phenomenon, potential difference and electric current capacitor of condenser inductance, impedence, Electro magnetism resistance heating and chemical effect of current, electromagnetic induction, Laws, Ohm's law, Safety fuses Galvanometer, AC and DC currents, RMS value, Peak value.

- ✓ **Sound -**

Production of sound, wave motion, velocity of sound, Superimposition of sound musical sounds, vibration of strings, Air Columns etc. Production ultrasonic waves, Clinical application of ultra sound.

✓ **Transformers**

Principles construction of step up & down and Auto transformers, construction of high tension .Transformers rectification . Self rectification.

✓ **X-Ray**

Production of x-ray, properties, interaction with matter (Photo electric comption effect and pair production) luminescent effect, photographc effect, ionizing effect & biological effects.

✓ **Units and Measurements of X-Rays-**

Lonixation, Roentigen, Rad Rem, R.B.E. Radiaton badges, lionization chambers.

Semester - II

➢ **X -Ray Tube –** (**10 Marks)**

- Construction of x-ray tube Targets, cooling and insulation, X-Ray Circuits , timers and rectifiers in x-ray, circuits, inter locking circuits, stationary and Ratatory anode tube.

- Quantity and Quality x-ray , H.V.T or VVL linear absorption co-efficient grids, cones cylinders, filters, focal spot size LBD FFD or LSD and OFD Fluoroscopy and Image intensifier

✓ **Radioactivity :-**

- Curie, Half life period, decay factor, radium, cobalt, caesium, dose. Dose rate exposure dose, Exit dose, Depth dose, isotopes and isobars, isodose charts and their uses.

- Gamma of X-Ray film (toe & shoulder region linear and Solarization) X-Ray tube calibration, sensitometer, densitometer.

✓ **Musculoskeletal System :-**

- Skull, vertebral column, Shoulder girdle, Thoracic cage. Bones upper limbs, Bones of lower limbs, Types of bony joints and movements.

➢ **Radiographic photography Technique (Dark room Techniques)**
(30 Marks)

✓ **Dark Room-**

- Definition and location of dark room, ideal design of dark room , light and radiation protection devices , safe light test, ventilation, dry and wet benches, Duplicator.

✓ **Radiographic Films-**

- Ortho-chromatic films , panchromatic films, Base, Bonding layer, emulsion and super coating of films. Non screen films CTA base and polyster base films. The structure of Double coated & single coated film.

✓ **X-Ray Cassettes -**

- Construction of various cassettes, cassettes care, mounting of intensifying screen in cassettes.

✓ **Intensifying screens-**

- Luminescence (Phosphores cence and fluorescence) construction of screens. Type of phosphors and pigments film screen contact, speed of screens-slow parfast care of intensifying screens . Intensification factors numeral proof and rare earth screens.

a) Mounting of intensifying screens.
b) Screen film contact.

✓ **Film Processing -**

Auto processing material for processing equipment and annual processing control on temperature chemical in Dark room the PH Scale.

- X-ray Developer
- X-Ray Fixer
- Film Rinsisng Washing & Drying
- Preparation of processing chemicals, loading and unloading of cassettes,

✓ **Presentation of Radiograph-**

- Film identification- Direct or Stereoscopic views, trimming legends, record filling and report distribution..

✓ **Film Artifacts-**

- Definition, type an causes of radiation and photographic artifacts, factors affecting the quality control of radiograph.

Semester - III

- **Radiograpghic General Procedures** (**30 Marks)**

- Intorduction- The Radiographic image (image formation, magnification image Distortion, Image, sharpness, Image contrast) Ex posure factor and Anatomical Terminology.

✓ **Skeletal System-**

Upper Limb- Procedure for thumb, fingers, meta carpals, hand corpometacarpel joints, wrist joint, carpo-radio-ulpar joint, forearm, elbow joint, arm, special views for scaphoid bone, olecranon process , supra condylar prljection in various type ofinjured patients.

- **Lower limb-** Procedure for toes, meta tarsalls, complete foot, trasoancaneal, talo calcaneal joint, lege with ankle joint legewith knee jointm knee joint, thigh with hip joint.
- **Shoulder Girdle and Bony thorax-** Procedures for scapula calvicle and head of humerus sternoclavicular joint , special views for clavicle. Head of humerus and scapula in various types of injured or dislocation cases.

- **Vertebral Column-** Normal curvature relative levels of vertebrae, procedures for atlanto-occipital joint, odontoid process, cervical spine , cervicodorsal spine , dorsalsspine, dorso-lumbar spine, and spondolysis.
- **Pelvic Girdle and Hip Joints : -** Procedure for whole pelvis, ileum, ischium and public bones, sacro – iliacjoint symphysis pubis, acetabulum, neck of femur greater & lesser trochanter. Hip Joint with upper one third femur, special view for orthodosis. S.M. pinning and S.P. nailing and platting.
- **Skull :-** Procedure for whole skull, localized for frontal occipital, temporal, external and internal auditory meatus, sella turcica, juglar foramen, for a magnum, optic foramen maxillae zygomatic bones, mandible, temporo-mandibular joints, styloids processes, cranio-vertebral junction.
- **Teeth :-** National and International formulae and D.T and P.T. Procedures for maxillary and mandibular teeth (incisors canine, premolar and molar) for D.T and P.T cephalometery, orthopantogram, occulusal view for maxilla and mandible.

✓ **Chest-**

- Procedures for chest at six feet, lying down and crect positions, inspiration and expiration views , special views like lordotic , decubitus, MMR portable teleradiography, chest in pregnancy. High Kilovolatage technique.

✓ **Abdominal Pelvis –**

- Preparation for procedure, procedure for upper abdomen,lower abdomen,KUB Gallbladder Stomach , small intestina and large intestine in Supine and erect position, special views in case of perforation etc supine and erect position, special views in case of performation etc.

✓ **Sinus –**

- Procedures for paranasalsinuse (frontal, ethmoid,sphenoid and maxillary sinuses.)

✓ **Soft Tissue Radiography-**

- Procedures for STM , STN abdomen and other body organs. invetogram procedures, manipulation of positions, immobilization , exposure, FFD in abnormal conditions of patients.

✓ **Hospital Practice and Care of Patients :-**

- Setup of Radiology department in Hospital, Hospital staffing and organization, Patients Registration, record filling, cases put up and dispatch devices, medico legal aspect of profession. Professional relationship of Radiographer with patient and organization staff.

❖ **Special Investigation** (**15 Marks)**

✓ **Urinary Tract –**

- Plain Radiographs for UB Intravenous Pyelegraph, (IVP or IVU) Retrogratepyelegraphy, Micturting- cystourethrogram Retrograte Urethrogram.

✓ **Gastro –Intestinal Tract -**

- Plain Radiographs, abdomen, Barium Swallow, Ba meal ET, Ba Enema, double contract Baenema and instant Baenema, Miscellaneous Procedures, Gastrigraffim study, fluoroscopy,

- **Biliary Tract**

✓

- Introduction to biliary contrast oral choleystography (OCG) pancreatograpy (ERCP), HCG, Fistulogram Sinogram.

- Basic principle and application of computerized tomography, ultrasound Magnetic resonance Imaging, Computer Radiography and Digital Radiography.

- Contrast Agents, Contrast Reaction and their management, Emergency Drugs used in Radiology Department.

Semester - IV **PAPER - I**

➢ **Ardiological special procedures and radiotherapy** **(10 Marks)**

- **Introduction-** Importance of special procedure, parameters for a special procedure (indication, contraindication, patient preparation, accessories, contrast media, technique aftercare etc.
- Ideal step of different special procedure Laboratories (Cath-lab, Angiolab, U/S Lab. C.T. Center & M.R.I Centers) Accessories of a special procedure center.
- Contrast and different contrast media for various procedure, Adverse effects of contrast media.
- Handling of emergencies in Radiology deptt. Preparation of different contrast media. Uses of Drugs and other equipment in procedure roo. Checking of Instrument, drugs and their labellings knowledge of sterile and unsterile techniques.

✓ **Cardio-Vascular System -**

Plain Radiographs of Interested – Body part catherization technique guidewires, Catheters, General complication of catheter technique.

- **Gngiography peripheral Angiograms -** Angiogram for upper and lower limbs
  - **Central Angiogram :-** Cardiac catherization, Carohd Angiogram, Aotogram, Selective angiogram, Digital substmction angiography.
  - **Venography :** Plain Radographs of interested body parts.

    Peripheral Venography : Venography of upper and lower limbs. Intraosseous venography

    Central Venography : - Portal venography, Superior venacavography, Inferior Venacavography Retrograde selective Venography.
- **Central Nervous System -** Introduction to water soluble contrast & Oily contrast for C.N. System. Plain Radiographs of skull or vertebral column, ventriculography, Pneumo encephalography, Shuntography, Myelegraphy, cisternography.
- **Respiratory Tract –** Plain radiographs of Face, Neck or Thorax Nasopharyngography Oropharyngography, Laryngography, Lung Biopsy.

- **Reproductive System : -** Plain Radiographs of interested body part Vesiculography Hystero Salpingography, Gynaecography.
- **Skeletal System :-** Plain Radiographs of interested bones, Arthrography (wrist, knee , Shoulder, Hip elbow, ankle joints) Fistulography and Airmeatography.

  Basic Principle and application of tomography computerized Tomography Ultrasound, Magnetic resonance Imaging. Manula Substruction & Duplicating techniques.
- **Radiotherapy :-** Physical Principles of Radio Therapy general Pathology in Relation to Radiation Therapy Radiation Treatment & Types of Sources, cobalt Calcium and Radium. Radiotherapy its advantages & Disadvantages Radio therapy Tubes, Radiotherapy Techniques for skin, respiratory, Digestive Urinary, Reproductive, Endocrine and Nervous diseases, Kilovoltage techniques, External & Internal Radiation technique in various diseases. Plesiotherapy Dose data, uses of isodose chart for correction of isodose curve. Basic Principles of CT & MRI and application.

Semester - IV **PAPER - II**

Medical OPD / Emergency / Ward Tray with Physician.

✓ Electrocardiography & Techniques -

- Definition of ECG, EMG. Introduction to Electro Cardiography. History Physiological basic, Vector concept in ECG, Conduction velocity, Impulse generation, Impulse Transmission, Normal cardiacrhythum, Blood pressure, Pulse rate, Central Terminal of Wilson, Unipolar limb leads, Biopolar limb leads, Augmentation, Esophaheal leads, Jelly used in ECG different colour codes in ECG leads.

✓ Normal Electrocardiograms -

- Normal paper speed, standardization, Calibration, Filters, Normal heart position, Interpretation of ECG. Atrial complexex (p-wave), P-R interval, QRS complex, QT Interval, ST segment, T-Wave, Purkinjee fibres repolarization. Duration and amplitude of different normal waves recorded in an ECG. No. of complexes tobe recorded in a normal ECG.

✓ Abnormal Electrocardiogram -

- Abnormal P-wave, Interventicular conduction defect, RBBB (Right bundle Branch Block) LBB (Left Bundle Branch Block). Hypertrophy, RVH (Right Ventricular Hypertrophy, LVH (Left Venticular Hypertrophy), WPH (Wolf Parkinson white Syndrome.) Bilateral Bundle Branch Book. Trifasicuair Blocks. Lown-Ganong Levine-Syndrome, Mahim by pass, Pulmonary embolism. Chronic Obstruction. Mitral Lung disease (COPD). Biventricular Hypertrophy, Myocardial infarction Mitral Stenosis. Mitral valve prolapsed, Paroxy small Atrial Tachycardia. Sick-Sinus-Syndrome, Supra Ventricular Tacheardia. Left Posterior and anterior hemi block.

✓ Coronary Artery Disease -

- Ischemia, Injury, Infarction, Subtle, Atypical, Non-specific patterns. Condition defects and infarctions, Location of infarctions, ventricular premature beat and acute infarctions, coronary insufficiency. Atherosclerosis Thrombo embolism.

✓ Drugs and Electrolytes -

- Adrenaline, Acetyl choline, Digitalis, Quinidine, Potassium, Hyperkalemia and Hypokalemaia, Hyper and Hypo Calcemia. Phenothiazines. Anthro Cyclines, Cerebro Vascular Accidents (CVA). Hypo and hyper Thermia, pericarditis, Myocarditis. Heart trauma. Pericardial effusion. Malignancy of heart. Cardiomyopathies, Electrical Alternans, Negative V-Wave, Liquid Protein diet Anaemia etc.

✓ Exercise Test -

- Definition, Acetyl Choline, Digitalis, Quinidine, Potassium. Hyperkalemia and Hypokalemala, Hyper and Hypo Calcemia. Phenothiazines. Anthro Cyclines, Cerebro Vascular Accidents (CVA), Hypo and Hyper thermia, pericarditis, Myucarditis. Heart Trauma. Pericardial effusion. Malignancy of heart. Cardionyopathies, Electrical Alternans, Negative V-Wave, Liquid Protein diet Anaemia Etc.

✓ Disorders of Cardiac Rhythum -

- Disbalance of impulse formation at SA node, disturbance of impulse conduction, Secondary disorders of rhythum, Physiology of cardia rhythum, automaticity. A Vnode, Sinus rhythum, Sinus tachycardia, Sinus brady cardia, Sinus Arrythmia, Sinoatrial block, partial SA block, complete SA block, causes of exit block, Atrial Extrasystoles, Bocked Atrial extrasystole, Wandering Pacemaker, Praroxysmal Atrial tachycardia (PAT) Chaotic atrial rthythm, Atrial Flutter, Atrial Fibrillation, Supraventricular tachycardia (SVT.) Ventricular tachycardia (VT) Ventricular fibrillation. Sick sines syndrome etc.

✓ ECG as a Clue to Clinical Diagnosis -

- Pulmonary Stenosis, tricuspid atresia, Atrial septal defect, Ventricular septal defect, Ebstein Anomaly, Corected Transposition of great vessels, Mirror image dextrocardia, Anomalous Origin of left coronary Artery, Rheumatic Heart Disease (RHD), Mitral valve prolapsed, Athelete's Heart, cardia Pacemaker etc.

Annexure "O"

Marks: 120
Time:02 hours

SYLLABUS

PARAMEDICAL ASSISTANT

➢ Basic Medical Foundation (Marks : 10)

- Human Anatomy and Physiology

  - Introduction to human body systems
  - Structure and functions of organs
  - Skeletal, muscular, respiratory, circulatory, digestive, and nervous systems

➢ Basic Pathology & Microbiology (Marks : 10)

Common diseases and their pathology

- Infection types and control
- Microorganisms and their roles
- Sample collection and handling

➢ Clinical Biochemistry (Marks : 10)

- Blood sugar, cholesterol, urea, creatinine tests
- Electrolyte balance
- Use of lab instruments (centrifuge, colorimeter)

➢ Medical Terminology (Marks : 10)

- Basic medical terms
- Prefixes, suffixes, and abbreviations
- Understanding prescriptions and records

➢ First Aid and Emergency Care (Marks : 15)

- Basic life support (BLS)
- CPR, bleeding control, fractures
- Handling shock, burns, and wounds

➢ Clinical & Practical Training (Marks : 15)

- Pharmacology
- Common drugs and their usage
- Dosage forms and administration
- Side effects and contraindications
- Storage of medicines

➢ Hospital and Patient Care (Marks : 15)

- Bed making, bathing, feeding patients
- Handling equipment (BP apparatus, thermometer)
- Patient record-keeping
- Infection control & biomedical waste management

➢ Laboratory Techniques (Marks : 15)

- Blood sample collection
- Hemoglobin, blood group, urine test
- Slide preparation & staining
- Diagnostic tool handling (microscope, autoclave)

➢ Radiology Basics (Marks : 10)

- Introduction to X-ray, ultrasound
- Safety measures
- Positioning of patients

➢ Communication Skills and Ethics (Marks : 10)

- Patient interaction and empathy
- Professional behavior
- Basic English and report writing
- Medical ethics and legal aspects

Annexure "P"

Marks: 120
Time: 02 hours

SYLLABUS
TECHNICIAN G-II

➢ **ANATOMY** **(Marks : 05)**

- **Introduction :** Human Body as a whole.
- Locomotion and support.
- Cardiovascular System.
- Gastro-Intestinal System.
- Respiratory System.
- Peritoneum.
- Urinary System.
- Reproductive System.
- Endocrine Glands.
- Nervous System.
- Sensory Organs.
- Embryology.

➢ **PHYSIOLOGY** **(Marks : 05)**

- Introduction : Composition and Function of Blood.
- Blood Bank.
- Cardiovascular System.
- Digestive System.
- Respiratory System.
- Endocrine System.

- Special senses.
- Nervous System.
- Excretory System.
- Reproductive System.
- Muscle nerve physiology.
- Skin – Structure and function.

➢ BIOCHEMISTRY – I **(Marks : 10)**

- Clinical Laboratory.
- Laboratory Apparatus.
- Instruments: Use Care and Maintenance.
- Units of measurement.
- Introduction to general Bio-molecules.
- Fundamental Chemistry.
- Solutions, Definition, Use , Classification.
- Acids Basis, Salts and Indicators.
- Biomedical Waste management.

➢ PATHOLOGY **(Marks : 10)**

- Histopathology – Theory.
- Clinical Pathology- Theory.
- Hematology – Theory.
- Blood Bank – Theory.

➢ MICROBIOLOGY **(Marks : 10)**

- Introduction.
- Growth and Nutrition.
- Sterilization and Disinfection.
- Biomedical Waste Management.
- Immunology.
- Infection.
- Systematic bacteriology.
- Parasitology.
- Virology.
- Mycology

➢ **ENGLISH : BEHAVIOURAL OBJECTIVES** **(Marks : 05)**

- Introduction.
- Applied Grammar.
- Written Composition.
- Reading and Comprehension.
- The Study of various forms of composition.
- Verbal Communication.

➢ **HEALTH CARE** **(Marks : 05)**

- Introduction.
- Introduction to Nursing.
- First Aid.

➢ **BIOCHEMISTRY – II** **(Marks : 10)**

- Preparation of Solution and reagents.
- Measurements in Clinical Laboratory.
- Chemistry of Carbohydrates.
- Chemistry of Amino acids and Proteins.
- Enzymes.
- Chemistry of Nucleic Acids.
- Water soluble vitamins.
- Metabolism of carbohydrates.
- Metabolism of Amino Acids and Nucleic Acids.
- Overview of Body Fluids.
- Specimen collection.
- Normal constituents of Urine.
- Renal Function Tests.
- Techniques.

➢ **MICROBIOLOGY- II** **(Marks : 10)**

- Gram Positive Bacteria.
- Gram Negative Bacteria.
- Spirochetes & others.
- Applied Bacteriology.

- Bacteriology of water, milk and Air.
- Parasitology.
- Protozology.
- Helminthology.

➢ **PATHOLOGY – II** **(Marks : 10)**

- Histopathology and Hematology.
- Instrumentation.
- Techniques.
- Staining techniques.
- Mounting techniques.
- Hematology.
- Special Hematological tests.
- Homeostasis and Coagulation.
- Investigation of Megaloblastic Anemia and Iron Deficiency Anemia.
- Demonstration of LE Cells.

➢ **SUBSIDIARY SUBJECTS** **(Marks : 05)**

- Sociology.
- Introduction.
- Social factors in Health and Disease.
- Socialization.
- Social Groups.
- Family.
- Community.
- Constitution of India
- Indian Constitution.
- Environmental Science and Health.

➢ **BIOCHEMISTRY – III** **(Marks : 10)**

- Laboratory management.
- Clinical Enzymology.
- Plasma Proteins.
- Fat Soluble vitamins : A, D,E and K.

- Metabolism of carbohydrates.
- Lipid Metabolism.
- Molecular genetics.
- Tumor markers.
- Acid base balance.
- Liver.
- Pancreatic function tests.
- Thyroid function tests.
- Cardiac Markers.
- Techniques- Principle, Instrumentation and Application.
- Calculi.
- Mineral Metabolism and Clinical conditions.
- Nutrition.

➢ **MICROBIOLOGY – III** **(Marks : 10)**

- Immunology.
- Infection.
- Immunity.
- Immune System.
- Immune responses.
- Antigens.
- Antibodies.
- Antigen antibody reactions.
- Complimentary system.
- Hypersensitivity reactions.
- Autoimmunity.
- Transplantation and Malignancy Immunity.
- Immunodeficiency Diseases.
- Virology.
- Mycology.

➢ **PATHOLOGY – III** **(Marks : 10)**

- Cytology.
- Female Genital Tract.

- Respiratory Tract.
- CSF and Effusions.
- Glands.
- Automation in Cytology.
- Tissue culture.
- Cytogenetics.
- Immunocytochemistry.

➢ BIOSTATICS **(Marks : 05)**

- Introduction.
- Tabulation of Data.
- Measure of Central Tendency.
- Measure of Variability.
- Probability and standard Distributions.
- Sampling Techniques.
- Health Indicator.

Annexure "Q"

Marks: 120
Time: 02 Hours

Syllabus for Refrigeator Mechanic

FIRST SEMESTER **(Marks 60)**

- Importance of the trade in domestic industrial & commercial fields. Industrial safety & fire fighting occupational health & safety.
- Allied trade knowledge, Basic fitting, Welding, Sheet Metal Work , Concept of Shop floor layout of the trade.
- AC Induction Motor - Single phase (Split phase- Capacitor, shaded pole, repulsion) & tree phase (squirre cage & slip ring)
- Transformer - single phase (auto transformer & current transformer, Potential transformer) and three phase inverter controls EER motors.
- Basic Electronics, Concept of Semi conductor, Rectifier, Transistor. FET.Mosfet, Bipolar Transistors, IGBT(Integrated Bi-Polar Transistor) IC, Thermister, Transducer, function, concept of Microprocessor, PLC, Regulated Power supplies, SMPS.
- Fundamentals and different terminology of RAC machineries, Laws of Thermodynamics, Gas Lawas, Carnot cycle and reverse Carnot cycle.
- Methods of Refrigeration - Ice Refrigeration, Dry ice, Steam jet, Gas throtting, Liquid Gas, Air refrigeration, vapour absorption, Vapour compression, Thermo electric, Magnetic, Thermo acoustic, Pulse tube, vortex tube.
- Types of refrigeration systems and cycles. Capacity of RAC machineries, applications in domestic commercial and Industrial fields.
- Description of major components used in RAC systems Function construction, Application of Domestic and commercial applications.
- Types of compressor used in domestic appliances Reciprocating Rotary Scroll screw etc.
- Types of Condenser used in domestic appliances Water cooled, Air cooled Evaporative etc.
- Expansion Device types, construction working, adjustments & applications.
- Evaporator -types (domestic & Commercial) construction working (Direct & Indirect systems) DX Chiller, Flooded types & applications
- Refrigerants, Description Function Composition Appliances & Types Environmental impact of different refrigerants. Alternatives of cfcs. Thermodynamic properties & characteristics of ideal refrigerants. Azeotropic and Zeotropic blends. Description odp Retro fitting, filter drier.
- Secondary refregerants, Properties of brines & glycols. Application of various brines, Inhibitor & other secondary refrigerants.
- Basic concepts of Tribology, Lubricants & Lubrication in RAC compressors properties of lubricants Thermal insulation types & function properties of insulating materials.
- Thermal insulation types, Selection of insulating material, Duct insulation & properties of insulating materials.
- Conventional Refrigerator, Frost free refrigerator, Water cooler,Deep Freezer, etc.
- Window AC, Split & Package AC description Advantage & Application.
- Introduction about commercial plants.
- Automobile AC, Function of Individual components. Refrigerants used & retrofitting of old car / Mobile AC's

SECOND SEMESTER **(Marks 60)**

- Non-conventional refrigeration system :- Thermo-Acoustic, Magnetic vortex-tube, Pulse-Tube Refrigeration & Lithium Bromide- Vapour Absorption System.
- PTC & NTC function & applications, Rectifications in single phase and three phase AC to DC, Variable frequency Drive (VFD) Starters-DOL, Star Delta Starter, Inter locking.
- IC's PWM (Pulse Width Modular) controller, Micro processor, Micro controller CRO
- Commercial used compressors, Digital Scroll compressor, Centrifugal Compressor, Capacity control of commercially used compressor
- Commercial used condenser, Air colled, water cooled, Evaporative Description types condenser capacity.
- Fibre reinforced Plastic (FRP) cooling Tower, Description & Types construction Application and function. Descaling procedure, Cooling tower capacity terms etc.

- Refrigerant controls for commercial plants description types Liquid expansion valve, Electronic Expansion valve, level Master Control & Equalizer construction, Function & application.
- Chilled water System - DX and flooded chiller
- Foor preservation System : Cold storage milk chilling, ice plant, pasteurizing, Description types , construction, function and Appliation.
- Refrigerant and Lubrication variable Refrigerant Flow System (VRF) with Micro controller controlling.
- Cassette Type Systems, Inverter AC's, Ductable Package, ceiling suspended split A/C , Floor standing Type, Panel A/C
- Precision Air Conditioning System, Comfort Air Conditioning System, Hospital Air Conditioning System and Unitary Systems.
- Central Air Conditioning Plants, Starting and Stopping procedure of Central Air Conditioning plant.
- HVAC Systems. Different heating systems, calculating the tonnage of heating system
- Air Distribution System : Duct Designing material classifications applications and Fabrication. Air filtering, Classifications and applications, Air outlets, fans and blowers. Acoustic and Air washer. Application of clean rooms, Air Curtain AHU and FCU.
- Heat recovery wheel (HRW) for maintaining IAQ (Indoor Air Quality) CAV (Constant Air Volume) and VAV.
- Psychrometry : Properties of air, Preparation of Chart processes relations, Different systems, heating coolong, Himidifying , De-humidifyong.
- Cooling Load Calculations and Design of Air Conditioning Systems. Different Heat source and Heat load Bypass Factor.
- Errection commissioning Heat balancing and Evaluation of central Air conditioning system. System performance, Plant operation, maintain log book, Preventive Maintenance of Commercial Plants, Trouble shooting etc.
- Transport Air Conditioning Introduction Bus, railway, Marine, Air craft-Types Function Construction, Types Capacity Application of Central Air conditioning system.

Annexure "R"

Syllabus for the post of Extension Educator/Health Educator

Marks: 120 ***Time: 02.00 Hrs.***

GENERAL ENGLISH 20 Marks

(i) Tenses
(ii) Rearranging of jumbled sentences.
(iii) Narration
(iv) Models
(v) Articles
(vi) Comprehension with blanks to be filled in with
  i. Phrases
  ii. Pronouns
  iii. Homonyms / homophones.
(vii) Clauses
(viii) Synonyms and antonyms
(ix) Pairs of words and their use in meaningful sentences.
(x) Idioms and phrases.
(xi) Uses of Prepositions.
(xii) Active & Passive Voice

GENERAL KNOWLEDGE AND CURRENT AFFAIRS 20 Marks

(i) Indian History with special reference to Freedom struggle
(ii) First in world (Adventure, Sports, Discoveries)
(iii) First in India (Adventure, Sports, Discoveries)
(iv) Popular Personalities (Politics, Scientific discoveries, Geographical, Sports, History)
(v) The Newspaper world – (Current Dailies & Weeklies of India)
(vi) Languages & Culture
(vii) International Organisations- UNO, WHO, WTO, IMF, UNESCO, UNCTAD etc.
(viii) Important Regional Organizations and Blocs- BRICS, OPEC, ASEAN, SAARC, BIMSTEC, G-20, G-7 etc.
(ix) Sustainable Development Goals
(x) Communicale Diseases- cure and prevention
(xi) NCDC- COVID-19 - SOPs, Advisories, Guidelines etc
(xii) World famous Awards
(xiii) The world of Sports
(xiv) Climate & Crops in India
(xv) Political & Physical divisions of world & India
(xvi) Important Rivers & Lakes in India
(xvii) Current Events of National and International importance

(xviii) Agriculture in economic development; Industrialization and economic development.
(xix) Foreign Trade & Balance of payments
(xx) New economic reforms
(xxi) Inflation, Monitory Policy, Fiscal Policy, Capital Markets, Role of RBI, Taxation in India- Direct & Indirect Tax - CBDT, GST etc.
(xxii) India's Automic Research Programme,
(xxiii) Thermal / Nuclear/ Hydro Power Plants in India.

GENERAL KNOWLEDGE WITH SPECIAL REFERENCE TO UT of J&K 20 Marks

(i) Popular names of personalities and their achievements/ Contribution (National and International).
(ii) Weather, Climate, Crops, Means of Transport.
(iii) J&K History, Economy and Culture
(iv) Flora and Fauna of J&K
(v) Rivers and Lakes.
(vi) Important Tourist Destinations.
(vii) J&K Panchayati Raj Act, 1989 (as ameneded upto December, 2020), 73rd & 74th Constitutional amendments.
(viii) J&K Reorganisation Act, 2019

GENERAL SCIENCE 20 Marks

(i) Various sources of energy; conventional sources of energy; improvement in technology for using conventional source of energy (Biomass and wind energy)
(ii) Non-conventional sources of energy (Solar energy,Tidal energy).
(iii) Mechanics, Rest, motion, Velocites, acceleration, Newton Laws of motion,
(iv) Voltage, Current, Resistance, Power, D.C Batteries
(v) Waves, light as a wave, Sound waves, Transverse and longitudinal waves.
(vi) Structure of Atom
(vii) Solids, Liqids and Gases(Basics)
(viii) Life processes: Nutrition and its types, Respiration, Transportation of water, food and minerals in plants.
(ix) Vitamins- Dieases related to vitamin deficiency.
(x) Environmental pollution.
(xi) Ecosystem – Its components, Food chains and Food webs.
(xii) Ozone layer, its depletion, Green House Effect.
(xiii) Importance of water in life

MENTAL ABILITY TEST 20 Marks

(i) Number series.

(ii) Letter series.
(iii) Coding decoding.
(iv) Direction sense.
(v) Blood relations.
(vi) Mathematical reasoning.
(vii) Speed, Distance and Time.
(viii) Statements and conclusions.
(ix) Logical Reasoning.
(x) Mental Reasoning.

COMPUTER APPLICATIONS **20 Marks**

(i) Fundamentals of computer sciences
(ii) Hardware & Software
(iii) Input and output devices
(iv) Operating system
(v) M.S Word,M.S Excel, M.S Acess and Powerpoint Presentation
(vi) E_mail & Internet

Annexure "S"

Syllabus for the post of Sanitary Inspector

Marks: 120
Time:02 hours

Sanitary Inspector: A Paramedical worker primarily trained for ensuring standards of cleanliness in and around public places but with capabilities to handle or be part of most routine health care activities. The Course is designed to develop among students an understanding of health disease and other health related phenomenon so that they are able to contribute effectively in the delivery of health care to reduce the magnitude as well the impact of disease in the community.

PART- I

A) Anatomy

- Basic Concepts
- Organ Systems Elementary Knowledge

(Marks 05)

B) Physiology

- Basic concepts
- Various systems Elementary Knowledge.

(Marks 05)

C) Community Medicine

(Marks 40)

i) History of Community Medicine and Public Health

ii) Basic concepts

- Concept of health
- Concept of disease
- Concept of prevention

iii) Epidemiology - Basic concepts

iv) Infectious Disease.

- Dynamics of transmission
- Concept of control
- Immunity and Immunization
- Disinfection

v) Essentials of Outbreak Investigation

vi) Non Communicable Disease

- General concepts
- Prevention of Hypertension, Diabetes, Stroke, Blindness

v) Environmental Health

- Basic Concepts
- Water - Physical , Chemical and Biological standards for potable water sources and nature of pollution of water, hazards of water pollution, purification of water on large and small scale, sanitary well and tube well, water supply and storage system at community and household level.

- Air-sources of air pollution, estimation of level of pollutants, green house effect, thermal comfort, radiation.
- Noise pollution.
- Housing - standards for healthy housing.
- Athropods of public Health Importance.
- **Solid Waste management** - classification of solid waste, harmful effect of solid waste system of collection and disposal of solid waste.
- **Liquid Waste management** - classification, quality of different type of waste, hazards, sanitary sewerage system.
- **Night Soil Disposal -** Hazards of insanitary disposal, types of latrines in use, Borehole, Dug well, RCA and Septic tank latrines, sanitation of trenching ground.

vi) Disaster Management

- Basics

vii) Bio Medical Waste Management

- Basics

PART - II

1. Health Communication (Marks 05)

- Basics
- Approaches in Health Education
- Methods
- Contents
- Planning an IEC

2. Nutrition (Marks 10)

- Food components
- Nutritional Assessment
- Deficiency diseases
- Food adulteration
- Food borne diseases
- Food hygiene
- Nutritional Programs

3. Sanitation and Hygiene (Marks 10)

- Sanitation of Public places and Hospitals
- Slaughter House
- Eating Establishment

4. Health Administration (Marks 05)

- Health Care delivery System

- National Health Programs (Selected)
- Health Statistics
- Role of Sanitary Inspector

5. MCH and Family Planning (Marks 10)

- Ante Natal Care
- INC, PNC, Under five Care
- Family and Demography
- Methods of FP

6. Occupational Health (Marks 05)

- Hazards
- Diseases

7. International Health (Marks 05)

8. Drug Therapy (Marks 05)

- Basic concepts
- Classification of drugs
  - Brief description of common drugs at primary level

9. First Aid during (Marks 05)

- Common Ailments
- Injuries, Fractures, RTA
- Burns, Drowning, Bites, Poisoning

10. Store Keeping- Basics (Marks 05)

11. Organization and functioning of Municipal Corporations (Marks 05)

Annexure "T"

Syllabus for the post of Service Engineer

Total Marks:120 **Time: 02 Hours**

1. Electric Circuits and Fields: **15 Marks**

Basic concepts: Concepts of resistance, inductance, capacitance and various factors effecting them., Circuit laws: ohms law KCL, KVL, node and mesh analysis, resonance, ideal current and voltage sources, Source conversions Thevenin's, Norton's and Superposition and Maximum Power Transfer theorems, Simple Circuit solution using network theorems. Three phase circuits; Ampere's and Biot-Savart's laws; inductance; dielectrics; capacitance.

2. Control Systems: **10 Marks**

Basic control system components; block diagrammatic description, reduction of block diagrams. Open loop and closed loop (feedback) systems and stability analysis of these systems.

3. Electrical and Electronic Measurements: **15 Marks**

Bridges and potentiometers; PMMC, moving iron, dynamometer and induction type instruments; Extension of range, measurement of voltage, current, power, energy and power factor; instrument transformers; digital voltmeters and multimeters; phase, time and frequency measurement; Q-meters; oscilloscopes. Transducers: measurement of displacement, flow and temperature, Megger. Measurements of active and reactive power, Measurement of Energy.

4. Electronic Devices and Circuits: **10 Marks**

Energy bands in silicon, intrinsic and extrinsic silicon. Carrier transport in silicon: diffusion current, drift current, mobility, and resistivity. p-n junction diode, Zener diode, tunnel diode, BJT, JFET, MOS capacitor, MOSFET, LED, avalanche photo diode .Small Signal Equivalent circuits of diodes, BJTs, MOSFETs. Simple diode circuits, clipping, clamping, rectifier. Biasing and bias stability of transistor and FET amplifiers. Single-and multi-stage, tuned voltage, operational, feedback, and power amplifiers. Frequency response of amplifiers. Simple op-amp circuits. Filters. Sinusoidal oscillators; criterion for oscillation; single-transistor and op-amp configurations. Function generators and wave-shaping circuits, 555 Timers IC and its applications. Power supplies.

5. Digital Electronics and Microprocessor: **10 Marks**

Number systems: Binary, decimal, octal, hexadecimal, BCD number systems and their conversions, Binary and hexadecimal addition, subtraction multiplication,1's and 2's complement methods of addition/subtraction. Boolean algebra, minimization of Boolean functions; logic gates; digital IC families (DTL, TTL, ECL, MOS, CMOS). Combinatorial circuits: arithmetic circuits, code converters, multiplexers, decoders, PROMs. Sequential circuits: latches and flip-flops, counters and shift-registers. ADCs, DACs. Semiconductor memories. Microprocessor (8085): architecture, instruction set, programming, memory and I/O interfacing. Study of peripheral chips-8251,8155, 8257,8259.

6. Power Electronics and Drives: **10 Marks**

Semiconductor power diodes, transistors, thyristors, triacs and MOSFETs – static characteristics and principles of operation; triggering circuits; phase control rectifiers; bridge converters – fully controlled and half controlled; Choppers and Inverters; concepts of adjustable speed dc and ac drives.

7. Electrical Machines: **25 Marks**

Single phase transformer – equivalent circuit, phasor diagram, tests, regulation and efficiency; three phase transformers – connections, parallel operation; autotransformer, Energy conversion principles, Electro-mechanical energy conversion ; DC machines–types, windings, generator characteristics, armature reaction and commutation, starting and speed control of motors; three phase induction motors– principles, types, performance characteristics, starting and speed control; single phase induction motors; synchronous machines – performance, regulation and parallel operation of generators, motor starting, characteristics and applications; servo and stepper motors. Braking of DC and AC motors

8. Power Systems: **25 Marks**

Basic power generation concepts; transmission line models and performance; cable performance, insulation; corona and radio interference; distribution systems; power factor correction; economic operation; symmetrical components; principles of over-current, differential and distance protection; Generator, feeder, transformer and bus-bar protection, Lightning protection; solid state relays and circuit breakers; Sub-Station Practices, Load frequency control, Tariffs, Earthing. Utilisation of Electrical energy: Illumination, electrical heating and welding, electroplating.

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Annexure "U"

Time:02 Hours	**Syllabus for the post of Warden**	Marks: 120
Unit-1:	INTRODUCTION TO HOSPITALITY & HOTEL INDUSTRY- Origin & Evolution & Domestic & International hotel companies, Hotel organization- Full service/ limited service, Revenue & Non-revenue producing departments, Staff organization-Rooms division hierarchy	
Unit- 2:	CLASSIFICATION OF HOTELS- Size, Target market- (Location, clientele, facilities offered, facilities), Levels of Service, Star classification, HRACC guidelines), Ownership & affiliation. TYPES OF ROOMS-Room sizes (with reference to HRACC), SMART rooms & differently abled guest rooms, Basic of charging-Check-in-check out, 24 hours, Night/ Day, Day use, Types of Room rates (Special rates). Meal plans- (EP, BP, CP, AP, MAP etc.)	
Unit- 3:	GUEST CYCLE-Stages of Guest cycle, related front office function areas. Pre- arrival – Reservations -1 (Confirmed – Guaranteed / Non-guaranteed, Tentative/Waitlisted).Pre-arrival – reservations –II -Reservation procedure (FIT: DFIT & FFIT, group, VIP).Sources-Direct, CRS, GDS, Intersell agencies. Modes of reservations –Verbal & Written. Amendments &cancellations	
Unit-4:	ARRIVAL –I -Bell desk & valet services, Functions, Procedures, Arrival –II –a) Creating registration record b) Assigning room& rate c) Establishing the method of payment d) Issuing room key e) Fulfilling special requests, DFIT, FFIT, Walk-in, VIP & Group, express check –In, self-registration, Room selling techniques-Upselling	
Unit-5:	DURING THE STAY-Concierge, Mail & message handling, Room change procedure, Special procedure, Wake-up call, Newspaper delivery & transport arrangements. Service recovery - Guest relations, Handling complaints, Follow-up procedures, Complaint handling Apps/ escalation Matrix & Root cause analysis	
Unit-6:	GROOMING ETIQUETTE- Introduction to service culture, Service product, Guest Relationship-Business protocol & Professionalism. Moments of Truth, Creating a WOW factor (Guest delight) & Guest satisfaction SKILL SET & ATTITUDE OF FRONT OFFICE PERSONNEL, Job description & Job specifications, Layout of Front Office- FO equipment	
Unit-7:	RESERVATION PROCEDURES-Amendments, Cancellations, Formats-Arrival procedure, Bell desk activities, Pre-registration, Escorting guest & room orientation-Check-in procedure, Formats Telephone, Email, Texting etiquette, Reservation records/ Formats. APPLICABLE TAXES & CHARGES- Special rate calculations, Design a package.	
Unit-8:	DURING THE STAY ACTIVITY PROCEDURES- Mail handling, Message handling, Paging, Special requests, Room change procedure & Complaint handling. Discrepancy report, Arrival Notification, Amenity vouchers, Meal coupons & Mini bar	
Unit-9:	GUEST ACCOUNTING, FUNDAMENTALS (Folio, Voucher, Ledger, Accounts, POS).Creation & maintenance of Accounts (Charge privileges, Cash & credit monitoring, Account	

	maintenance & Record keeping systems) TRACKING TRANSACTIONS- Cash payments, Charge purchase, Account corrections, Account allowance , Account transfer Cash advance
Unit-10:	DEPARTURE- I -Check out& settlement, Departure procedure, DFIT, FFIT, Group, VIP, Modes of payment (Cash, Credit card, Bill to company, foreign currency & combined methods) DEPARTURE-II -Additional check out options , Express checkout , Self-check- out, kiosk, interactive checkout, mobile app checkout , Late checkout.
Unit- 11:	POST DEPARTURE- Unpaid account balances, Account collection, Account ageing & Record generation. NIGHT AUDIT –Importance, Role of night auditor & The night audit procedure
Unit-12:	SITUATION HANDLING -EMERGENCY procedures (Medical, Fire, Robbery/ theft, Accident , Natural calamity, Bomb threat & Terrorist attack) Guest safety & security- a) Electronic locking systems b) Surveillance & access systems. EMERGING TRENDS IN ROOM'S DIVISION- a) Use of technology b) Product innovation
Unit-13:	MIS- a) Importance b) Statistical ratios (Occupancy% , Multiple occupancy%, House count, Bed occupancy% , Domestic occupancy%, Foreign occupancy %, Occupancy multiplier, ARR/ADR, ARG/ Rev PAC, RevPAR, Yield
Unit- 14:	Introduction to checkout procedures, PMS, Formats used at check out Departure procedure –PMS, Formats used at check out Post departure procedures, Night audit procedure, PMS
Unit-15:	MANAGING RELATIONSHIP AND BUILDING LOYALTY-a) Importance b) Concept of customer loyalty c) Understanding guest-hotel relationship d) The wheel of Loyalty e) Foundation for Loyalty f) Strategies for developing Loyalty g) Strategies for reducing customer Defection. Artificial intelligence in the hospitality- a) Guest cycle b) Room design c) Public areas
Unit- 16:	BUDGETING: A. Types of budget & budget cycle B. Making front office budget C. Factors affecting budget planning D. Capital & operations budget for front office E. Refining budgets, budgetary control F. Forecasting room revenue G. Advantages & Disadvantages of budgeting

Unit-17:	YIELD MANAGEMENT: A. Concept and importance B. Applicability to rooms division □ Capacity management □ Discount allocation □ Duration control C. Measurement yield D. Potential high and low demand tactics E. Yield management software F. Yield management team
Unit-18:	TIMESHARE & VACATION OWNERSHIP □ Definition and types of timeshare options □ Difficulties faced in marketing timeshare business □ Advantages & disadvantages of timeshare business □ Exchange companies -Resort Condominium International, Intervals International □ How to improve the timeshare / referral/condominium concept in

Annexure "V"

Marks: 120
Time: 02 hours

SYLLABUS

Prosthetics & Orthotics

➢ **Life / Basic Science** **(Marks : 15)**

✓ **Anatomy**

- Introduction to human body terminology used.
- The skeleton classification of bones, terms used in describing bones
- The skull
- The Thorax.
- The Vertebral Coloumn
- The Pelvic girdle
- The skeleton of upper Limb Scapula, Humerus, Ulna,Radius, Bones of wrist & hands
- The skeleton of Lower Extremity. The innominate bone,femur, Patella, Tibia, Febula Bones of the foot.
- The Joint of the Skeleton classification & Types
- Joints of Upper Extremity
- Joints of Lower Extremity, Knee, Ankle & Joints of the foot.
- Myelogy – the muscle of the skeleton, Name of Muscles & their derivation.
- Muscle of the head & face- Position, attachments, action & nerve supply
- Muscle of the neck, Position, attachments, action & nerve supply.
- Muscle of the Chest- Position, attachments, action & nerve supply
- Muscles of the Back - Position, attachments, action & nerve supply
- Abdominal muscles- Position, attachments, action & nerve supply
- Muscle of the Upper Extremity- Position, attachments, action & nerve supply
- Muscles of the Lower Extremity- Position, attachments, action & nerve supply
- Anatomical regions formation & contents of Axilla anticubital fossa, anterior & posterior triangle of neck,femoral triangle, popliteal space
- Living anatomy - recognition of structure in living body by inspection & palpatation.
- Ability to replace the surface of the living body, the position of the chief structures

➢ Physiology

- Introduction to physiology & different systems of the body
- Body fluids, tissue cells, cytoplasm, nucleus,irritability, conductivity, reproduction.
- Elementary tissue of the body & their functions development & growth of bones
- The circulatory system - Heart, Blood vessels attached to it & nerve supply of the heart,cardiac cycle of the heart, cardiac cycle, the heart sounds, the pulse, blood pressure, the cardiac output, circulation of blood throughout body, Principal blood vessels, arteries & veins.
- The blood composition of blood & functions – the coagulation of blood.
- The spleen & the Reticula Endothelial system
- The classification of food
- The digestive system
- The liver & pancreas
- The respiratory system and respiration
- Metabolism
- Endocrine glands.
- Urinary system
- Reproductive system
- The nervous system - sympathetic, parasympathetic
- Organs of special senses and skin

➢ Pathology

- Introduction to pathology, General pathology
- nflammation – signs and symptoms – types of inflammation, Acute & Chronic inflammation
- Infections – Bacteria and viruses, immunity,types, classification, control of infection, cross infection & prevention. Asopsis and sterilization, pyogenic infection – boils, abscess setticamla, Tuberculous infection of bones & joints & management. Fungle infection – actiriomycosis, filariasis, leprosy, veneral disease syphilis, gonorrohea, virus infection – poliomyelitis influence.
- Wounds – types of healing process
- Gangrene – types, causes, signs & symptoms and management.
- Inflammation of joints – Arthritis – classification and pathology

➢ Workshop Technology & Practice (Marks : 15)

- Introduction to workshop technology
- Bench work-bench vice, leg vice, hand vice, hammers of different types, Files of various types, Chisels, Scrappers & their uses. Hack saws, wrenches, surface plate, angle plate, V-block Centre Punches, dividers & tranmmels feeler & surface gauges, etc.
- Measuring Tools – scales & tapes, calipers, Micrometer,Vernier calipers, gauges, plug gauges, dial gauges, vernier protractors sine bars, indicators.
- Fundamentals of rivetting soldering, brazing and welding.
- Forging (blacksmithy) -the forge & tools used in smithy & forging processes.

- Drilling-Machine operation, tools holding devices, types of drill, reamers and uses, cutting internal- external threads, by using taps and dies, counter sinking, counter boring.
- Lathe work-parts of centre lathe and their uses, turning of centre, taper burning screw cutting in lathe, cutting tools used in lathe, tools speed, feed and depth of cut.
- Milling types of milling machines, Milling cutter, Up-cut & cone cut milling dividing head, set-up and operation on milling machine
- Shaping – Shaping machine and their use.
- Grinding – The grinding wheels, abrusies, wheel bends, grit & grade, wheel structure, shape, selection, hand grinders, speed & feed, types of grinding & different types of grinding machines.
- Finishing process polishing, buffing, electroplating, copper, nickel and chromium.
- Material & Tools used in Prosthetics & Orthotics; -
  a. Rubber- different types uses, densitity, resilience, utility in prosthetic & Orthotics
  b. Plastics-types, strength impregnation, lamination colouring & utility:
  c. Ferrous metals – Steel variety & uses
  d. Non–ferrous metals and alloys, aluminum, various suitability.
  e. Fabrics
  f. Leather
  g. Plaster of Paris
  h. Adhesive & Fasteners
  i. Special tools & equipments used in prosthetic & orthotic work

➢ Applied Mechanics & Strength of Material & Electronics & Bio-Electricity.

(Marks : 10)

✓ Applied Mechanics & Strength of Material

- Simple stress & strains Definition of stress and strains, factor of safety, safe stress, modules of elasticity, longitudinal strain and lateral strains, Poission's ratio, etc. –
- Geometric properties of sections Definition of moment inertia & radius of gyration of a solid body. Definition of centroid, moment of inertia of sections, determining of centroid of 'L' section,
- Shear Stress & Bending moment Classification of beams, types of loads, definition of shear force & bending moment of a loaded beam
- Torsion Definition of torsion, angle of twist, polar moment of inertia etc. assumption mode in torsion,
- Springs Types of springs, uses of various springs, development of formulae for stiffness & deflection of closely coiled helical springs – simple problems.
- Riveted Joints Types of riveted joints, strength of joints,
- Friction Principles of friction – co-efficient of, definition of static & dynamic friction, laws of static friction, least force required to drag a body on horizontal plane, angle of repose frictional force on inclined plane simple problems.

➢ Electronics & Bio-Electricity

✓ Fundamental of Electricity

- Ohm's Law. Resistance in Parallel & series AC + DC resistance capacitance, impedance-power, power factor, transformers, meters

Elements of Electronics

- Vacuum tubes, Diode, Electrode, Tetrode, Pentode, Electrification, valve as rectifier value as amplifier semi-conductors, integrated circuit, computers.

Bio-Electricity

- Biological potentials, muscle action potentials, electromyography, myoelectricity control of artificial arms, Bio-cybernetics.

➢ Orthopaedics, Amputation Surgery & Kinesiology & Bio-mechanics

(Marks : 20)

✓ Orthopaedics

- Introduction to Orthopaedics
- Principles of Orthopaedics -
- Congenital deformities
- Diseases of Nervous System
- Poliomyelitis
- Obstetrical paralysis
- CP
- Hemiplegia
- Paraplegia
- Pyoenic infection
- Tuberculosis
- Leprosy
- Chronic arthritis
- Rheumatoid arthritis
- Osteoarthritis
- Neuropathic arthritis
- Metabolic diseases
- Rickets
- Avitaminosis
- Bone tumours
- Trauma
- Fractures upper extremity
- Fracture lower extremity
- Spine fractures and dislocation

➢ Amputation

- Introduction to amputation surgery – indications
- Principles of amputation, types, techniques.
- Amputation in children (Upper & Lower Extremity)
- Amputation in adults (Upper extremity) and its complications (various levels)
- Amputation in lower extremity & its complications (various levels)

- Postoperative care of the stump properties of good stump.
- Examination & prescription
- Stump dermotology
- Common skin diseases and their management -
- Care of Stump
- Latest techniques of amputation Myodesis –Myoplasty

➢ Kinesiology & Bio-mechanic

- ➢ Definition of Kinesiology & Bio-mechanics
- ➢ Definition of Kinetics & Kinematics
- ➢ Centre of gravity of human body.
- ➢ Segment masses & the density of parts.
- ➢ Segment of centres of gravity
- ➢ Human movements & its significance
- ➢ Forms of human movement their characteristics & factors affecting them.
- ➢ Analysis of movement.
- ➢ Body links and motion of parts.
- ➢ Closed chain systems.
- ➢ Open chain system.
- ➢ Four bar mechanism.
- ➢ Measurement of joint motion.
- ➢ Electrogonio-metric method
- ➢ Mechanics of the spine.
- ➢ Lumbar discometry.
- ➢ Human Locomotion.
- ➢ Bio-mechanics of lower extremity
- ➢ Bio-mechanics of upper extremity.
- ➢ Gait analysis
- ➢ Bio-mechanics of squatting

➢ Prosthetics (Upper Extremity) (Marks : 10)

i. Classification by level of amputation.
ii. Medical consideration applied anatomy and pathological consideration
iii. Classification of congenital skeletal limb deficiencies
iv. Prosthetic prescription
(v) Amputee trainee

- Components of upper extremity prostheses, control & harness systems.
- Fabrication principle & procedures for upper extremity prostheses.
- Measurement fitting & alignment
- Check-out & care of B.E.prostheses.
- Bio-mechanics of U.E.prostheses.
- Harness & control systems Below Elbow harnessing & this causes, shoulder amputee harnessing.
- Clinical aspects of U.E. prosthesis
- Training in the use of U.E.prosthesis
- Electro-mechanical myoelectric and other externally powered prostheses
- Study of publication sources for updating information on upper limb prostheses

➢ Orthotic (Upper Extremity) (Marks : 10)

1. Medical

(i) Functional anatomy of the hand
(ii) How to train the patients to use functional splint & arms braces.

2. Technical

Measurement, selection of materials & components, fabrication & fitting of the following:
(i) Static fingers hand splints.
(ii) Functional hand splints
(iii) Functional arm braces
(iv) Feeders
(v) Special assistive devices
(vi) Myoelectric & other externally powered upper extremity orthoses

3. Biomechanics of functional hand splints and arm Orthosis

➢ P.M.R. & Introduction to Rehabilitation & Psychology & Workshop Administration & Management (Marks : 05)

- Introduction to Physical Medicine & Rehabilitation.
- Muscle charting
- Electro-therapy.
- Hydro-therapy.
- Application of the above topics in management of disabling conditions
- Neuro muscular diseases type and management
- Arthritis, types and management
- Crutches & uses, different mobility and assistive devices
- Bandaging of stumps, BK/AK etc. Knees, Elbows, Hands, Wrists and Ankles.
- Gait training & analysis of patients fitted with orthoses & prostheses
- Prescription of appliances.

➢ Introduction to the Course, Rehabilitation & Psychological Aspects. (Marks : 05)

- Introduction to the subject
- Visit to various department, of the institution.
- General idea & definition of prosthetics / orthotics
- Function of different sections / departments of the institute
- Rehabilitation
  a. Concept of Rehabilitation
  b. Total Rehabilitation
  c. Rehabilitation team and role of each member of the team.
- Psychology of disabled
  a. Goals & methods of scientific psychology
  b. Normal personality, normal growth & development

c. Heredity
d. Maturation
e. Environment & Learning factor in intellectual & Social Development.
f. Psychometry
g. Testing & motivation
h. Emotional life of the disabled & psychological assessment
i. Counseling

- Social & Vocational Aspects
  a. Disability & social effects
  b. Home environment of disabled
- CBR – concept and application
  c. Attitude of the society
  d. Vocational problems
  e. Vocational assessment
  f. Vocational counseling and guidance
  g. Follow up

➢ Workshop Administration & Management (Marks : 05)

- Workshop administrative and management structure
- Foremanship & Duties of forman & qualities of forman
- **Store & Store Organisation**
  - Purpose of store keeping, store location, layout of stores, systems of location of materials,methods of storing Biocard, Indent of stores material returned, Accounting of stores, registers, advantages of good stores keeping.
- **Purchase procedures**
  - Functions of purchase department, methods of purchasing, purchase procedures.
- **Cost Accounting**
  - Closing of job cards and work orders
- **Accident Hazards and Industrial Safety**
  - Introduction to safety and management function, basic principles of accident prevention, Physical and Psychological factors in safety, occupational hygiene and health, safety in engineering & industry safety in prosthetic & orthotic workshop
- **First Aid**
  - Wounds, antiseptics, bandages, splints, and their practical uses, care of injured cares
  - Artificial respiration, practical demonstration
  - Practical demonstration or external cardiac message.
  - Transportation of Causalities

➢ Prosthetics (Lower Extremity) (Marks : 10)

- Levels of amputation & limiting factor (lower extremity)
- Psychological aspects of amputation
- Classification of congenital skeletal limb deficiencies.
- Prosthetic / Orthotic assessment and evaluation techniques
- Prosthetic prescription
- Immediate & early Prosthetic management

- Prosthetic components below knee & above knee
- Examination of stump, measurement, cast taking POP modification, fabrication, alignment & fitting procedures for below knee & above knee amputations (this include prosthesis for partial foot, choparts, syme's below knee, through knee above knee amputations.
- Gait analysis of BK/ AK amputees fitted with prostheses.
- Check out of below knee & above knee prosthesis
- Maintenance & care of prosthesis
- Hip disarticulation & Hemipelvectomy prosthesis
- Bio-mechanics of below knee, above knee & hip disarticulation prosthesis
- Fluid controlled prosthesis
- Modular & other modern types of prosthesis
- Development of squatting type prosthesis – Madras & Jaipur port, etc,
- Study of publication of sources for updating information on L.E.Prosthesis Examination

➢ Orthotic (Lower Extremity) (Marks : 10)

Foot Orthoses

a. Medical

(i) Anatomy of Foot

(ii) Orthotic - Prescription for different pathological condition, pathomechanics of foot & ankles.

b. Technical

(i) Shoes, boots & their components.

(ii) Shoe modifications, principles & procedures in clinical application

(iii) Biomechanics of the foot

Ankle Foot Orthoses K.O. KAFO, EKAFO, GIL, HKAFO

a. Medical

(i) Pathomechanics Lower extremity (including foot, ankle, knee and hip.)

(ii) Introduction to Orthotic management

(iii) Orthotic prescription

(iv) The influence of error in bracing upon deformity of lower extremity

(v) Gait training 2 Hrs. -

b. Technical

(i) Lower extremity orthotic components & functions.

(ii) Principles of taking measurements selection of components, fabrication, alignment fitting and check-out of orthoses.

(iii) Analysis of Pathological & orthotic gait

(iv) Study of publications sources for upto- date information on lower extremity Orthoses.

➢ Spinal Orthotic (Marks : 05)

✓ Medical

- Surface of anatomy of trunk
- The Physiological basis of Orthotic methods
- Orthotic treatment of lumber & thoracic conditions

- Orthotic treatment of cervical condition
- Spinal Orthosic prescription
- The M.W. brace, exercises for users of M.W. Braces, Boston brace.

✓ **Technical**

- Components of spinal braces.
- Bio-mechanics of the spine
    - Study of publications for up to date information on orthotics (Spine)