

ALL INDIA INSTITUTE OF MEDICAL SCIENCES BHUBANESWAR  
Sijua, Post- Dumduma, Bhubaneswar-751019

**NOTICE**

Dated 26.08.2023

**SCHEME OF EXAMINATION AND INDICATIVE SYLLABUS FOR VARIOUS  
NON-FACULTY POSTS OF PHASE-III**

In reference to Vacancy Notice No. AIIMS/BBSR/RECT/2023/990/ B&C/1583 Dated 01.07.2023 & Notice No. AIIMS/BBSR/RECT/2023/990/ B&C/2016 Dated 20.07.2023 uploaded on the official website of AIIMS Bhubaneswar for filling up of various Group 'B' and 'C' Non-faculty posts at AIIMS Bhubaneswar, the indicative syllabus and scheme of examination for the Phase-III posts is annexed.

2. The Important terms and conditions are as follows

2.1 The candidates are advised to download their Admit Cards from the website of AIIMS Bhubaneswar i.e. <https://aiimsbhubaneswar.nic.in/>. Only website generated Admit Card will be treated authentic and permissible to appear in the said Examination. No admit card will be sent by Speed Post..

2.2 As per practice, the Online Computer Based Test (CBT) for the advertised posts will be conducted without pre-examination screening of the applications of the candidates with regard to their eligibility. Hence, the candidate will be allowed PROVISIONALLY to appear in the online (CBT) Recruitment Examination.

2.3 However, the original documents of all selected candidates related to fulfilment of eligibility criteria, experience etc. will be verified by the Institute before final appointment.

2.4 The city for examination will be allocated on the basis of order of application form, candidates choices and availability of computer nodes. Decision of AIIMS Bhubaneswar in this regard will be final and no further correspondence will be entertained in this regard.

2.5 All applicants are required to visit the institute's website regularly as all subsequent Corrigendum/Addendum/ Updates will only be uploaded on the official website of AIIMS Bhubaneswar i.e. <https://aiimsbhubaneswar.nic.in/>.

2.6 Resolution of Tie Cases: In cases where more than one candidate secures equal MARKS, tie will be resolved:

- Accuracy in Skill Test (if applicable), otherwise
- Date of birth shall be used [candidates who are older / born earlier will be placed above candidates who are younger / born later].

2.7 Medium of Examination: Hindi/English

2.8 01 mark will be awarded for each correct answer and there will be negative marking of 0.25 marks for each wrong answer.

  
Deputy Director (Admin)(I/c)  
AIIMS Bhubaneswar

**SYLLABUS FOR THE POST OF ASSISTANT ADMINISTRATIVE OFFICER**

1/29/2023

**A. General Intelligence & Reasoning (10 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (5 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (10 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart

**D. English Language (5 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Basic concepts of Management & Computers (10 Marks):**

Principles of Management, Organisation behaviour, MS Office, MS Windows, Fundamentals of Computers, Internet etc.

**F. Central Govt. Service Rules (80 Marks):**

Central Government Rules: Questions relating to CCS (Leave) Rule, CCS (Conduct) Rules, GFR, FR/SR, General Service Condition, Office Procedures, Types of correspondence, General Knowledge about IPC/CRPC, CPC/CAT/High Court, RTI Act, 2005, Establishment, Reservation, Roster, LTC, Travelling Allowance etc.

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**SYLLABUS FOR THE POST OF ASSISTANT ENGINEER (AC & R)****A. General Intelligence & Reasoning (10 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (10 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (10 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart

**D. English Language (10 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Basic concepts of Management & Computers (10 Marks):**

Principles of Management, Organisation behaviour, MS Office, MS Windows, Fundamentals of Computers, Internet etc.

**F. Subject Knowledge (70 Marks):**

- General —  
Knowledge of Indian Electricity Act, Indian Elect. Rules as amended up-to date. General conditions of supply and charges to be paid to licences for obtaining connection. CPWD General Specifications for Electrical Works, Principles of analysis of rates. General Principles

in preparation of estimates, project reports, award of works and execution of works and measurement. ISI/BIS Standards and Codes of practices.

Internal Electrical Installations - Systems of wiring and their design, distribution system. Apparatus for Control, protection and Testing.

- Earthing, Lighting Protection, Safety & Maintenance - Necessity of earthing, earthing resistance, type of earthing. Lighting protection design, layout, material and installation. Safety procedures and practices, principles of equipment installation, preventive maintenance and testing of equipment.
- Sub-Station upto 33 KV and Distribution - Layout and Design for indoor and outdoor application. Specification for equipment, Sub- Station earthings, stand-by generating sets, commissioning procedures and tests.
- Distribution: Design of overhead line and underground distribution systems. Specification for cables, conductors, Supports etc. Cable joining and termination methods, power factor improvement, service connection to buildings. Air-Conditioning Ventilation - General principles of Refrigeration, Air- Conditioning, evaporative cooling and ventilation, Heating and cooling load estimation. Classification of systems, their design and application, structural requirements, specifications for installations.
- Water Supply - Types of pumps and their characteristics. Prime movers, pumping systems and application. Specification for equipment and installation.

#### ELECTRICAL APPARATUS —

- Single and poly phase A.C. Circuit. Effects of resistance inductance and capacitance.
- Single and poly phase transformers — constructional features, equivalent circuits performance, parallel operation, phase conversion. Separation of losses and determination of efficiency by various methods. Auto transformers.
- Alternators, Constructional features, regulation, parallel operation and Protection. Automatic Voltage regulators, Emergency generating sets, automatic change over.
- Induction machines, polyphaser motor and its principle of operation and equivalent circuit. Torque, slip characteristics. Crawling, methods of starting, single phase motor, its theory, characteristics and application.

INSTRUMENT TRANSFORMERS, PROTECTIVE RELAYING, MEASUREMENTS- Current, Voltage transformers. Constructional features of IDMT relays, instantaneous relays including knowledge of overload earth fault, undervoltage, Bucholz relays. Connection diagrams, settings. Electrical instruments and Measurements, principles of construction and theory of measuring instruments for direct and alternating currents. Commercial types. Measurement of resistance, Voltage, Current, power, power factor and energy. Watt meters, energy meters. Thermo couples, Resistance Thermometers, Pyro-meters. Fault locating bridges for cables. Measurements of resistance, inductance and capacitance, wheatstone bridge.

#### INTERNAL COMBUSTION ENGINES-

- Fuels and Combustion. Fuels and their properties, combustion calculations. Analysis of products of combustion. Power cycles. Vapour power cycles-Carnot and Rankine. Gas Power-Otto and Diesel cycles. Deviation of actual cycles from theoretical cycles. Internal combustion engines — Two and four stroke compression ignition and spark ignition engines. Combustion Phenomena, Detonation, Knocking, scavenging of two stroke engines. Fuel injection and carburation. Lubrication and cooling system performance and testing of IC engines. Pollution control requirements/standards.
- HEATING, AIR CONDITIONING AND REFRIGERATION- Refrigeration — Refrigeration and heat pump cycles. Vapour compression, absorption Cycles. Refrigerants and their characteristics. Air Conditioning — Psychrometric chart, comfort air conditioning, comfort indices, ventilation requirements. Cooling and dehumidification methods. Industrial air-conditioning processes. Different methods of electric heating. Construction and performance of Electric heating equipment.

- WORKSHOP TECHNOLOGY- Estimation of power and energy requirements of electric welding, different types of equipments used and their characteristics. Manufacturing and Fabricating methods and practices for various electrical and mechanical equipment such as pumps, switch boards, light fittings, AHUs etc.

ENERGY CONSERVATION, POWER FACTOR IMPROVEMENT

- Comparison of different types of lamps from the point of energy conservation, calculation of pay back period. Power factor improvement, Reduction of load current and transformer losses due to power factor improvements. KVA requirement for power factor improvement.

SOLAR ENERGY UTILISATION-

- Solar Hot Water system, principles, constructional features, constituent parts, installation, operation & maintenance, solar photo voltaic system, Advantages/disadvantages of solar heating & solar photo voltaic system.

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**SYLLABUS FOR THE POST OF ASSISTANT ENGINEER (CIVIL)****A. General Intelligence & Reasoning (10 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (10 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (10 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart

**D. English Language (10 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Basic concepts of Management & Computers (10 Marks):**

Principles of Management, Organisation behaviour, MS Office, MS Windows, Fundamentals of Computers, Internet etc.

**F. Subject Knowledge (70 Marks):**

1/29/2023

- Fundamentals of Civil Engineering
- Subject Knowledge of Civil Engineering: Strength of Material and Theory of Structures Stress Strain relation - Hooke's Law, Determination of forces in members of trusses pin-jointed frames, Bending Moments and shear forces. Theory of simple bending, Continuous beams and simple portals -Determination of bending moments and shear forces - methods of analysis.
- Design Principles Determinations of dead, live and wind, seismic loads - Relevant I.S. Codes, Factor of Safety and Load Factor.
- Steel Design, Design of simple Beams and plate Girders according to Indian Standards, Design of single and built-up columns, column base connections, Design of Steel Roof Trusses.
- Reinforced Concrete - Basic principles of reinforced concrete, shear, bond and diagonal tension, location of reinforcement, Design of singly and doubly reinforced beams, one way and two way slabs, Theory and design of reinforced concrete columns with uni-directional bending only, Design of cantilever and simple counterfort retaining wall, Liquid retaining structures - Special requirements.
- Construction Practice - General details of Building construction including foundations, flooring, masonry and different type of roofs. Safety during construction, durability. General properties, standard requirements and tests for common building material such as bricks, stones, sand and aggregate, cement, lime, timber and steel. Tests for fresh and hardened concrete.
- Central PWD Specifications for building works, sanitary and water supply works and road works including modes of measurements.
- Surveying - Use and adjustment of Surveying Instruments: Chain, Plane table and accessories magnetic compass, level and theodolite. Use of Compass and Theodolite: Alignments and adjustments. Levelling Methods of leveling and reduced level calculations. Contour Survey: Methods of contouring, properties of contours, Curves and alignment: Setting out of simple, reverse and transition curves using different methods, Vertical curves.
- Highway Engineering Road alignment in hills and plains, minimum standards for National highways. Principles of design of urban roads, their cross-sectional requirements and interactions, road drainage and maintenance. House paths, approach roads and service lanes.
- Public Health Engineering Water Supply: Quality and quantity of water required for public water supplies. Water purification processes. Water distribution systems - valves and fittings - testing. Sanitation: Orientation, ventilation and damp proofing of buildings. Sanitary appliances Construction and testing of house drains.
- Sewage disposal - Sewerage system: - Construction and maintenance. Types of sewage treatment - Oxidation ponds - simple sedimentation, re-circulation and filtration - plant, contact beds - percolating filters. Septic tanks.
- Soil Mechanics and Foundation Engineering: Properties of soils, classification, soil explorations, methods of determining bearing capacity.
- Foundation Engineering: Principles of selection of type of foundation for a structure, shallow and deep foundations. Compaction; Laboratory and field methods, optimum moisture content, soil stabilization

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**SYLLABUS FOR THE POST OF CSSD TECHNICIAN****Subject Knowledge (120 Marks):****A. Basic Anatomy (10 Marks):**

1. General Introduction– Definition of Anatomy & Physiology. – Types of Anatomy (including systemic) – Definition of topographic term/term used to describe the body.  
Description of Various regions of the body.
2. Cells and tissues of body and general histology.
3. Anatomical description of the following:
  - Skin and breast
  - Ontology
  - Joints
  - Ligaments
  - Fasciae and Bursae Musculoskeletal system
  - Cardiovascular system – Respiratory system– Lymphatic system
  - Blood and blood forming organs
  - congenital system
  - Endocrine system
  - Organs of special senses (ear, eye, etc.)
  - Digestive system
  - Embryology

**B. Basic Physiology (10 Marks):**

Introductory Lectures or specialization of tissues. Homeostasis and its importance in mammals.

Blood and lymphatic system, Cardiovascular system, Excretory system, skin and temperature regulation, Respiratory System, Digestive system and metabolism Endocrinology, Reproductive system, Nervous system, Special senses, Muscles

**C. Basic Pathology and Microbiology (10 Marks):**

Definitions and Classification of diseases,

- Inflammatory diseases – viral and fungal, Parasitic.
- Degenerative diseases – Fatty degeneration, Amyloidetc.
- Tumors – Definition, etiology& classification.

Disturbances in blood flow, pigment disorders, hereditary diseases, C.V.S. Blood vessels, Heart, Respiratory system, G.I. tract, Liver Lymphatic system, genitourinary system, skeletal system, Blood, Central Nervous system, Endocrine system Clinical Pathology – Normal composition of blood; diseases of RBCs, WBCs, Platelets. Coagulation factors and disorders Blood groups and cross – matching, Blood transfusion, in common diseases, CSF and body fluids, Gastric & Duodenal contents, parasites, Introduction and historical background, Classification special, Characteristics of organisms bacteria, Asepsis, Disinfection, Antiseptics, Sanitation, Infection, Immunity, Allergy, Study of pathogenic organisms, Non-pathology organisms, Virus and fungus, Parasitic diseases- their stance in India with lab Diagnosis.

**D. Operation Theatre Techniques (10 Marks):**

Operation theatre techniques, Surgical Procedures Organize and set up trolleys for theatre Tracking and recall of equipment items, Surgical Instruments, Criteria for Purchase and Maintenance Checking in and out of loan instruments Decontamination Process Scientific Principles Recommended Practices.



1/29/2023

**E. Disinfection (10 Marks):**

Principles of Disinfection Cleaning of equipment, Use of detergents Sonic washers /Mechanical cleaning apparatus, Cleaning of catheters and tubings, cleaning glass ware, cleaning syringes and needles, Preparation and Supplies for Terminal Sterilization.

**F. Packaging and assembly line (10 Marks):**

Precautions while handling instruments and line, Assembly and packing, Packaging selection and use, Materials used for wrapping and packing assembling pack contents. Types of packs prepared. Inclusion of trays and gallipots in packs. Method of wrapping and making use of indications to show that a pack of container has been through a sterilization process date stamping.

**G. Sterilization Methods (10 Marks):**

Different Methods of Sterilization, High Temperature Sterilization – Dry Heat Moist heat sterilization, EO gas sterilization, H<sub>2</sub>O<sub>2</sub> gas plasma vapor sterilization Endoscopes and their Sterilization Recommended Practices for Flash Sterilization

**H. Sterilization record keeping (10 Marks):**

Sterile storage, Call back system in case of detection of failure, HVAC system, Records & register maintenance

**I. Quality assurance (20 Marks):**

Biological indication and quality control Quality measurement methods and its standards

**J. Quality Standards (20 Marks):**

International Organization for Standardization (ISO) standards Water Quality and its impact in CSSD process biomedical waste disposal protocols.

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RECT/6/2023-RECU SEC  
**SYLLABUS FOR THE POST OF HEALTH EDUCATOR (SOCIAL PSYCHOLOGIST)**

1/29/2023

**Subject Knowledge (100 Marks):**

**A. Basic Psychology (10 Marks):**

- Psychophysics and Perception
- Signal detection theory, subliminal perception and related factors, information processing approach to perception, culture and perception, perceptual styles. Ecological perspective on perception.
- Perceptual Processes
- Approaches to the Study of Perception: Gestalt and physiological approaches. • Perceptual Organization: Gestalt, Figure and Ground, Laws of Organization.
- Perceptual Constancy: Size, Shape and Brightness, Illusion; Perception of Depth and Movements. • Role of motivation and learning interception
- Motivation Basic Motivational Concepts: Instincts, needs, drives, incentives, motivational cycle. Approaches to the Study of Motivation : Psychoanalytical, ethological, S – R
- Cognitive, humanistic. Biological Motives: Hunger, thirst, sleep and sex. Social Motives :
- Achievement, affiliation, approval Exploratory behaviour and curiosity
- Motivation and Emotion Physiological correlates of emotions. • Theories of emotions: James – Lange, Canon –
- Bard, Schechter and Singer. Conflicts: Sources and types

**B. Social Psychology (10 Marks):**

- Current trends in Social Psychology. Historical Background: Growth of social psychology, Methods of social psychology. Theoretical perspective: Cognitive dissonance, Social comparison, Attribution, Field
- Psychoanalytic, Symbolic interactions, Socio-biology.
- Social cognition. Person perception, impression management. Role of Stereotypes in person Perception types of influence process.
- Social Influence Processes: Leadership
- Attitude: Nature and Characteristics, Development and change. Theories of attitude change.
- Pro social behaviour, aggression and violence. Nature, Characteristics, Determinants, Theories.

**C. Research Methodology-1 (10 Marks):**

- Research Methodology • Types of psychological research. • Methods of Psychological Research:
- Experimental, Quasi – experimental, case studies, field studies and cross – cultural studies. • Variables: Nature and types. Techniques of experimental manipulation control in experiment.
- Sources of bias. Ethical issues in psychological research, Research Process: Consideration of research problem and hypothesis,
- Operationalization. Sampling: probability and nonprobability sampling.
- Research designs: Cross Sectional and Longitudinal Correlation, factorial, randomized block, matched group, quasi – experimental, Graceo Latin Square time series design
- Central tendencies, Dispersion, Normal Probability Curve, its properties and utility in inferential statistics, Null hypothesis, Type I and Type II errors, Levels of significance.

**D. Research Methodology-2 (10 Marks):**

- Experimental Design: Single Factor, Randomized block, 2X2 factorial design, repeated measures (on one factor),
- ANOVA: one–way and two– way: Randomized and Repeated Measure Design.

- ANCOVA, Post ANOVA tests.
- Measures of relationships: bi-serial, point bi-serial, tetracoric and phi, Multiple and partial Correlations.
- Regression: simple and multiple, Factor Analysis: Assumptions
- ,Methods Rotation and interpretation Use of computer in psychological researches, Research report writing

**E. Psychopathology (10 Marks):**

- Concept of Psychopathology, Classification systems in psychopathology: W.H.O. (ICD-10) and multiracial systems (DSMIVTR): Evaluation of classification system.
- Theoretical background, approaches to psychopathology
- (1)Psychodynamic. (2) Behavioural.
- (3) Cognitive. (4) Phenomenological. (5) Biological. (6) Socio cultural; Diagnosis – purposes of diagnosis, reducing undesirable Variability: diagnostic system.
- Anxiety disorder : Panic, Phobic,
- OCD, Post – Traumatic, GAD, somatoform disorders, Impulse control disorder, eating disorder, Sleep disorder, dissociative: Types, symptoms and management.
- Psychotic disorders: Schizophrenia, Mood disorder. Personality disorder (cluster categories and problems), types & symptoms: Types, Symptoms and management.
- Substance related disorders. Mental Retardation and developmental
- Disorders

**F. Basic Psychological Processes (10 Marks):**

- Learning Process: Classical conditioning: Procedure, Phenomena and related issues. Instrumental learning: Phenomena, Paradigms and theoretical issues. Process, Escape
- Conditioning, Avoidance Conditioning, Generalization. Reinforcement: Basic variables and schedules.
- Experimental analysis of behaviour: Behaviour modification, shaping Discrimination learning.
- Neurophysiology of learning.
- Verbal learning: Methods and materials, organizational processes
- Learning theories: Hull, Tolman, and Skinner. Cognitive approaches in learning: Latent
- learning, observational learning
- Memory and forgetting • Memory
- Processes: Encoding, Storage, Retrieval.
- Stages of Memory: Sensory memory, Short-term Memory (STM) and Long – term

**G. Cultural Psychology (10 Marks):**

- Memory ( LTM).
- Episodic and Semantic memory.
- Theories of Forgetting: Interference, decay, retrieval

**H. Psychology and Health Behaviour (10 Marks):**

- Group Dynamics and Group behaviour, Group effectiveness, and Group Cohesiveness: meanings, formation, decision making, problem solving and group level behaviours.
- Leadership: Meaning and nature, function, styles and effectiveness.
- Social issues: Poverty, Caste, gender, population issues in India, Communal tension and harmony. Culture and Behaviour I: Culture and Cognition and emotion. Culture and Organisation.
- Culture and Behaviour II: Culture and Health. Culture and Personality. Social psychology: Health, Environment and Law Methods and Basic concepts
- Methods of Physiological psychology:
- Lesion and Brain Stimulation. Receptors, effectors and adjuster mechanisms.

- Neural impulse: Origin, conduction and measurement.
- Sensory system: Vision and Audition.
- Human nervous system: Structure and functions.
- Sleep and waking: Stages of sleep, Disorders of sleep and Physiological mechanisms of sleep andwaking.
- Drinking and its neural mechanism; hunger and its neural mechanism.
- Endocrine System: Chemical and glandular.
- Approach to therapy (Psychoanalytic,] Biological Behavioural, Behavioural medicine and spiritual therapy).

**I. Basic Psychiatry-1 (10 Marks):**

- Mental health promotion and maintenance, present issues and trends in health psychology
- Disorders of consciousness, attention, motor behaviour, orientation, experience of self, speech, thought, perception, emotion, and memory.
- Psychoses: Schizophrenia, affective disorders, delusional disorders and other forms of psychotic disorders – types, clinical features, ethology and management.
- Neurotic, stress-related and somatoform disorders: types, clinical features, ethology and management.
- Disorders of personality and behaviour: Specific personality disorders; mental & behavioural disorders due to psychoactive substance use; habit and impulse disorders; sexual disorders and dysfunctions – types, clinical features, ethology and management.
- Organic mental disorders: Dementia, delirium and other related conditions with neuralgic and systemic disorders – types, clinical features, ethology and management

**J. Basic Psychiatry-2 (10 Marks):**

- Behavioural, emotional and developmental disorders of childhood and adolescence: types, clinical features, ethology and management. Mental retardation: Classification, ethology and management.
- Neurobiology of mental disorders: Neurobiological theories of psychosis, mood disorders, suicide, anxiety disorders, substance use disorders and other emotional and behavioural syndromes. Therapeutic approaches: Drugs, ECT, psychosurgery, psychotherapy, and behaviour therapy, preventive and rehabilitative strategies – half-way home, sheltered workshop, day-care, and institutionalization.
- Consultation-liaison psychiatry: Psychiatric consultation in general hospital; primary care setting.
- Special populations/Specialties: Geriatric, terminally ill, HIV/AIDS, suicidal, abused, violent and no cooperative patients; psychiatric services in community, and following disaster/calamity

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**SYLLABUS FOR JUNIOR ACCOUNTS OFFICER (ACCOUNTANT)****A. General Intelligence & Reasoning (10 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (5 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (10 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

**D. English Language (5 Marks):**

Candidates' ability to understand correct English, his basic comprehension and writing ability, etc. would be tested.

**E. Government Accounting System & Budgeting (45 Marks):**

Introduction of Government Accounting System and Government Budgeting, GFR, GeM, PFMS, Role & Functions of RBI.

**F. Fundamental Principles and Basic Concepts of Accounting (45 Marks):**

Financial Accounting - Nature and scope, Limitations of Financial Accounting, Basic Concepts and Conventions, Generally Accepted Principles. Basic Concepts of Accounting: Single and Double Entry System, Books of Original Entry, Bank Reconciliation, Journal, Ledgers, Trial Balance, Rectification of Errors, Manufacturing, Trading, Profit & Loss Appropriation Accounts, Balance Sheet, Distinction between Capital and Revenue Expenditure, Depreciation Accounting, Valuation of Inventories, Non-profit making organizations' Accounts, Receipts and Payments, Income & Expenditure Accounts, Bills of Exchange, Self-Balancing Ledgers.

**SYLLABUS FOR THE POST OF WARDEN (HOSTEL WARDEN)****A. General Intelligence & Reasoning (10 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (5 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (10 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart

**D. English Language (5 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Misspelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Basic concepts of Management & Computers (10 Marks):**

Principles of Management, Organisation behaviour, MS Office, MS Windows, Fundamentals of Computers, Internet etc.

**F. Knowledge of Housekeeping, Material Management, Public Relations and Estate Management (80 Marks)**

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**SYLLABUS FOR THE POST OF LIBRARIAN GRADE III**

1/29/2023

**A. General Intelligence and Reasoning (10 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (5 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (5 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart

**D. English Language (10 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Basic concepts of Management & Computers (10 Marks):**

Principles of Management, Organisation behaviour, MS Office, MS Windows, Fundamentals of Computers, Internet etc.

**F. Subject Knowledge (Library methods and techniques) (60 Marks):**

Library Methods and Techniques Library and Society: Laws of Library Science; Types of Libraries; Library Associations, Systems and Programmers; Library Movement and Library Legislation in

India; Organizations and Institutions involved in the development of Library and Information Services-UNESCO, IFLA, FID, INIS, NISSAT, etc.

1/29/2023

Library Management: Collection development - Types of Documents and Selection Principles, Acquisition Procedure, Acquisition of Journals and Periodicals, Preparation of Documents for use; Library Personnel and Library Committee, Library Rules and Regulations; Library Finance and Budget; Principles of Library Management, Library Organization and Structure; Use and Maintenance of the Library - Circulation, Maintenance, Shelving, Stock Verification, Binding and Preservation, Weeding out, etc.; Library Classification Theory and Practice: Canons and Principles, Library Classification Schemes- DDC, CC, UDC; Library Cataloguing Theory and Practice: Canons and Principles; Library Cataloguing Codes - CCC and AACR; Reference and Information Sources: Bibliography and Reference Sources Types of Bibliography; Reference Sources- Dictionaries, Encyclopaedias, Ready Reference Sources, etc.; Sources of Information - Primary, Secondary, Tertiary, Documentary, Non-Documentary; E-Documents, EBooks, E-Journals, etc.; Information Services: Concept and need for Information; Types of Documents; Nature and organization of Information Services, Abstracting and Indexing Services; Computer based Information Services - CAS, SDI; Information Technology: Basics Introduction to Computers; Use of computers in Library housekeeping, Library Automation; Software and software packages; Networks DELNET, NICNET, etc.; National and International Information Systems NISSAT, NASSDOC, INSDOC, DESIDOC, etc.

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**SYLLABUS FOR THE POST OF MEDICAL RECORD OFFICER****Subject Knowledge (100 Marks):****A. Hospital and Patient-care Appraisal (10 Marks):**

- History and Evolution of Hospitals
- New trends in Hospitals
- Definition of Hospital - Objectives of Hospital.
- Parameters of Good Medical Care/Patterns of Patient Care.
- Functions of Hospital.
- Role of a Hospital in Health is Delivery Systems (HCDS)
- Classification of Hospitals.
- Hospitals Organization and its analysis
- Chart of Organization. – Board and committees
- Duties and responsibilities thereof.
- Departmental Administration
- Delegation
- Decentralization
- Patient Care Appraisal (PCA)
- History of Medical Audit
- Tools and Techniques
- Various Phases of Medical Audit.

**B. Departments and Service Units (10 Marks):**

- Clinical Departments
- Diagnostic and therapeutic services (including clinical Laboratories, Radiology, Physical Medicine and Rehabilitation and Pharmacy services)
- Nursing Department
- Dietary Department
- Outpatient Department
- Accident and emergency services Department
- Medical Social Service Department
- General and Medical stores
- Blood Bank
- Medical Library services.
- Service units in a hospital Laundry, Housekeeping, CSSD. Miscellaneous Services: Engineering, Mortuary and Transport services.

**C. Basic Anatomy (10 Marks):**

- General Introduction
- Definition of Anatomy & Physiology.
- Types of Anatomy (including systemic)
- Definition of topographic term/term used to describe the body.

**D. Basic Physiology (10 Marks):**

- Description of Various regions of the body.
- Cells and tissues of body and general histology.
- Anatomical description of the following:
- Skin and breast – Ontology

1/29/2023.

## Joints – Ligaments

- Fasciae and Bursae – Musculoskeletal system
- Cardiovascular system – Respiratory system
- Lymphatic system – Blood and blood forming organs
- Congenital system – Endocrine system – Organs of special senses (ear, eye, etc.) – Digestive system – Embryology

**E. Basic Pathology and Microbiology (10 Marks):**

- Introductory Lectures or specialization of tissues.
- Homeostasis and its importance in mammals.
- Blood and lymphatic system
- Cardiovascular system
- Excretory system, skin and temperature regulation
- Respiratory system
- Digestive system and metabolism
- Endocrinology
- Reproductive system
- Nervous system
- Special senses Muscles
- Definitions and Classification of diseases, Inflammatory diseases – viral and fungal,
  - Inflammatory diseases –Parasitic, - Degenerative diseases – Fatty degeneration, Amyloid etc.
- Tumours – Definition, etiology & classification
- Disturbances in blood flow, pigment disorders
- Hereditary diseases, C.V.S. Blood vessels
- V.S. Heart, Respiratory system
- G.I. tract, Liver Lymphatic system
- Genitourinary system, Skeletal system, transfusion, - Urine composition: variation in common diseases, - CSF and body fluids, - Gastris & Duodenal contents, - Fasces – parasites
- Introduction and historical background,
- Classification special, Characteristics of organisms bacterias, - Asepsis, - Disinfection
- Antiseptics- Sanitation, Infection, Immunity,
- Allergy study of pathologenic organisms, Non-pathology organisms, Virus and fungus,
- Parasitic diseases- their stance in India with lab Diagnosis.

**F. Medical Terminology (10 Marks):**

- Objective
- Basic
- Elements of Medical Terms (a) Roots (b) Prefixes (c) Suffixes (d) Colours (e) Numerals (f) Symbols
- Terms pertaining to Body as a whole.
- Terms relate to Investigations, and operation, treatment of conditions, disorders of: - Skin and Breast (integumentary system)
- Musculoskeletal
- Neurological and psychiatric
- Cardio- vascular
- Blood and blood forming organs
- Respiratory
- Digestive
- Uro – genital
- Gynaecological
- Maternal, Antenatal and Neonatal conditions

1/29/2023

- Endocrine and Metabolic
- Sense organs of: (i) Vision (ii) Hearing Systemic: (i) Infectious diseases. (ii) Immunological diseases. (iii) Diseases of the Connective Tissues
- Geriatrics and Psycho geriatrics. III. Supplementary terms: Selected terms relating: Oncology
- Anesthesiology
- Physical Medicine and Rehabilitation
- Nuclear Medicine
- Plastic Surgery of Burns and Maxillofacial
- Radio- Diagnosis
- Radiotherapy

**G. Biostatistics (10 Marks):**

- Introduction to Statistics. (ii) Methods of collection of data. (iii) Measures of central tendency (simple average, G.M., H.M. Mode and Median).
- Measures of dispersion (Standard deviation, range, variance, average deviation)
- Sampling; Definition, Methods of sampling (random in systematic, stratified, cluster).
- Correlation and regression: Significance, linear correlation, correlation coefficient, linear regression.
- Time series analysis – concept and its utility, component of time series.
- Test of significance.
- Graphical presentation of data.
- Probability- concept and definition.
- Uses of statistics.
- Sources of hospital statistics (In Patient census, Out – Patient Deptt, and Special Clinics).
- Definitions (live, birth, foetal death, immaturity, cause of death, underlying cause of death inpatient bed etc)
- Analysis of hospital services and discharges.
- Indices (Bed occupancy, average length of stay, bed turn – over interval, death rate, birth rate etc.)
- Vital statistics.
- Uses and Limitations of hospital data.
- Method of compilation of various Health Returns/ Statistical Returns.

**H. Healthcare organization (10 Marks):**

- Introduction to Principles of Management and Administration scope and importance of management. –Principles of Management. – Functions of a Manager (POSDCORB-E).
- Management Techniques. –Material Management – Personal Administration.
- Financial Administration.
- Public Health Structure in India. – Directive Principles with relation to Public Health & medical Care. – Constitutional lists. – Various five years plans and priorities. Role of Voluntary Health Organisation.
- Basic facts of Health in India.
- Current Objectives and strategies. – Population Dynamics. – Community Health Worker schemes.
- National Health Programmes of Medicine and Homeopathy.
- Other programmes of relevance to Health Sector. – Family Welfare. –
- Medical Termination of Pregnancy. – National Population Policy. – Maternity and Child Health.

1/29/2023

**Medical Record Science (10 Marks):**

- Introduction to Medical Record Science.
- Development, Analysis and Uses of Medical Record.
- Development of Medical Record Forms, basic and special
- Order of Arrangements:
  - (a) Ward
  - (b) Medical Record Department.
  - (c) Source oriented medical record.
  - (d) Problem oriented medical record.
  - (e) Integrated Medical Record.
- Analysis of Medical record: (i) Quantitative. (ii) Qualitative.
- Uses of Medical Records: (a) as a personal document (b) as impersonal document.
- Values of the Medical Record

**J. International classification of Diseases (10 Marks):**

Classification of diseases as per I.C.D.

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**SYLLABUS FOR THE POST OF MEDICO SOCIAL WORKER****A. General Intelligence and Reasoning (20 Marks) :**

It would include questions of both verbal and non-verbal type. The test will include questions on analogies, similarities and differences, space visualization, problem solving, analysis, judgement, decision making, visual memory, discriminating observation, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series, non-verbal series etc. The test will also include questions designed to test the candidate's abilities to deal with abstract ideas and symbols and their relationship, arithmetical computation and other analytical functions.

**B. English Language (20 Marks) :**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Misspelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**C. Subject Knowledge (80 Marks) :**

Framework: Social Welfare- The concept of Social Welfare Social Welfare: Concept, need and objectives Philosophy of Social Welfare and Social work Social welfare in historical perspective Changing concepts and practices of social welfare in relation to social, economic and industrial development Changing political philosophy and its impact on social welfare Social Welfare and related terms:

(1) Social Development

(2) Social Planning and social administration

(3) Social reform

(4) Social Security

(5) Social Policy

(6) Social Action

(7) Social justice

(8) Social and welfare services

(9) Social legislation

(10) Human Rights Professional Social work an Introduction The concept of professional social work-alignment of scientific and humanitarian motives for promoting social welfare.

Framework: Social Welfare- The basic principles and values of professional social work and their relationship to the values of Indian Society Evolution of professional social work in UK, USA, Evolution of Professional Social work in India. Social work as a profession Nature and characteristics of a profession.

The basic values and Principles of professional social work Professional status of Social work in India Code of ethics for social workers

Methods of Social Work Primary Methods of Social work Secondary methods of Social work Integrated approach of social work Interface between Professional and voluntary social work

**Psychology and Mental Health: Fundamentals –**

Mental Health & Psychology, Psychology: Definitions and Fields, Mental Health: Meaning, Definitions, Characteristics

**Developmental Sociology:**

Characteristics Normal & Abnormal Behaviour: Meaning, Characteristics

1/29/2023 Human Development: Heredity and Environment Meaning, Definition and scope of Mental Hygiene Characteristics and Importance of Mental Hygiene Aims of Mental Hygiene

Principles of Mental Hygiene Programme of Mental Hygiene

Developmental Stages

Developmental Stages I: Prenatal, Infancy

Developmental Stages II: Babyhood, Childhood

Developmental Stages III: Puberty, Adolescence, Adulthood.

Developmental Stages III: Middle age, Old age.

Personality Development

Psycho-Sexual development theory:

1. Sigmund Freud

2. Psycho Social development theory: Erick Erickson

3. Defence Mechanism

4. Perspectives of Psychopathology Unit Social Psychology Nature and scope of social psychology Attitude: nature and measurement of attitude prejudice and discrimination Communication: concept, methods, skills in communication, major obstacles Mass communication, public opinion, propaganda, fashion, social facilitation crowd behaviour.

Normal & Abnormal Behaviour: Meaning, Characteristics

Human Development : Heredity and Environment Meaning, Definition and scope of Mental Hygiene Characteristics and Importance of Mental Hygiene Aims of Mental Hygiene Principles of Mental Hygiene Programme of Mental Hygiene Developmental Stages

Developmental Stages I : Prenatal, Infancy

Developmental Stages II : Babyhood, Childhood

Developmental Stages III : Puberty, Adolescence, Adulthood.

Developmental Stages III : Middle age, Old age.

Personality Development

1. Psycho-Sexual development theory: Sigmund Freud

2. Psychosocial development theory: Erick Erickson

3. Defence Mechanism

4. Perspectives of Psychopathology Unit Social Psychology Nature and scope of social psychology Attitude: nature and measurement of attitude prejudice and discrimination Communication: concept, methods, skills in communication, major obstacles Mass communication, public opinion, propaganda, fashion, social facilitation crowd behaviour.

Sociology: Theoretical Perspective-

Conceptual & Theoretical Perspectives to Understand Society

1. Society: Nature, Approaches, Functions, Theories of Society (Evolutionary, Cyclical, Conflict and Systems theories).
2. Social Group: Concept & Characteristics of Primary Group, Secondary Group, Reference Group.
3. Social Institutions: Family, Marriage, Kinship, Property (Present trends).
4. Culture: Concept of Culture, Traditions, Customs, Values and Norms Social System and Social Process of Contemporary Society
5. Social System & Sub system: Structure & Function, Classification of System.
6. Social Structures: Status & Role.  
Social Process: Meaning and kinds of Social Interaction, Socialization, Cooperation, Conflict, Assimilation, Social control.

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**Subject Knowledge (120 Marks):****HUMAN BODY & HUMAN DEVELOPMENT**

- Gross motor development
- Fine Motor development
- The development of drawing and writing
- Developmental milestones of daily living skills
- Cognitive development
- Perceptual development
- Generalization
- Language mediation for motor development
- Social & emotional development
- Development of play in 0-6 years.
- Visual development
- Development of hearing.

**COUNSELLING**

- Nature, meaning & scope of guidance & counselling
- Role of home & type school
- Techniques of guidance & counselling with reference to disabled
- Vocational guidance for disabled.
- Individual problems and stress management through counselling

**DISABILITY & REHABILITATION - related issues****CAUSES & PREVENTION OF IMPAIRMENTS**

- Disability: genesis, magnitude, futuristic trends
- Disability types and causes
- Disability limitation & prevention
- Preventable disabilities: strategies & approaches Early detection & intervention
- Rehabilitation: Definition, aims, objectives & Philosophy of rehabilitation
- Rehabilitation approaches and systems
- Different models of service delivery
- Community based rehabilitation concepts & approaches

**DISABILITY PROCESS AND CAUSATIVE FACTORS**

- Magnitude of Problem, Genesis, Sign, Symptoms, diagnosis, prognosis, morbidity and mortality.

**GENERAL MEDICAL CONDITIONS**

- Neurology
- Pediatrics
- Skin
- Medical conditions
- Psychiatric conditions

**SURGICAL CONDITIONS**

- General Surgery/Plastic Surgery

**AUDIOLOGY AND AURAL REHABILITATION**

- Hearing Mechanism
- Identification and assessment of Hearing
- Hearing aids, Assistive devices and Ear moulds
- Auditory Training

**LANGUAGE AND SPEECH**

- **Language**-Definition, function. Definition, nature, mode and scope of communication, Biological and psychological foundation of language, Effects of hearing impairment on language development, Critical period and its importance
- **Speech**-Definition, Concept of Speech, Development of Speech
- Language and Speech Therapy

**PHYSICAL AGENTS AND EXERCISE THERAPY**

- Exercise therapy
- Heat and cold therapy
- Electro therapy

**FABRICATION OF VARIOUS SUPPORTIVE AND SUBSTITUTIVE APPLIANCE**

- Above knee prostheses
- Below knee prostheses
- Above knee calliper
- Below knee calliper

**ANATOMY AND PHYSIOLOGY OF THE EYE**

- Prevention of blindness
- Education of visually impaired children
- Integration of blinds
- Orientation and mobility of blinds
- Rehabilitation of the elderly Blind

**MENTAL RETARDATION - NATURE AND NEEDS**

- Assessment and Evaluation
- Special Education for Children with M.R.
- Curriculum and Educational Intervention.
- Problem Behavior in Persons with Mental Retardation and its management.

**REHABILITATION THERAPY CEREBRAL PALSY AND OTHER NEUROLOGICAL CONDITIONS****RECENT ADVANCES IN EQUIPMENT'S RELATED TO PHYSIOTHERAPY**

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**SYLLABUS FOR THE POST OF PRIVATE SECRETARY****A. General Intelligence & Reasoning (20 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (20 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (20 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart

**D. English Language (20 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Misspelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Basic concepts of Management & Computers (20 Marks):**

Principles of Management, Organisation behaviour, MS Office, MS Windows, Fundamentals of Computers, Internet etc.

1/29/2023 **PART-II**

Skill Test in Stenography:

The Skill Test will be of qualifying nature. Candidates will have to qualify the test for English or Hindi at the prescribed speed on Computer as per the advertisement.

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**SYLLABUS FOR THE POST OF SENIOR HINDI OFFICER**

**A. General Hindi and Grammar (35 Marks)**

**B. General English (30 Marks):**

General English Questions in this component will be designed to test the Candidate's understanding and knowledge of Hindi & English Languages and will be based on error recognition, fill in the blanks (using verbs, preposition, articles etc.), vocabulary, spellings, grammar, Sentence structure, synonyms, antonyms, sentence completion, correct use of words, phrases and idioms, ability to write language correctly, precisely and effectively.

**C. Translation of small paragraphs consisting of 1-2 sentences from Hindi to English and vice versa (35 Marks):**

Questions in this part should be designed to test the knowledge of translation.

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**SYLLABUS FOR THE POST OF TB & CHEST DISEASES HEALTH ASSISTANT****A. English Language (5 Marks) :**

Questions in this component will be designed to test the candidate's understanding and knowledge of English language and will be based on spot the error, fill in the blanks, synonyms, antonyms, spelling/detecting mis-spelt words, idioms & phrases, one word substitution, improvement of sentences, active/passive voice of verbs, conversion into direct/indirect narration, shuffling of sentence parts, shuffling of sentences in a passage, comprehension passage and any other English language questions at the level of Matriculation/Higher Secondary.

**B. Quantitative Ability (5 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be percentage, Ratio & Proportion, Square roots, Averages, Interest, Profit & Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & work, Basic algebraic identities of School Algebra, Elementary surds, Graphs of Linear Equations, Triangle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Square, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency Polygon, Bar diagram, Pie chart and any other question of Matriculation level.

**C. Logical / Verbal Reasoning / Qualitative Aptitude (10 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualisation, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & de-coding, Numerical Operations, Symbolic Operations, Trends, Space Orientation, Space Visualisation, Venn Diagrams, Drawing inferences, Punched hole/pattern - folding & un-folding, Figural Pattern folding and completion, Indexing, Address matching, Date & City matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence & Other subtopics, if any or any other questions as per the pattern of SSC/UPSC/SPSC, etc.

**D. Subject Knowledge (80 Marks):**

Objective type of multiple choice questions to assess the domain knowledge of the candidate in the relevant area specific to the job at the level of B.Sc (Hons.) Nursing/Diploma in Nursing academic syllabus along with nursing practice with specialisation in TB and Chest Diseases.

1. Nursing Art & Bio-Medical Waste.
2. Anatomy Physiology.
3. Microbiology & Hospital Infection Control
4. Medical Surgical Nursing & Intensive-care Nursing
5. Mental Health - Psychiatric

1/29/2023

6. Midwifery & Gynaecology
7. Paediatric Nursing
8. Community Health Nursing Part I & Part II – Hygiene

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## SYLLABUS FOR THE POST OF TECHNICAL OFFICER (DENTAL)/DENTAL TECHNICIAN

**A. General Intelligence & Reasoning (10 Marks):** It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (10 Marks):** Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (10 Marks):** The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart

**D. English Language (10 Marks):** Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

### **E. Subject Knowledge (80 Marks):**

#### **1. Anatomy, General and Dental**

- ✓ General structure of mucous membrane (tongue, pharynx, lips), bones, muscles, blood vessels, lymphatics, glands & nerves. Blood and nerve supply in relation to face in general and teeth and associated structures in particular.
- ✓ Elementary knowledge of development of the jaws and teeth
- ✓ Structure, nomenclature and morphology of human teeth.
- ✓ Eruption; resorption & occlusion of teeth.

1/29/2023

- ✓ Relationship of teeth with investing tissues.
- ✓ Muscles of mastication and facial expression
- ✓ Tempromandibular Articulation.
- ✓ Course and distribution of V<sup>th</sup> and VII<sup>th</sup> Cranial nerves.
- ✓

## 2. Physiology & Histology, General & Dental

- ✓ Cell structure of the human body.
- ✓ Brief description of the histology and function of various dental and oral tissues e.g. Gingiva, Periodontal membrane, Alveolar process, Cementum-; Enamel, Dentine, Nasmyths membrane Pulp etc.
- ✓ Salivary glands, ducts and their functions.
- ✓ Composition and function of Saliva.
- ✓ Blood: Composition & functions
- ✓ Mastication, deglutition & Phonation.
- ✓ General outlines of the physiological processes of the human body-particularly circulatory.

## 3. Pharmacology, General & Dental:

Brief description, nomenclature, derivation, dosage, pharmacological action and therapeutic uses of drugs commonly used in dentistry, astringent, mouth wash, antiseptics.

## 4. Pathology & Microbiology, General and Dental:

- ✓ General principles of Pathology
- ✓ Inflammation, degeneration and repair.
- ✓ Application of general principles of pathology to tooth and surrounding tissues
- ✓ Dental Anomalies.
- ✓ Attrition, Abrasion and Erosion.
- ✓ Oral manifestation of systemic diseases like diabetes, syphilis, anemia, vitamin deficiencies and infectious diseases like AIDS & Hepatitis B
- ✓ Infection Control in Dental Operatory and Bio-Medical Waste Management and Handling Neoplasm with reference to oral cavity.
- ✓ Elementary knowledge of Bacteriology, Asepsis, Infection, Immunity, Brief description of Pathology and Bacteriology of Dental Caries and Gingival infections.

## 5. Dental Radiology:

- ✓ Fundamental and elementary principle of Dental Radiology including X- Ray machine, its components and maintenance. Radiology
- ✓ Basic knowledge of Radiology & extra oral radiographs including Panoramic (Ortho-pantographs and cephalostats.
- ✓ Automatic film processing
- ✓ Cataloguing & Indexing of IOPA Films.
- ✓ Knowledge of occlusal, bitewing and digital radiography

1/29/2023

- ✓ Technical aspects of Dental Radiographs i.e. the taking, processing and mounting of Dental Radiographs.
- ✓ Characteristics of acceptable image, factors that influence finished radiographs, rules of radiation protection. Radiation Hazards.

#### **6. Food and Nutrition:**

- ✓ Basic 'food chemistry' in relation to general and Oral Health.
- ✓ Physical nature of diet in prevention of dental diseases.
- ✓ Carbohydrates, fats, proteins, vitamins, minerals and water in relation to dental and oral Health.
- ✓ General food requirements for growth, maintenance and repair of the body.
- ✓ Assessment & charting of individual diet & counselling.
- ✓ Effect of malnutrition on oral health.
- ✓ Special diet and its administration in maxillofacial injury cases.

#### **7. Dental Hygiene and Oral Prophylaxis**

- ✓ Definition of hygiene
- ✓ Objectives of dental hygiene
- ✓ Oral Prophylaxis - Various methods.
- ✓ Oral Prophylaxis: treatment system
- ✓ Stains on teeth - extrinsic, intrinsic and their management.
- ✓ Dental plaque.
- ✓ Brushing & Glossing technique
- ✓ Dental Calculus
- ✓ Technical knowledge of ultrasonic scaling
- ✓ Brief description and the role of Oral Prophylaxis in Gingivitis, Periodontitis, Periodontal and Alveolar abscess.
- ✓ Instruments, technique of Oral Prophylaxis
- ✓ Destining and polishing of teeth.
- ✓ Topical application of fluorides.
- ✓ Care of oral cavity and appliances during treatment of maxillofacial cases.

#### **8. Dental Health Education, Community Public Health Dentistry & Preventive Dentistry**

- ✓ Definition of Health and Dental Health
- ✓ Aims and objectives of Dental Health Education.
- ✓ Dental Health and Children.
- ✓ Steps in preventive program, patient counselling.
- ✓ Dental Health Education-Parents, mothers (anti and post-natal), infant's pre-school Children and grownup Handicapped children.
- ✓ Dental caries- Prevalence and Prevention.
- ✓ Prevention by fluoridation.
- ✓ Periodontal Diseases.



1/29/2023

- ✓ Saliva in relation to dental health and disease.
- ✓ Dietary habits and Dental Health
- ✓ Habits and Malocclusion
- ✓ Oral Cancer.
- ✓ Brief outline of historical background of public Health, History of dentistry and Public Health Services. Dental Health Team in relation to community health.
- ✓ Technical knowledge of Topical Fluoride Application

### **9. Dental Ethics, Jurisprudence and Orientation in Dentistry**

- ✓ Difference between ethics and law, types of law.
- ✓ Legal impositions in relation to dental practice, code of ethics.
- ✓ Unlicensed practice of dentistry.
- ✓ Regulatory and professional organization.
- ✓ Place and function of dental profession in the society and discussion of economic problems involved therein.
- ✓ Social factors in dental Progress, income and living standard of people
- ✓ Objective and scope of dentistry.
- ✓ Dental specialties.

### **10. DENTAL MATERIALS**

General knowledge of various material used in Dentistry such as impression material, gypsum products, waxes, investing materials and various filling materials, Temporary and Permanent cements, orthodontic material and implant materials, materials used in maxillofacial and surgical prosthesis. Recognition and knowledge of various dental equipment and stores used in dental establishment. Organisation of dental stores, storage and accounting, handling and maintenance of dental items, assembly and minor repair of dental equipment

### **11. Applied Physics**

- ✓ Specific gravity, density, properties of matter, including cohesion, capillarity, surface tension viscosity, elasticity, diffusion and osmosis.
- ✓ Heat: Temperature and its measurements Thermometers and Pyrometers. General account of expansion by heat of solids, liquids and gases, Thermostats, Pressure gas and hydraulic. Boyle's and Charles Laws. Unit of heat, thermal capacity and specific Heat, Change of State; Latent heat; Melting Point. Properties of vapours, conduction, convection and radiation.
- ✓ Principles of electro-technology applied to dental work room, small motors, constructional features and characteristics, electric furnaces, heaters, thermostats, pyrometers, spot welders, electroplating, electre-fornkag, and anodizing, wiring regulations relating to low voltage supplies.

### **12. Applied Mechanics**

- ✓ Forces, Parallelogram and triangle of forces. Moments, Couples, Centre of gravity, Principles of lever and cantilever work, Energy; Power, Friction, inclined plane, Screw Stress, Strain, Shearing Strain, Torsion, Bending movements, Strength and stiffness of materials.

### 13. Applied Chemistry

- ✓ Distinction between physical and chemical change; elements, mixtures, and compounds; composition of the atmosphere; Oxygen oxides, burning and rusting; water solvent properties and crystallization; action of water on metals; composition of water hydrogen; Laws of chemical combination; meaning of chemical symbols valency; simple chemical equations; acids, bases and salts.
- ✓ Electrolysis, The ionic theory of solution. The electro potential series, electroplating, General characteristics of the metals including an elementary study of the common metals and their alloys with special reference to those used in the dental work room.
- ✓ Alcohol, ethers, aldehydes and ketones, fatty acids and their more important derivatives, amines. Simple treatment of carbohydrates, fats and proteins, Benzenes and its homologues. General characteristics of aromatic substances. Synthetic resins and plastics used in Dentistry.

### 14. Applied Oral-Anatomy

- ✓ Elementary anatomy and structure of denture/bearing area.
- ✓ Human dentition and occlusion.
- ✓ Functions of teeth and morphology of Crowns of teeth.
- ✓ Muscles of mastication and facial expression.
- ✓ Mastication deglutition and phonation.
- ✓ Movements of temper-mandibular joint.

### 15. Dental Mechanics

- ✓ Infection control measures for impressions and models
- ✓ Impression Preservation and Boxing-in.
- ✓ Cast: Preparation, Trimming, including Orthodontic casts.
- ✓ Cast duplication - various methods.
- ✓ Construction of special trays - spacers
- ✓ Bite blocks- base plates and wax rims.
- ✓ Articulators: Classification, daily uses, and care of articulators.
- ✓ Adjustments, Mounting of casts.
- ✓ Articulation, Occlusal plane, protrusive balance, working bite, balancing bite, curve of space, compensating curve, lateral curve.
- ✓ Principles of selection of teeth.
- ✓ Setting of teeth and wax finishing. -
- ✓ Flasking, Dewaxing, Packing, curing and Deflasking.
- ✓ Finishing and polishing of dentures.
- ✓ Additions, repairs, relining and revasing of dentures.

1/29/2023

- ✓ Immediate denture construction.
- ✓ Making of acrylic teeth.
- ✓ Kennedy's classification of partial dentures.
- ✓ Principles of partial denture, design, clasp surveyor, surveying, path of insertion and removal.
- ✓ Establishment of clasp seat. Clasp's parts, classification, function and reciprocation.
- ✓ Principles of wire bending, Preparation of wrought clasps, occlusal rests and lingual bars.
- ✓ Casting machines: Centrifugal and pressure casting machines, Furnaces, Principles of casting
- ✓ Casting techniques of partial denture (Skeletal) Clasps, bars, occlusion rest.
- ✓ Setting of teeth and completion of dentures on metal skeletons.
- ✓ Mechanical principles of Orthodontic appliances, anchorage, force, tissue changes and retention.
- ✓ Stainless steel wire-preparation of clasps, springs and Arch wires for Orthodontic appliances.
- ✓ Use of various types of expansion screws.
- ✓ Designing - Implant supported Prosthesis (if facilities available for Dental Implants)
- ✓ Ceramic, laminates and Veneers. W
- ✓ Fabricating Maxillofacial prosthesis such as eye, nose ear, cheek, obturator and splint
- ✓ Indirect Resin Restoration preparation techniques.
- ✓ Porcelain firing techniques
- ✓ Preparation of removable Orthodontic appliances, Activators, Retention appliances and Oral screen.
- ✓ Construction of fixed Orthodontic appliances, bands, tubes and arches.
- ✓ Soldering and spot welding-Soldering of clasps, tags, Strengtheners and lingual bars.
- ✓ Inlays and Crowns-classification and construction facing & backings. Casting Procedures.
- ✓ Principles of bridge work-types of abutments, abutments and pontics construction of bridges using porcelain and acrylic pontics.

## 17. Dental Materials and Metallurgy

### Dental Materials:

- ✓ Composition, Properties, Uses, Advantages & Disadvantages of the following materials: - Plaster of Paris; Dental Stone, Die Stone
- ✓ Investment Materials
- ✓ All Impression Materials Tray Materials
- ✓ Denture Base Materials, both for cold curing and heat curing, Tooth Materials Waxes, Base Plate Zinc Oxide
- ✓ Dental Luting Cements Dental Ceramics and indirect resin restoration materials.

### Dental Metallurgy:

- ✓ Metallurgical Terms
- ✓ Study of Metals used in Dentistry Particularly Gold, Silver, Copper, Zinc, Tin, Lead and Aluminum.
- ✓ Study of Alloys used in Dentistry particular y, Casting Gold Wrought Gold Silver Alloys, Stainless Steel, Chrome Cobalt Alloys.

1/29/2023

- ✓ Heat treatment-annealing and tempering.
- ✓ Solders, Fluxes, Anti Fluxes.
- ✓ Tarnish and Corrosion.
- ✓ Electric Deposition.
- ✓ Dental implant materials.

**18. Basic Knowledge of Computers**

- ✓ General office routine economics, record-keeping services, Professional referrals and computing skill;
- ✓ Record keeping of materials indented and Audit of use.
- ✓ Receipt and dispatch of work from clinicians

**SYLLABUS FOR THE POST OF VOCATION COUNSELLOR****Subject Knowledge (100 Marks):****A. Nature and concept of guidance, types of guidance (10 Marks):**

- Nature and scope of guidance.
- Concept, definition, basic assumptions and principles of guidance.
- Importance of understanding the individual, Barriers to understanding, Aids in understanding, measurement and application of self-understanding, Guidance movement in India.
- Educational Guidance: Nature, Pupil personnel work, pupil appraisal information,
- Role of teacher, Preparation and training, School curriculum and guidance,
- Vocational guidance: Nature, study of occupations, occupational information, Theories of occupational choices, Job placement and Satisfaction.

**B. Information and techniques essential for effective guidance (10 Marks):**

- Personal Guidance: Nature of emotional problem, adjustment problems of adolescents and delinquents: prevention and treatment.
- Achievement and aptitude tests, Personality and interest inventories, School records and reports
- Occupational information: Collection, Classification and dissemination.
- Individual and Group guidance.
- Organization of guidance programmer: Types and basic procedures.

**C. Stages of human development and areas of guidance (10 Marks):**

- Characteristics of different stages of development (Physical, Cognitive, Emotional, Social and Moral).
- Problems of childhood and adolescence.
- Problems of adulthood and aged.
- Role of teacher in providing guidance services.

**D. Meaning & types of counselling (10 Marks):**

- Meaning, Historical development and Importance of Counselling
- Individual and Group Counselling
- Emerging Trends in Counselling

**E. Approaches of counselling (10 Marks):**

- Approaches of Counselling: Directive, Non directive, and Elective.
- Qualities and Professional Ethics of a Counsellor.

**F. Areas of counselling (Counselling Skills) (10 Marks):**

- Counselling Families Concerning
- Children, Counselling with Parents,
- Counselling the Delinquent, Marriage
- Counselling, Premarital Counselling,
- Counselling the Handicapped, Career Counselling, and Adolescent Counselling.

1/29/2023. Role of Counsellor in developing Good Mental Health.

- Building Trust: Listening, Attending,
- Observing, Building Rapport, Demonstrating Empathy.
- Specialized Concerns in Counselling: Substance Abuse, Drug Addiction; HIV AIDS; Child Abuse (Trauma); Internet and Technological Abuse.

**G. Counselling for exceptional children and adolescents (10 Marks):**

- Types of different abilities.
- Needs & Problems of children and adolescents with different abilities
- Importance of counselling of students with different abilities and their parents, family and peers.

**H. Identification and diagnosis of problem areas (10 Marks):**

- Identification of personal, Social & academic problems of children (5-12 year) at elementary level
- Identification of academic, social & vocational needs & problems of adolescents (13 to 18 years) at secondary level.
- Diagnosis of Problem areas, stress as a cause of Mental, Emotional, Physical, Social behaviour and academic problems.

**I. Intervention programmes (10 Marks):**

- Individual and group counselling of children and adolescents for emotional, social, behavioural and academic problems.
- Relaxation strategies, yoga & meditation therapies for children and adolescents for reducing stress and other related problems.
- Meaning and historical development of career counselling
- Concept of Career development.
- Different stages of career development.
- Emerging career options in present context.

**J. Career development (10 Marks):**

- Bases of Career Development
- Vocational Development: reports of various educational commissions and committees.
- Identifying and analysing career choices and career talents.
- Need for career education in schools.
- Present Conditions and Career Education
- Changing economic conditions of society and the job market.
- Psycho-social conditions of the individuals.
- Advancement of technology and survival skills.
- Problems pertaining to work, family, education and leisure.
- Career choice and Decision Making
- Career maturity: concepts and factors.
- Empowering students in career decision making (strategies)
- Matching career talents with career decision making.
- Guidance for developing life goals & choices
- Pillars of Education and Life Skills

1/29/2023. Need for Life Skills Education.

- Importance of Life Skills for Growing Minds.
- Components of Life Skills. Importance of Emotional, Social and Thinking Skills.
- Concept of Four Pillars of Education:
- Learning to Know, Learning to Do, Learning to Live Together, and Learning to Be.

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**SYLLABUS FOR ASSISTANT LAUNDRY SUPERVISOR**

1/29/2023

**A. General Intelligence & Reasoning (15 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (15 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (15 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

**D. English Language (15 Marks):**

Candidates' understanding of the Basics of English Language, its vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage, etc. his/her writing ability would be tested.

**E. Subject Knowledge (40 Marks):**

- On and Off Premise Laundry, advantages and disadvantages
  - Flow process chart in laundry
  - Stages in the laundry process
  - Laundry equipment
  - Location, layout and planning of laundry
  - Stain removal: agents and method
  - Alternative laundry procedures
  - Disinfection
  - Blood and Human Secretion related infection
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**SYLLABUS FOR THE POST OF CODING CLERK****PART-I****A. General Intelligence & Reasoning (15 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (15 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (10 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage, Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

**D. English Language (10 Marks):**

Candidates' understanding of the Basics of English Language, its vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage, etc. his/her writing ability would be tested.

**E. Basic Computer Knowledge (10 Marks):**

General Computer Processing ability in MS-Office like Word Processing, Excel, Power Point etc. & Operating Systems.

Professional Software/Hardware System relevant to the Post.

Any other Computer/IT related questions.

**F. Subject Knowledge (40 Marks):**

1/29/2023

- Definition, objectives & functions and classifications of Hospitals.
- Departmental administration, delegation and decentralization.
- Departments and service units.
- Medical Terminology: Elements of medical terms (Roots, prefixes, suffixes, colours, numerals, symbols, abbreviations). Terms related to Investigations, Operations, Treatment of conditions & Disorders.
- Introduction, Values, Purposes and Uses of Medical Records.
- Documentation of Records (indexes/ Registers).
- Birth, Death, Registration and Correction in Record.
- Medical Ethics and Legal Aspects of Medical Records.
- International Classification of Diseases (ICD-10) and Related Health Problems.
- Medical Coding.
- Electronic Medical Record/ Hospital information System.
- Contents and Components of Medical Record.
- Numbering, Filing and Retrieval of Medical Records.
- Retention, Preservation and Destruction of Medical Records.
- Accidents registers and wound certificates Legal aspects of hospital-patient, doctor-patient, hospital doctor relationship.
- Medico-Legal Cases.
- Hospital Statistics.

**PART-II**

The Skill Test will be of qualifying nature. Candidates will have to qualify the test for English or Hindi at the prescribed speed on Computer as per the advertisement.

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**SYLLABUS FOR THE POST OF DATA ENTRY OPERATOR GRADE 'A'**

1/29/2023

**PART-I****A. General Intelligence and Reasoning (20 Marks):**

It would include questions of both verbal and non-verbal type. The test will include questions on Semantic Analogy, Symbolic operations, Symbolic/Number Analogy, Trends, Figural Analogy, Space Orientation, Semantic Classification, Venn Diagrams, Symbolic/Number Classification, Drawing inferences, Figural Classification, Punched hole/pattern-folding & unfolding, Semantic Series, Figural Pattern-folding and completion, Number Series, Embedded figures, Figural Series, Critical Thinking, Problem Solving, Emotional Intelligence, Word Building, Social Intelligence, Coding and de-coding, Other sub-topics, if any Numerical operations.

**B. General Awareness (20 Marks):**

Questions are designed to test the candidate's general awareness of the environment around him and its application to society. Questions are also designed to test knowledge of current events and of such matters of everyday observation and experience in their scientific aspect as may be expected of an educated person. The test will also include questions relating to India and its neighbouring countries especially 10 pertaining to History, Culture, Geography, Economic Scene, General policy and scientific research.

**C. Quantitative Aptitude (20 Marks):**

Number Systems: Computation of Whole Number, Decimal & Fractions, Relationship between numbers

Fundamental arithmetical operations: Percentages, Ratio and Proportion, Square roots, Averages, Interest (Simple and Compound), Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time and work.

Algebra: Basic algebraic identities of School Algebra and Elementary surds (simple problems) and Graphs of Linear Equations.

Geometry: Familiarity with elementary geometric figures and facts: Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles.

Mensuration: Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square Base

Trigonometry: Trigonometry, Trigonometric ratios, Complementary angles, Height and distances (simple problems only) Standard Identities like  $\sin^2\theta + \cos^2\theta = 1$  etc.

Statistical Charts: Use of Tables and Graphs: Histogram, Frequency polygon, Bar- diagram, Pie-chart

**D. English Language (20 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Basic Computer Knowledge (20 Marks):**

General Computer Processing ability in MS-Office like Word Processing, Excel, Power Point etc. & Operating Systems.

Professional Software/Hardware System relevant to the Post.

Any other Computer/IT related questions.

**PART-II**

1/29/2023

**Skill Test:**

The Skill Test will be of qualifying nature. Data Entry Speed of 8000 (Eight Thousand) key depressions per hour on Computer will be adjudged on the basis of the correct entry of words/key depressions as per the given passage. The duration of the Test will be 15 (Fifteen) minutes and printed matter in English containing about 2000-2200 key-depressions would be given to each candidate who would enter the same in the Computer. The passage to be entered in the Computer may also be displayed on the Computer screen.

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**SYLLABUS FOR THE POST OF DISPENSING ATTENDANTS****Subject Knowledge (100 Marks):**

**Introduction of different dosage forms.** Their classification with examples-their relative applications. Familiarization with new drug delivery systems. Introduction to Pharmacopoeias with special reference to the Indian Pharmacopoeia.

**Metrology**-System of weights and measures. Calculations including conversion from one to another system. Percentage calculations and adjustment of products. Use of alligation method in calculations, Isotonic solutions.

**Packaging of pharmaceuticals**-Desirable features of a container and types of containers. Study of glass & plastics as materials for containers and rubber as a material for closure-their merits and demerits. Introduction to aerosol packaging.

Size reduction, objectives, and factors affecting size reduction, methods of size reduction- study of Hammer mill, ball mill, Fluid energy mill and Disintegrator.

**Size separation**-size separation by sifting. Official standards for powders. Sedimentation methods of size separation. Construction and working of Cyclone separator.

**Mixing and Homogenization**-Liquid mixing and powder mixing, Mixing of semisolids. Study of silverson Mixer-Homogenizer, planetary Mixer; Agitated powder mixer; Triple Roller Mill; Propeller Mixer, colloid Mill and Hand Homogeniser. Double cone mixer.

**Clarification and Filtration**-Theory of filtration, Filter media; Filter aids and selection of filters. Study of the following filtration equipments-Filter Press, sintered filters, Filter candles, Metafilter.

**Extraction and Galenicals-**

(a) Study of percolation and maceration and their modification, continuous hot extraction-Application in the preparation of tinctures and extracts.

(b) Introduction to Ayurvedic dosage forms.

Heat process-Evaporation-Definition-Factors affecting evaporation-study of evaporating still and Evaporating pan.

**Distillation**-Simple distillation and Fractional distillation, steam distillation and vacuum distillation. Study of vacuum still, preparation of purified water I.P. and water for Injection I.P. construction and working of the still used for the same.

**Introduction to drying process**-Study of Tray Dryers; Fluidized Bed Dryer, Vacuum Dryer and FreezeDryer.

**Sterilization**-Concept of sterilization and its differences from disinfection-Thermal resistance of microorganisms. Detailed study of the following sterilization process.

Sterilization with moist heat, Dry heat sterilization, Sterilization by radiation, Sterilization by filtration and Gaseous sterilization.

**Aseptic techniques**-Applications of sterilization process in hospitals particularly with reference to surgical dressings and intravenous fluids. Precautions for safe and effective handling of sterilization equipment.

**Processing of Tablets**-Definition; different type of compressed tables and their properties. Processes involved in the production of tablets; Tablets excipients ; Defects in tablets; Evaluation of Tablets; Physical standards including Disintegration and Dissolution. Tablet coating-sugar coating; films coating, enteric coating and micro-encapsulation (Tablet coating may be de.. in an elementary manner).

**Processing of Capsules**-Hard and soft gelatin capsules; different sizes of capsules; filling of capsules; handling and storage of capsules. Special applications of capsules.

1/29/2023 **Study of immunological products** like sera, vaccines, toxoids & their preparations.

## **PHARMACOGNOSY**

1. Definition, history and scope of Pharmacogonosy including indigenous system of medicine.
2. Various systems of classification of drugs and natural origin.
3. Adulteration and drug evaluation; significance of pharmacopoeial standards.
4. Brief outline of occurrence, distribution, outline of isolation, identification tests, therapeutic effects and pharmaceutical application of alkaloids, terpenoids, glycosides, volatile oils, tannins and resins.
5. Occurrence, distribution, organoleptic evaluation, chemical constituents including tests wherever applicable and therapeutic efficacy of following categories of drugs.
  - (a) **Laxatives**- Aloe, Rhubarb, Castor oil, Ispaghula, Senna.
  - (b) **Cardiotonics**- Digitalis, Arjuna.
  - (c) **Carminatives & G.I. regulators**- Umbelliferous fruits, Coriander, Fennel, Ajowan, Cardamom, Ginger, Black pepper, Asafoetida, Nutmeg, Cinnamon, Clove.
  - (d) **Astringents**- Catecheu.
  - (e) **Drugs acting on nervous system**- Hyoscyamus, Belladonna, Aconite, Ashwagandha, Ephedra, Opium, Cannabis, Nux -vomica.
  - (f) **Antihypertensive**- Rauwolfia.
  - (g) **Antitussives**- Vasaka, Tolu balsam, Tulsi.
  - (h) **Antirheumatics**- Guggal, Colchicum.
  - (i) **Antitumour**- Vinca.
  - (j) **Antileprotics**- Chaulmoogra oil.
  - (k) **Antidiabetics**- Pterocarpus, Gymnema sylvestro.
  - (l) **Diuretics**- Gokhru, Punarnava.
  - (m) **Antidysenterics**- Ipecacuanha.
  - (n) **Antiseptics and disinfectants**- Benzoin, Myrrh, Neem, Curcuma.
  - (o) **Antimalarials**- Cinchona.
  - (p) **Oxytocics**- Ergot.
  - (q) **Vitamins**- Shark liver oil and Amla.
  - (r) **Enzymes**- Papaya, Diastase, Yeast.
  - (s) **Perfumes and flavoring agents**- peppermint oil, Lemon oil, Orange oil, lemon grass oil, sandalwood.

**Pharmaceutical aids**-Honey, Arachis oil, starch, kaolin, pectin, olive oil. Lanolin, Beeswax, Acacia, Tragacanth, sodium Alginate, Agar, Guar gum, Gelatin.

**Miscellaneous**- Liquorice, Garlic, picrorhiza, Dirscorea, Linseed, shatavari, shankhpushpi, pyrethrum, Tobacco.

Collection and preparation of crude drugs for the market as exemplified by Ergot, opium, Rauwolfia, Digitalis, senna.

Study of source, preparation and identification of fibers used in sutures and surgical dressings- cotton, silk, wool and regenerated fibers.

Gross anatomical studies of-senna, Datura, cinnamon, cinchona, fennel, clove, Ginger, Nuxvomica & ipecacuanha.

## **BIOCHEMISTRY AND CLINICAL PATHOLOGY**

**Introduction to biochemistry.** Brief chemistry and role of proteins, polypeptides and amino acids, classification, Qualitative tests, Biological value, Deficiency diseases.

**Carbohydrates:** Brief chemistry and role of carbohydrates, classification, qualitative tests, Diseases related to carbohydrate metabolism.

**Lipids:** Brief chemistry and role of lipids, classification and qualitative tests. Diseases related to lipids metabolism.

**Vitamins:** Brief chemistry and role of vitamins and coenzymes. Role of minerals and water in life processes.

**Enzymes:** Brief concept of enzymatic action. factors affecting it.

**Therapeutics:** Introduction to pathology of blood and urine. Lymphocytes and platelets, their role in health and disease. Erythrocytes-Abnormal cells and their significance. Abnormal constituents of urine and their significance in diseases.

**HUMAN ANATOMY AND PHYSIOLOGY**

**Scope of Anatomy and physiology.** Definition of various terms used in Anatomy. Structure of cell, function of its components with special reference to mitochondria and microsomes.

**Elementary tissues:** Elementary tissues of the body, i.e. epithelial tissue, muscular tissue, connective tissue and nervous tissue.

**Skeletal System:** Structure and function of Skeleton. Classification of joints and their function. Joint disorders.

**Cardiovascular System:** Composition of blood, functions of blood elements. Blood group and coagulation of blood. Brief information regarding disorders of blood. Name and functions of lymph glands. Structure and functions of various parts of the heart. Arterial and venous system with special reference to the names and positions of main arteries and veins. Blood pressure and its recording. Brief information about cardiovascular disorders.

**Respiratory system:** Various parts of respiratory system and their functions, physiology of respiration.

**Urinary System:** Various parts of urinary system and their functions, structure and functions of kidney. Physiology of urine formation. Patho-physiology of renal diseases and edema.

**Muscular System:** Structure of skeletal muscle, physiology of muscle contraction. Names, positions, attachments and functions of various skeletal muscles. Physiology of neuromuscular junction.

**Central Nervous System:** Various parts of central nervous system, brain and its parts, functions and reflexion. Anatomy and physiology of automatic nervous system.

**Sensory Organs:** Elementary knowledge of structure and functions of the organs of taste, smell, ear, eye and skin. Physiology of pain.

**Digestive System:** names of various parts of digestive system and their functions. structure and functions of liver, physiology of digestion and absorption.

**Endocrine System:** Endocrine glands and Hormones. Location of glands, their hormones and functions. pituitary, thyroid. Adrenal and pancreas

**Reproductive system:** Physiology and Anatomy of Reproductive system.

**HEALTH EDUCATION AND COMMUNITY PHARMACY**

Concept of health: Definition of physical health, mental health, social health, spiritual health determinants of health, indicator of health, concept of disease, natural history of diseases, the disease agents, concept of prevention of diseases.

**Nutrition and health:** Classification of foods, requirements, diseases induced due to deficiency of proteins, vitamins and minerals-treatment and prevention.

Demography and family planning: Demography cycle, fertility, family planning, contraceptive methods, behavioral methods, natural family planning methods, chemical methods, mechanical methods, hormonal contraceptives, population problem of India.

**First aid:** Emergency treatment in shock, snake-bite, burns, poisoning, heart disease, fractures and resuscitation methods, Elements of minor surgery and dressings.

**Environment and health:** Source of water supply, water pollution, purification of water, health and air, noise, light-solid waste disposal and control-medical entomology, arthropod borne diseases and their control. rodents, animals and diseases.

**Fundamental principles of microbiology:** Classification of microbes, isolation, staining techniques of organisms of common diseases.

**Communicable diseases:** Causative agents, mode of transmission and prevention. Respiratory infections- chicken pox, measles, influenza, diphtheria, whooping cough and tuberculosis.

**Intestinal infection-**poliomyelitis, Hepatitis, cholera, Typhoid, food poisoning, Hookworm infection.

**Arthropod borne infections-**plague, Malaria, filariases. **Surface infection-**Rabies, Trachoma, Tetanus, Leprosy. **Sexually transmitted diseases-**Syphilis, Gonorrhoea, AIDS.

**Non-communicable diseases:** causative agents, prevention, care and control.

**Epidemiology:** Its scope, methods, uses, dynamics of disease transmission. Immunity and immunization: Immunological products and their dose schedule. Principles of disease control and prevention, hospital acquired infection, prevention and control. Disinfection, types of disinfection procedures, for-faces, urine, sputum, room linen, dead-bodies, instruments.

### **PHARMACEUTICS (Dispensing Pharmacy)**

**Prescriptions-**Reading and understanding of prescriptions; Latin terms commonly used (Detailed study is not necessary), Modern methods of prescribing, adoption of metric system. Calculations involved in dispensing.

**Incompatibilities in prescriptions-** study of various types of incompatibilities-physical, chemical and therapeutic.

**Posology-** Dose and dosage of drugs, factors influencing dose, calculations of doses on the basis of age, sex, surface area and veterinary doses.

**Dispensed Medications:** (Note: A detailed study of the following dispensed medication is necessary. Methods of preparation with theoretical and practical aspects, use of appropriate containers and closures. special labeling requirements and storage conditions should be high-lighted).

**Powders-**Type of powders-Advantages and disadvantages of powders, Granules, cachets and tablet triturates. preparation of different types of powders encountered in prescriptions. Weighing methods, possible errors in weighing, minimum weighable amounts and weighing of a material below the minimum weighable amount, geometric dilution and proper usage and care of dispensing balance.

### **Liquid oral Dosage forms:**

**Monophasic-**Theoretical aspects including commonly used vehicles, essential adjuvant like stabilizers, colorants and flavors, with examples.

Review of the following monophasic liquids with details of formulation and practical methods. Liquids for internal administration Liquids for external administration or used on mucous membranes

Mixtures and concentrates, Gargles

Syrups Mouth washes

Douches

Sprays

Throat-paints

Ear Drops

Liniments

Elixirs

Nasal

drops

Lotions.

### **Biphasic Liquid Dosage Forms:**

**Suspensions** (elementary study)-Suspensions containing diffusible solids and liquids and their preparations. Study of the adjuvant used like thickening agents, wetting agents, their necessity and quantity to be incorporated, suspensions of precipitate forming liquids like tinctures, their preparations and stability. suspensions produced by chemical reaction. An introduction to flocculated /non-flocculated suspension system.

**Emulsions-**Types of emulsions, identification of emulsion system, formulation of emulsions, selection of emulsifying agent. Instabilities in emulsions, preservation of emulsions.

### **Semi-Solid Dosage Forms:**

**Ointments:** Types of ointments, classification and selection of dermatological vehicles. Preparation and stability of ointments by the following processes:

Trituration

chemical reaction

fusion

Emulsification.



**Pastes:** Differences between ointments and pastes, Bases of pastes. preparation of pastes and their preservation .

**Jellies:** An introduction to the different types of jellies and their preparation. An elementary study of poultice.

**Suppositories and pessaries-** Their relative merits and demerits, types of suppositories, suppository bases, classification, properties, preparation and packing of suppositories. Use of suppositories of drug absorption.

**Dental and cosmetic preparations:** Introduction to Dentifrices, facial cosmetics, Deodorants. Antiperspirants, shampoo, Hair dressings and Hair removers.

### Sterile Dosage forms:

**Parenteral dosage forms-** Definition, General requirements for parenteral dosage forms. Types of parenteral formulations, vehicles, adjuvant, processing and personnel, Facilities and quality control. Preparation of Intravenous fluids and admixtures- Total parenteral nutrition, Dialysis fluids.

**Sterility testing:** particulate matter monitoring- Faculty seal packaging.

**Ophthalmic products:** study of essential characteristics of different ophthalmic preparations. Formulation: additives, special precautions in handling and storage of ophthalmic products.

### PHARMACEUTICAL CHEMISTRY

1. Introduction to the nomenclature of organic chemical systems with particular reference to heterocyclic system containing up to 3 rings.
2. The chemistry of following pharmaceutical organic compounds covering their nomenclature, chemical structure, uses and the important physical and chemical properties (chemical structure of only those compounds marked with asterisk (\*). The stability and storage conditions and the different type of pharmaceutical formulations of these drugs and their popular brand names.

**Antiseptics and Disinfectants-** Proflavine\*, Benzalkonium chloride, Cetrimide, Phenol, chloroxylenol, Formaldehyde solution, Hexachlorophene, Nitrofurantoin.

**Sulphonamides-** Sulphadiazine, Sulphaguanidine, Phthalylsulphathiazole, Succinylsulphathiazole, Sulphadimethoxine, Sulphamethoxypyridazine, Co-trimoxazole, sulfacetamide\*

**Antileprotic Drugs-** Clofazimine, Thiambutosine, Dapsone\*, solapsone,

**Anti-tubercular Drugs-** Isoniazid\*, PAS\*, Streptomycin, Rifampicin, Ethambutol\*, Thiacetazone, Ethionamide, cycloserine, pyrazinamide\*.

**Antimoebic and Anthelmintic Drugs-** Emetine, Metronidazole, Halogenated hydroxyquinolines, Diloxanide furoate, Paromomycin, Piperazine\*, Mebendazole, D.E.C.\*

**Antibiotics-** Benzyl penicillin\*, Phenoxy methyl penicillin\*, Benzathine penicillin, Ampicillin\*, Cloxacillin, Carbenicillin, Gentamicin, Neomycin, Erythromycin, Tetracycline, Cephalexin, Cephaloridine, Cephalothin, Griseofulvin, Chloramphenicol.

**Antifungal agents-** Udecylenic acid, Tolnaftate, Nystatin, Amphotericin, Hamycin.

**Antimalarial Drugs-** Chloroquine\*, Amodiaquine, Primaquine, Proguanil, Pyrimethamine\*, Quinine, Trimethoprim.

**Tranquilizers-** Chlorpromazine\*, Prochlorperazine, Trifluoperazine, Thiothixene, Haloperidol\*, Triperiodol, Oxypertine, Chlordizepoxide, Diazepam\*, Lorazepam, Meprobamate.

**Hypnotics-** Phenobarbitone\*, Butobarbitone, Cylobarbitone, Nitrazepam, Glutethimide\*, Methypylon, Paraldehyde, Triclofosodium.

**General Anaesthetics**-Halothane\*, Cyclopropane\*, Diethyl ether\*, Methohexital sodium, Thiopental sodium, Trichloroethylene .

**Antidepressant Drugs**- Amitriptyline, Nortriptyline, Imipramine\*, Pheipazine, Tranylcypromine.

**Analeptics**- Theophylline, Caffeine\*, Coramine\*, Dextro-amphetamine.

**Adrenergic drugs**- Adrenaline\*, Noradrenaline, Isoprenaline\*, Phenylephrine, Salbutamol, Terbutaline, Ephedrine\*, Pseudoephedrine.

**Adrenergic antagonist**- Tolazoline, Propranolol\*, Practolol.

**Cholinergic Drugs**- Neostigmine\*, Pyridostigmine, Pralidoxime, Pilocarpine, Physostigmine\*.

**Cholinergic Antagonists**- Atropine\*, Hyoscine, Homatropine, Propantheline\*, Benztropine, Tropicamide, Biperiden\*.

**Diuretic Drugs**- Furosemide\*, Chlorothiazide, Hydrochlorothiazide\*, Benzthiazide, Urea\*, Mannitol\*, Ethacrynic Acid.

**Cardiovascular Drugs**- Ethylnitrite\*, Glyceryl trinitrate, Alpha methyl dopa, Guanethidine, Clofibrate, Quinidine.

**Hypoglycemic Agents**- Insulin, Chlorpropamide\*, Tolbutamide, Glibenclamide, Phenformin\*, Metformin. **Coagulants and Anti coagulants**- Heparin, Thrombin, Menadione\*, Bisphydroxycoumarin, Warfarin sodium.

**Local Anaesthetics**- Lignocaine\*, Procaine\*, Benzocaine,

**Histamine and anti Histaminic Agents**- Histamine, Diphenhydramine\*, Promethazine, Cyproheptadine, Mepyramine\*, Pheniramine, Chlorpheniramine\*.

**Analgesics and Anti-pyretics**-Morphine, Pethidine, Codeine, Methadone, Aspirin\*, Paracetamol, Analgin, Dextropropoxyphene, Pentazocine.

**Non-steroidal anti-inflammatory agents**- Indomethacin\*, Phenylbutazone\*, Oxyphenbutazone, Ibuprofen.

**Thyroxine and Antithyroids**- Thyroxine\*, Methimazole, Methyl thiouracil, Propylthiouracil.

**Diagnostic Agents**- Lophanic Acid, Propylidone, Sulfobromophthalein-sodium, Indigotindisulfonate, Indigo Carmine, Evans blue, Congo Red, Fluorescein sodium.

Anticonvulsants, cardiac glycosides, Antiarrhythmic, Antihypertensives & Vitamins.

**Steroidal Drugs**- Betamethasone, Cortisone, Hydrocortisone, Prednisolone, Progesterone, Testosterone, Oestradiol, Nandrolone.

**Anti-Neoplastic Drugs**- Actinomycin, Azathioprine, Busulfan, Chlorambucil, Cisplatin, Cyclophosphamide, Daunorubicin Hydrochloride, Fluorouracil, Mercaptopurine, Methotrexate, Mytomycin.

## PHARMACOLOGY & TOXICOLOGY

### **Introduction to Pharmacology, Scope of Pharmacology.**

**Routes of administration of drugs**, their advantages and disadvantages. Various processes of absorption of drugs and the factors affecting them. Metabolism, distribution and excretion of drugs.

**General mechanism of drugs action** and their factors which modify drugs action. Pharmacological classification of drugs. The discussion of drugs should emphasize the following aspects:

Drugs acting on the central Nervous system:

1/29/2023

General anaesthetics- adjunction to anaesthesia, intravenous anaesthetics. Analgesic antipyretics and non-steroidal

Anti-inflammatory drugs- Narcotic analgesics. Antirheumatic and anti-gout remedies.

Sedatives and Hypnotics, psychopharmacological agents, anticonvulsants, analeptics. Centrally acting muscle relaxants and anti-parkinsonism agents. Local anesthetics.

Drugs acting on autonomic nervous system.

Cholinergic drugs, Anticholinergic drugs, anticholinesterase drugs. Adrenergic drugs and adrenergic receptor blockers.

Neurone blockers and ganglion blockers. Neuromuscular blockers, used in myasthenia gravis.

Drugs acting on eye: Mydriatics, drugs used in glaucoma.

Drugs acting on respiratory system, Respiratory stimulants, Bronchodilators, Nasal decongestants, Expectorants and Antitussive agents.

**Autocoids:** physiological role of histamine and serotonin, Histamine and Antihistamines, prostaglandins. Cardio vascular drugs, Cardiotonics, Antiarrhythmic agents, Anti-anginal agents, Antihypertensive agents, peripheral Vasodilators and drugs used in atherosclerosis.

Drugs acting on the blood and blood forming organs. Haematinics, coagulants and anticoagulants, Haemostatic, Blood substitutes and plasma expanders.

**Drugs affecting renal function-** Diuretics and anti-diuretics.

**Hormones and hormone antagonists-** Hypoglycemic agents, Anti--thyroid drugs, sex hormones and oral contraceptives, corticosteroids.

**Drugs acting on digestive system-** carminatives, digest ants, Bitters, Antacids and drugs used in pepticulcer, purgatives and laxatives, Anti-diarrohoeals, Emetics, Anti-emetics, Antispasmodics.

Chemotherapy of microbial diseases:

Urinary antiseptics, sulphonamides, penicillin, streptomycin, Tetracyclines and other antibiotics. Anti-tubercular agents, Antifungal agents, antiviral drugs, anti-leprotic drugs. Chemotherapy of protozoal diseases, Anthelmintic drugs. Chemotherapy of cancer.

**PHARMACEUTICAL JURISPRUDENCE**

**Origin and nature of pharmaceutical legislation in India**, its scope and objectives. Evolution of the "Concept of pharmacy" as an integral part of the Health care system.

**Principles and significance of professional Ethics.** Critical study of the code of pharmaceutical Ethics drafted by pharmacy council of India.

**Pharmacy Act, 1948-**The General study of the pharmacy Act with special reference to Education Regulations, Working of state and central councils, constitution of these councils and functions, Registration procedures under the Act.

**The Drugs and Cosmetics Act, 1940-**General study of the Drugs and cosmetics Act and the Rules there under. Definitions and salient features related to retail and whole sale distribution of drugs. The powers of Inspectors, the sampling procedures and the procedure and formalities in obtaining licenses

under the rule. Facilities to be provided for running a pharmacy effectively. General study of the schedules with special reference to schedules C,C1,F,G,J,H,P and X and salient features of labeling and storage conditions of drugs.

**The Drugs and Magic Remedies (objectionable Advertisement) Act, 1954**-General study of the Act, objectives , special reference to be laid on Advertisements, magic remedies and objections<sup>1</sup> and permitted advertisements -diseases which cannot be claimed to be cured.

**Narcotic Drugs and psychotropic substances Act, 1985**-A brief study of the act with special reference to its objectives, offences and punishment.

Brief introduction to the study of the following acts:

Latest Drugs (price control) order in force (as amended to date)

**Medicinal and Toilet preparations (excise Duties) Act, 1955 (as amended to date). Medical Termination of Pregnancy Act, 1971.**

### **DRUG STORE AND BUSINESS MANAGEMENT**

**Introduction**-Trade, Industry and commerce, Functions and subdivision of commerce, Introduction to Elements for Economics and Management. Forms of Business Organizations. Channels of Distribution.

**Drug House Management**-selection of site, space Lay-out and legal requirements. Importance and objectives of purchasing, selection of suppliers, credit information, tenders, contracts and price determination and legal requirements thereto. Codification, handling of drug stores and other hospital supplies. Inventory Control-objects and importance, modern techniques like ABC,VED analysis, the lead time, inventory carrying cost, safety stock, minimum and maximum stock levels, economic order quantity, scrap and surplus disposal.

**Sales** promotion, Market Research, Salesmanship, qualities of a salesman, Advertising and Window Display.

**Recruitment, training**, evaluation and compensation of the pharmacist.

**Banking and Finance**-Service and functions of bank, Finance planning and sources of finance.

### **HOSPITAL AND CLINICAL PHARMACY**

**Hospital**-Definition, Function, classifications based on various criteria,organization, Management and health delivery system in India.

**Hospital Pharmacy:** Definition Functions and objectives of Hospital pharmaceutical services. Location,Layout, Flow chart of materials and men. Personnel and facilities requirements including equipments based on individual and basic needs. Requirements and abilities required for Hospital pharmacists.

**Drug Distribution system in Hospitals.** Out-patient service, In-patient services- types of services detailed discussion of unit Dose system, Floor ward stock system, satellite pharmacy services, central sterile services, Bed side pharmacy.

**Manufacturing:** Economical considerations, estimation of demand.

**Sterile manufacture**-Large and small volume parenterals, facilities, requirements, layout production planning, man-power requirements.

**Non-sterile manufacture**-Liquid orals, externals, Bulk concentrates. Procurement of stores and testing of raw materials.

1/29/2023 Nomenclature and uses of surgical instruments and Hospital Equipments and health accessories.

**Hospital Formulary system** and their organization, functioning, composition.

**Drug Information service** and Drug Information Bulletin.

**Surgical dressing** like cotton, gauze, bandages and adhesive tapes including their pharmacopoeial tests for quality. Other hospital supply eg. I.V.sets, B.G. sets, Ryals tubes, Catheters, Syringes etc.

**Application of computers** in maintenance of records, inventory control, medication monitoring, drug information and data storage and retrieval in hospital retail pharmacy establishment.

**Clinical Pharmacy:**

**Introduction to Clinical pharmacy practice-** Definition, scope.

**Modern dispensing aspects-** Pharmacists and patient counseling and advice for the use of common drugs, medication history.

**Common daily terminology used in the practice of Medicine.**

**Disease, manifestation and patho-physiology** including salient symptoms to understand the disease like Tuberculosis, Hepatitis, Rheumatoid Arthritis, Cardio-vascular diseases, Epilepsy, Diabetes, Peptic Ulcer, Hypertension.

**Physiological parameters with their significance.**

**Drug Interactions:** Definition and introduction. Mechanism of Drug Interaction. Drug-drug interaction with reference to analgesics, diuretics, cardiovascular drugs, Gastro-intestinal agents. Vitamins and Hypoglycemic agents. Drug-food interaction.

**Adverse Drug Reaction:** Definition and significance. Drug-Induced diseases and Teratogenicity.

**Drugs in Clinical Toxicity-** Introduction, general treatment of poisoning, systemic antidotes, Treatment of insecticide poisoning, heavy metal poison, Narcotic drugs, Barbiturate, Organophosphorus poisons.

**Drug dependences,** drug abuse, addictive drugs and their treatment, complications.

**Bio-availability of drugs,** including factors affecting it.

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**SYLLABUS FOR THE POST OF JUNIOR MEDICAL RECORD OFFICER****PART-I****A. General Intelligence & Reasoning (5 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (5 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (10 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

**D. English Language (10 Marks):**

Candidates' understanding of the Basics of English Language, its vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage, etc. his/her writing ability would be tested.

**E. Basic Computer Knowledge (10 Marks):**

- General Computer Processing ability in MS-Office like Word Processing, Excel, Power Point etc. & Operating Systems.
- Professional Software/Hardware System relevant to the Post.
- Any other Computer/IT related questions.

**Subject Knowledge (60 Marks):**

1/29/2023

1. Definition, objectives & functions and classifications of Hospitals.
2. Departmental administration, delegation and decentralization.
3. Departments and service units.
4. Medical Terminology: Elements of medical terms (Roots, prefixes, suffixes, colours, numerals, symbols, abbreviations). Terms related to Investigations, Operations, Treatment of conditions & Disorders.
5. Introduction, Values, Purposes and Uses of Medical Records.
6. Documentation of Records (indexes/ Registers).
7. Birth, Death, Registration and Correction in Record.
8. Medical Ethics and Legal Aspects of Medical Records.
9. International Classification of Diseases (ICD-10) and Related Health Problems.
10. Medical Coding.
11. Electronic Medical Record/ Hospital information System.
12. Contents and Components of Medical Record.
13. Numbering, Filing and Retrieval of Medical Records.
14. Retention, Preservation and Destruction of Medical Records.
15. Accidents registers and wound certificates Legal aspects of hospital-patient, doctor-patient, hospital doctor relationship.
16. Medico-Legal Cases.
17. Hospital Statistics.

**PART-II**

**Skill Test:**

The Skill Test will be of qualifying nature. Candidates will have to qualify the test for English or Hindi at the prescribed speed on Computer as per the advertisement.

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RECT/6/2023-RECU SEC  
**SYLLABUS FOR THE POST OF LAB TECHNICIAN**

1/29/2023

**A. General Intelligence & Reasoning (15 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (15 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (15 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

**D. English Language (15 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Misspelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Subject Knowledge (40 Marks):**

**Biochemistry –**

- Cleaning and care of general laboratory glass ware and equipment. Types of pipettes, calibration of pipettes.
- Distilled water. Method of preparation and storage of distilled water. Type of water distillation plants.



- Preparation of solutions – units of weights and volume, Calculation of concentration and methods of expressing concentration of solution.
- Units of Measurement - S.I unit and CGS units. Normality, Molarity, Molality
- Calibration of volumetric apparatus
- Principle, working and maintenance of Analytical balance
- Quality control and quality assurance in a clinical biochemistry laboratory
- Laboratory organization, management and maintenance of records
- Principles of assay procedures, Normal range in blood, Serum, Plasma and Urine and reference values.
- pH – Definition, Henderson Hasselbach equation, Pka value, pH indicator, Methods of measurement of pH, pH paper, pH meter, Principle, working, maintenance and calibration of pH meter
- Volumetric analysis- Normal and molar solutions, Standard solutions, Preparation of reagents, Storage of chemicals
- Working principles Types and applications of Electrophoresis – Paper, Agarose Gel, Cellulose Acetate and PAGE.
- Working principles, types and applications of Chromatography - Paper Chromatography, TLC, Ion Exchange, Affinity Gel, Filtration, Gas Chromatography and HPLC.
- Working principles, types and application of centrifugation
- Working Principles and application of photometry, and atomic absorption, Spectrophotometry and colorimetry.
- Definition, basic concepts of classification mechanism of action and properties of enzymes, factors influencing enzyme action
- Basic and elementary concepts of chemistry and properties of carbohydrates as applicable to the human body. (Classification, Digestion and Absorption, Metabolism, Disorders of metabolism)
- Overview of metabolism of carbohydrates – Methods for determining glucose, ketones, lactate, pyruvate reducing sugars and mucopolysaccharides and their clinical significance. Biochemistry, types, criteria parameters in diagnosis and prognosis of Diabetes mellitus.
- Basic and elementary concepts of chemistry and properties of lipids as applicable to the human body. (Classification, Digestion and Absorption, Metabolism, Disorders of metabolism)
- Overview of lipid. Importance of lipids in the body in body basic metabolic aspects and analytical importance. Disorders of lipid metabolism. Lipoproteins patterns in disease – analytical methods and procedures applicable to detecting and monitoring such disorders.
- Basic and elementary concepts of chemistry and properties of proteins & amino acids as applicable to the human body. (Classification, Digestion and Absorption, Metabolism, Disorders of metabolism)
- Overview of metabolism of amino acids and proteins – current methodologies for their determination and identification in biological specimens – disease associated with alternation in or deficiencies of amino acids and proteins.
- Basic and elementary concepts of chemistry and properties of nucleic Acids as applicable to the human body.
- Basic concepts of principles of nutrition and nutrients macro and micro nutrients. Vitamins & Minerals. Vitamins- Fat soluble vitamins , Water soluble vitamins sources, Biochemical role, RDA, deficiency manifestations Minerals – Calcium, Phosphorous, Iron, Copper, Zinc, Magnesium, Manganese, Iodine.
- Analytical methods and recommendations for testing and assessing nutritional deficiency – Methods for assessing concentration of vitamins in biological samples.
- General requirements for laboratory assessment of trace elements including specimen collection, handling, selection of analytical methodology and establishing quality.
- Overview of Biochemical roles of major electrolytes and blood gases and their changes in pathological states – relationship between major electrolytes and acid base balance –

application of physical and chemical principles to biological system – laboratory measurements of electrolytes and blood gases. Acid base balance disorders

- Overview of current concepts in endocrinology RIA, ELISA, chemiluminescence assay procedure for hormones – physiological effects produced by normal and abnormal levels of various hormones. Thyroid function test and Adrenal function test.
- Introduction to molecular Biology. Recombinant DNA technology, Role of recombinant DNA technology as diagnostic tool. Polymerase chain reaction.
- Overview of porphyrins, their precursors, primary and secondary disorders of porphyrin metabolism – diagnostic laboratory methodologies including appropriate specimen collection and preservation techniques related to porphyrins
- Laboratory tests and analytical methods used in identification and evaluation of hepatobiliary disorders, renal disorders and disorders of Stomach, pancreas and intestinal tract
- Overview of calcium and inorganic phosphate metabolism current laboratory analytical

### **Microbiology –**

- History of Medical Microbiology - Host-Microbe relationship.
- Safety Measures in clinical microbiology
- Cleaning, care and handling of glassware
- Care and maintenance of Equipment in Microbiology.
- Microscopy: Principle, types and uses of microscope
- Sterilization and Disinfection - Definition, Types, principles, mode of action and methods. Qualities of a good disinfectant. Assay for various disinfectants .
- Biomedical waste management in a lab
- General characteristics & classification of Microbes : Classification of microbes. Morphological classification of bacteria, Bacterial anatomy (Bacterial cell structures)
- Growth and nutrition of bacteria, Culture media and culture methods-aerobic and anaerobic
- Quality control and safety in microbiology.
- Handling and care of laboratory animals.
- Antimicrobial agents, Antimicrobial susceptibility tests.
- Stains used in bacteriology Principle, procedures, significance and interpretation - Simple staining, Gram stain, Ziehl –Neelsen staining, Albert’s stain, Capsule staining.
- Principle, procedures and interpretation of the biochemical tests for identification of different bacteria.
- Immunity – innate and acquired immunity, humoral and cell mediated.
- Antigen antibody reactions and their applications
- Complement
- Hypersensitivity
- Vaccines
- Gram positive & Gram negative cocci – Staphylococci, Streptococci, Enterococci, Pneumococci, Neisseria
- Gram positive bacilli – Corynebacterium, Mycobacterium, Actinomyces, Listeria, Bacillus, Clostridia
- Gram negative bacilli – Enterobacteriaceae, Pseudomonas, Vibrio, Aeromonas, Plesiomonas, Campylobacter, Bacteroides, Fusobacterium, Brucella, Haemophilus, Bordetella, Pasteurella, Francisella
- Spirochaetes, Chlamydia, Rickettsia, Mycoplasma, L forms
- General properties of viruses – Structure, classification and replication.
- Laboratory diagnosis of virus
- DNA virus –Adenovirus, Papova virus, Herpes virus, Varicella zoster virus, Cytomegalo virus, Hepatitis B virus
- RNA virus – Polio virus, Influenza virus, Para influenza virus, Mumps virus, Measles virus, Rubella virus, Respiratory syncytial virus, Rhinovirus, Rotavirus, Hepatitis virus, Arbo viruses

prevalent in India (Dengue, West Nile, Japanese Encephalitis, KFD), HIV, Rabies virus, SARS virus.

- Bacteriophage
- Introduction to Parasitology –Common definitions, Types and Classification of parasites.
- Collection transport and preservation of specimens for parasitological examination
- Protozoa: Entamoeba Trichomonas, Trypanosomes, Leishmania, Giardia, Plasmodium, Isospora, Balantidium, and Toxoplasma.
- Cestodes - Diphylobothrium, Taenia, Echinococcus, Hymenolepis.
- Trematodes - Schistosoma, Fasciola, Fasciolopsis, Clonorchis, Paragonimus
- Intestinal Nematodes - Ascaris, Ancylostoma, Necator, Strongyloides, Trichinella Enterobius, Trichuris
- Tissue Nematodes - Wucherei, Brugia, Loa loa, Onchocerca, Dracunculus
- Collection and preservation of specimens for parasitological examination, preservation of specimens of parasitic eggs and embryos, Preserving Fluids, Transport of specimens.
- Morphology and classification of fungus
- Laboratory diagnosis of fungus- Culture media used in mycology, Direct microscopy in Medical mycology laboratory, Processing of clinical samples for diagnosis of fungal infections i.e. Skin, nail, hair, pus, sputum, CSF and other body fluids.
- Superficial fungal infections
- Subcutaneous fungal infections
- Deep fungal infections
- Opportunistic fungal infections
- Techniques used for isolation and identification of medically important fungi
- Methods for identification of yeasts and moulds
- Preservation of fungal cultures

### **Pathology –**

- General-Haematology: Origin, development, morphology, maturation, function and fate of blood cells, nomenclature of blood cells.
- Various methods of blood collection, anticoagulants-mechanism and uses.
- Basic concepts of automation in haematology
- Counting chamber- hemocytometry. Enumeration of RBC including various counting chambers, diluting fluids for RBC count.
- Haemoglobinometry. Principles and methods of quantitating Hb. Concentration of blood including knowledge of errors and quality control in various method. Abnormal hemoglobin and its investigation.
- ESR: introduction, factors affecting ESR, principles and methods of determining ESR, increasing and decreasing conditions of ESR.
- WBC: introduction, development of WBC, diluting fluids. Absolute eosinophil count, errors in sampling, mixing, diluting and counting.
- Cell counting, advantages and disadvantages, uses and mechanism of cell counting, quality control in cell counts.
- Preparation of peripheral smear and bone marrow smear. Thin smear, thick smear. Buffy coat smear, wet preparation. Romanowsky stain. Preparation advantages and disadvantages.
- Principle and methods of staining of Blood smears and bone marrow smears. Supravital stain. Reticulocyte count. Heinz bodies.
- Description of morphology of normal and abnormal red cells. Blood differential WBC counting. Recognition of abnormal cell. Anaemia – definition etiology classification and laboratory diagnosis.
- Methods of identification and estimation of abnormal hemoglobin including spectroscopy. HB electrophoresis. Alkali denaturation Test. Sickle cell preparation.

- Various benign leucocyte reaction – Leukocytosis. Neutrophilia, Eosinophilia, Lymphocytosis. Infectious mononucleosis. leucopenias.
- Leukemias – definition, causes, classification, detection of leukemia. Total leucocyte count in leukemias. Multiple myeloma.
- Blood Coagulation and disorders of hemostasis. Classification of coagulation factors, Principles and methods of assessment of coagulation. BT, CT, Prothrombin time, partial thromboplastin time, thromboplastin regeneration time
- Thrombocytopenia, thrombocythemia, platelet function test, platelet count. Clot retraction test. Platelet factor III Test.
- LE cell – definition, morphology causative agents. Various methods of demonstrating LE cells. Blood parasites. Malaria, LD bodies, microfilaria and methods of demonstration.
- Preparation of donor and collection of blood. Solution and apparatus used. Storage of blood. Preparation and storage of plasma. Preparation of packed red cells.
- Principles involved in Blood grouping. ABO system and the methods used. Factors influencing the results of blood grouping, Rh system. Rh antigen. Principles and methods used.
- Cross matching. Compatibility test, direct and indirect Coomb's test – Principle involved and the methods used. Blood transfusion and its Hazards.
- Definition, sources and types histological specimens, kinds of histological presentations
- Labelling, fixation, properties of fixing fluids, classification and composition of fixing fluids. Advantages and disadvantages of secondary fixatives. Post chroming.
- Tissue processing, dehydration and cleaning.
- Embedding. Water soluble substances, embedding in paraffin nitrocellulose
- Equipment for sectioning microtome, knife, honing and stropping. Types, care and use of microtome.
- Technique for sectioning – frozen section. Technique for sectioning – Paraffin embedded tissue. Errors in sectioning and remedies. Attaching blocks to carriers.
- Technique of processing bone for histological studies. Mounting and covering. Mounting media.
- Staining – theory, types of staining agent. Mordents and differentiation. H & E staining. Types of hematoxylin and its preparation. Eosin stock stain and other counter stain used.
- Demonstration of collagen, reticulin, elastin, fat, amyloid, glycogen, mucin, pigments and minerals (malarial, mercury, bile, lipofuscin, calcium, iron, copper).
- Principles of histochemistry and its application
- Demonstration of neuron, neuroglia, myelin and axon. Processing of eye ball for histology.
- Demonstration of fat, iron, amyloid, bile in large sections of tissue.
- Cytology – introduction, definition, types of cytological specimen, preparation of slide for microscopic studies, stains used.
- Museum technique. Preparation, setting up of and arrangement of museum.
- Preparation of cell blocks, mailing of slides.
- FNAC, definition, techniques involved in preparation of smear and staining. PAP smear.
- Calibration and Validation of Clinical Laboratory instruments

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RECT/6/2023-RECU SEC  
**SYLLABUS FOR THE POST OF LINEMAN (ELECTRICAL)**

1/29/2023

**A. General Intelligence & Reasoning (15 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (15 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (15 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

**D. English Language (15 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Subject Knowledge (40 Marks):**

- **Basic Electricity:** Fundamental of Electricity, Flux and soldering technique, Property of Resistance, Conductor, Insulator, Semi-conductor, Types of wires and cables.
- **Ohm's Law:** Ohm's Law, Kirchoff's law, Effects of variation of temperature on resistance, Chemical effect of electric current, Laws of resistance, Different type of cells, Grouping of cells, Care and maintenance of cell, Buckling, Sedimentation

- **Magnetism:** Classification of magnetic properties, Para, dia and ferromagnetic material, Electromagnetism, Fleming's left and right hand rule, MMF, Flux density, Reluctance, Faraday's laws of electromagnetic induction, Len's law, Capacitor, Types of functions
- **Alternating current and Earthing:** Alternating current, Earthing, Types of wiring both domestic and industrial, Grading of cable and wires, Current rating, Testing of installation by megger
- **DC Machine:** DC Generators and Type, EMF equation, Description of series, shunt and compound Generator, DC motors and type, Starter 3 point, 4 point and speed control machine
- **AC Motors, single and 3 phase:** AC motors and starters single phase and 3 phase, DOL, Star delta, slip ring motor starter, Auto transformer starter, AC motor panel wiring, Phase sequence
- **Instruments and Transformers:** Measuring Instruments, Indication type and Deflecting types, Controlling torque and Damping Torque, Basic principle of Transformer, emf equation of transformers, Parallel operation of Transformers, Cooling, Protective Device
- **Illumination and Basic Electronics:** Illumination- Laws of illumination, Type of lamp, Domestic appliances, Semiconductor- P type, N type, Classification of Diode, Rectifier, Transistor
- **Power Generation:** Generation Source of energy, Various types of power generation
- **Transmission:** Transmission and Distribution, Comparison of AC and DC transmission.

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**SYLLABUS FOR THE POST OF MANIFOLD ROOM ATTENDANT****A. General Intelligence & Reasoning (20 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (20 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (20 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

**D. English Language (20 Marks):**

Candidates' understanding of the Basics of English Language, its vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage, etc. his/her writing ability would be tested.

**E. Subject Knowledge (20 Marks):**

1. Gas Distribution Systems: Compressed gas cylinders, Colour coding, Cylinder valves; Pin index, Gas piping system, Recommendations for piping system, Alarms & safety devices.
2. MGPS Design and Techniques: Statutory obligations and safe system operation, MGPS design and installation requirements, Basic fault-finding, Structure and management of the permit-to work system, MGPS equipment performance requirements (plant and pipeline); Technical reporting including system capacities/limitations, upgrading requirements/equipment replacement, system compliance.

1/29/2023

3. MGPS Policies and documentation: MGPS documentation; Emergency procedures; MGPS operational policy preparation, implementation and monitoring; MGPS testing and quality control requirements; Manifold systems; Cryogenic liquid cylinders; Bulk cryogenic (VIE) systems Alarm requirements.
4. Piping materials and specification of W.I. & steel pipes, Pipe threads, Pipe fittings, Specifications of fittings, Brief description of different types of pipe joints, Pipe fittings, Flanges, Unions, Valves etc., Different types of pipes lay out systems, Different types of pipe joint
5. Working principals of valves and their description.
6. Mechanical faults on terminal outlets, Line regulators, Zone valve boxes and faults on electrically controlled line, Pressure alarms.
7. Oxygen acetylene welding procedure of medical gas pipeline using inert gas shielding
8. Installation, maintenance and repair of liquid oxygen plant and high-pressure cylinder manifolds
9. Types of many gas manifolds.
10. Manifolds selection criteria.
11. Manifolds assemblies.
12. Semi- automatic manifolds.
13. Manifolds accessories.
14. Manifolds valves etc.

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RECT/6/2023-RECU SEC  
**SYLLABUS FOR THE POST OF MECHANIC (E&M)**

1/29/2023

**A. General Intelligence & Reasoning (15 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (15 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (15 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

**D. English Language (15 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Subject Knowledge (Electrical) (20 Marks):**

- **Basic Safety:** Safety introduction, Personal protection. Basic injury prevention Hazard identification and avoidance, safety signs for Danger, warning, caution and personal safety messages. Use of Fire extinguishers. Various safety measures involved in the Industry. Elementary first Aid. Concept of Standard. Personal safety and factory safety.
- **Basic Electricity:** Fundamental of Electricity, Flux and soldering technique, Property of Resistance, Conductor, Insulator, Semi-conductor, Types of wires and cables.

- **Ohm's Law:** Ohm's Law, Kirchoff's law, Effects of variation of temperature on resistance, Chemical effect of electric current, Laws of resistance, Different type of cells, Grouping of cells, Care and maintenance of cell, Buckling, Sedimentation
- **Magnetism:** Classification of magnetic properties, Para, dia and ferromagnetic material, Electromagnetism, Fleming's left and right hand rule, MMF, Flux density, Reluctance, Faraday's laws of electromagnetic induction, Len's law, Capacitor, Types of functions
- **Alternating current and Earthing:** Alternating current, Earthing, Types of wiring both domestic and industrial, Grading of cable and wires, Current rating, Testing of installation by megger
- **DC Machine:** DC Generators and Type, EMF equation, Description of series, shunt and compound Generator, DC motors and type, Starter 3 point, 4 point and speed control machine
- **AC Motors, single and 3 phase:** AC motors and starters single phase and 3 phase, DOL, Star delta, slip ring motor starter, Auto transformer starter, AC motor panel wiring, Phase sequence
- **Instruments and Transformers:** Measuring Instruments, Indication type and Deflecting types, Controlling torque and Damping Torque, Basic principle of Transformer, emf equation of transformers, Parallel operation of Transformers, Cooling, Protective Device
- **Illumination and Basic Electronics:** Illumination- Laws of illumination, Type of lamp, Domestic appliances, Semiconductor- P type, N type, Classification of Diode, Rectifier, Transistor
- **Power Generation:** Generation Source of energy, Various types of power generation
- **Transmission:** Transmission and Distribution, Comparison of AC and DC transmission.

**F. Subject Knowledge (Mechanical) (20 Marks):**

- **Basic Safety:** Safety introduction, Personal protection. Basic injury prevention Hazard identification and avoidance, safety signs for Danger, warning, caution and personal safety messages. Use of Fire extinguishers. Various safety measures involved in the Industry. Elementary first Aid. Concept of Standard. Personal safety and factory safety.
- Conservation of Energy
- Engineering Materials
- Mechanics of Solids
- Workshop Technology
- Hydraulics and Pneumatics
- Theory of Machines
- Preventive Maintenance of machines
- Design and Estimation
- Production Technology
- Advanced Manufacturing Processes
- Industrial Engineering and Safety
- Metrology and Measuring Instruments
- Repair and Maintenance
- Disaster Management and Safety
- Introduction of fitting trade. Marking tools; callipers Dividers, Surface plates, Angle plates, Scribes, punches, surface gauges Types, Uses, Care and maintenance. Use of different bench tools used by sheet metal worker. Description and types of taps and dies, Description of marking and cutting tools such as snubs shears punches and other tools like hammers, mallets, etc. used by sheet metal workers. Types of rivets and riveted joints. Use of thread gauge. Different types of threads. Materials, fluxes and process. Care and maintenance of tools. Introduction to thermometers, pressure gauges etc.

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**Subject Knowledge (100 Marks):**

**Introduction of different dosage forms.** Their classification with examples-their relative applications. Familiarization with new drug delivery systems. Introduction to Pharmacopoeias with special reference to the Indian Pharmacopoeia.

**Metrology**-System of weights and measures. Calculations including conversion from one to another system. Percentage calculations and adjustment of products .Use of alligation method in calculations, Isotonic solutions.

**Packaging of pharmaceuticals**-Desirable features of a container and types of containers. Study of glass & plastics as materials for containers and rubber as a material for closure-their merits and demerits. Introduction to aerosol packaging.

Size reduction, objectives, and factors affecting size reduction, methods of size reduction- study of Hammer mill, ball mill, Fluid energy mill and Disintegrator.

**Size separation**-size separation by sifting. Official standards for powders. Sedimentation methods of size separation. Construction and working of Cyclone separator.

**Mixing and Homogenization**-Liquid mixing and powder mixing, Mixing of semisolids. Study of silverson Mixer-Homogenizer, planetary Mixer; Agitated powder mixer; Triple Roller Mill; Propeller Mixer, colloid Mill and Hand Homogeniser. Double cone mixer.

**Clarification and Filtration**-Theory of filtration, Filter media; Filter aids and selection of filters. Study of the following filtration equipments-Filter Press, sintered filters, Filter candles, Metafilter.

**Extraction and Galenicals-**

(c) Study of percolation and maceration and their modification, continuous hot extraction- Application in the preparation of tinctures and extracts.

(d) Introduction to Ayurvedic dosage forms.

Heat process-Evaporation-Definition-Factors affecting evaporation-study of evaporating still and Evaporating pan.

**Distillation**-Simple distillation and Fractional distillation, steam distillation and vacuum distillation. Study of vacuum still, preparation of purified water I.P. and water for Injection I.P. construction and working of the still used for the same.

**Introduction to drying process**-Study of Tray Dryers; Fluidized Bed Dryer, Vacuum Dryer and Freeze Dryer.

**Sterilization**-Concept of sterilization and its differences from disinfection-Thermal resistance of microorganisms. Detailed study of the following sterilization process.

Sterilization with moist heat, Dry heat sterilization, Sterilization by radiation, Sterilization by filtration and Gaseous sterilization.

**Aseptic techniques**-Applications of sterilization process in hospitals particularly with reference to surgical dressings and intravenous fluids. Precautions for safe and effective handling of sterilization equipment.

**Processing of Tablets**-Definition; different type of compressed tables and their properties. Processes involved in the production of tablets; Tablets excipients ; Defects in tablets; Evaluation of Tablets; Physical standards including Disintegration and Dissolution. Tablet coating-sugar coating; films coating, enteric coating and micro-encapsulation (Tablet coating may be de.. in an elementary

1/29/2023 manner).

**Processing of Capsules**-Hard and soft gelatin capsules; different sizes of capsules; filling of capsules; handling and storage of capsules. Special applications of capsules.

**Study of immunological products** like sera, vaccines, toxoids & their preparations.

## **PHARMACOGNOSY**

1. Definition, history and scope of Pharmacogonosy including indigenous system of medicine.
2. Various systems of classification of drugs and natural origin.
3. Adulteration and drug evaluation; significance of pharmacopoeial standards.
4. Brief outline of occurrence, distribution, outline of isolation, identification tests, therapeutic effects and pharmaceutical application of alkaloids, terpenoids, glycosides, volatile oils, tannins and resins.
5. Occurrence, distribution, organoleptic evaluation, chemical constituents including tests wherever applicable and therapeutic efficacy of following categories of drugs.

- (a) **Laxatives**- Aloes, Rhubarb, Castor oil, Ispaghula, Senna.
- (b) **Cardiotonics**- Digitalis, Arjuna.
- (c) **Carminatives & G.I. regulators**- Umbelliferous fruits, Coriander, Fennel, Ajowan, Cardamom, Ginger, Black pepper, Asafoetida, Nutmeg, Cinnamon, Clove.
- (d) **Astringents**- Catecheu.
- (e) **Drugs acting on nervous system**- Hyoscyamus, Belladonna, Aconite, Ashwagandha, Ephedra, Opium, Cannabis, Nux -vomica.
- (f) **Antihypertensive**- Rauwolfia.
- (g) **Antitussives**- Vasaka, Tolu balsam, Tulsi.
- (h) **Antirheumatics**- Guggal, Colchicum.
- (i) **Antitumour**- Vinca.
- (j) **Antileptotics**- Chaulmoogra oil.
- (k) **Antidiabetics**- Pterocarpus, Gymnema sylvestro.
- (l) **Diuretics**- Gokhru, Punarnava.
- (m) **Antidysenterics**- Ipecacuanha.
- (n) **Antiseptics and disinfectants**- Benzoin, Myrrh, Neem, Curcuma.
- (o) **Antimalarials**- Cinchona.
- (p) **Oxytocics**- Ergot.
- (q) **Vitamins**- Shark liver oil and Amla.
- (r) **Enzymes**- Papaya, Diastase, Yeast.
- (s) **Perfumes and flavoring agents**- peppermint oil, Lemon oil, Orange oil, lemon grass oil, sandalwood.

**Pharmaceutical aids**-Honey, Arachis oil, starch, kaolin, pectin, olive oil. Lanolin, Beeswax, Acacia, Tragacanth, sodium Alginate, Agar, Guar gum, Gelatin.

**Miscellaneous**- Liquorice, Garlic, picrorhiza, Dirscorea, Linseed, shatavari, shankpushpi, pyrethrum, Tobacco.

Collection and preparation of crude drugs for the market as exemplified by Ergot, opium, Rauwolfia, Digitalis, senna.

Study of source, preparation and identification of fibers used in sutures and surgical dressings- cotton, silk, wool and regenerated fibers.

Gross anatomical studies of-senna, Datura, cinnamon, cinchona, fennel, clove, Ginger, Nuxvomica & ipecacuanha.

## **BIOCHEMISTRY AND CLINICAL PATHOLOGY**

**Introduction to biochemistry.** Brief chemistry and role of proteins, polypeptides and amino acids, classification, Qualitative tests, Biological value, Deficiency diseases.

**Carbohydrates:** Brief chemistry and role of carbohydrates, classification, qualitative tests,

1/29/2023 Diseases related to carbohydrate metabolism.

**Lipids:** Brief chemistry and role of lipids, classification and qualitative tests. Diseases related to lipids metabolism.

**Vitamins:** Brief chemistry and role of vitamins and coenzymes. Role of minerals and water in life processes.

**Enzymes:** Brief concept of enzymatic action. factors affecting it.

**Therapeutics:** Introduction to pathology of blood and urine. Lymphocytes and platelets, their role in health and disease. Erythrocytes-Abnormal cells and their significance. Abnormal constituents of urine and their significance in diseases.

## **HUMAN ANATOMY AND PHYSIOLOGY**

**Scope of Anatomy and physiology.** Definition of various terms used in Anatomy. Structure of cell, function of its components with special reference to mitochondria and microsomes.

**Elementary tissues:** Elementary tissues of the body, i.e. epithelial tissue, muscular tissue, connective tissue and nervous tissue.

**Skeletal System:** Structure and function of Skelton .Classification of joints and their function. Joint disorders.

**Cardiovascular System:** Composition of blood, functions of blood elements. Blood group and coagulation of blood. Brief information regarding disorders of blood. Name and functions of lymph glands. Structure and functions of various parts of the heart .Arterial and venous system with special reference to the names and positions of main arteries and veins. Blood pressure and its recording. Brief information about cardiovascular disorders.

**Respiratory system:** Various parts of respiratory system and their functions, physiology of respiration.

**Urinary System:** Various parts of urinary system and their functions, structure and functions of kidney. Physiology of urine formation. Patho-physiology of renal diseases and edema.

**Muscular System:** Structure of skeletal muscle, physiology of muscle contraction. Names, positions, attachments and functions of various skeletal muscles. physiology of neuromuscular junction.

**Central Nervous System:** Various parts of central nervous system, brain and its parts, functions and reflexaction. Anatomy and physiology of automatic nervous system.

**Sensory Organs:** Elementary knowledge of structure and functions of the organs of taste, smell, ear, eye and skin. Physiology of pain.

**Digestive System:** names of various parts of digestive system and their functions. structure and functions of liver, physiology of digestion and absorption.

**Endocrine System:** Endocrine glands and Hormones. Location of glands, their hormones and functions. pituitary, thyroid. Adrenal and pancreas

**Reproductive system:** Physiology and Anatomy of Reproductive system.

1/29/2023 HEALTH EDUCATION AND COMMUNITY PHARMACY

Concept of health: Definition of physical health, mental health, social health, spiritual health determinants of health, indicatory of health, concept of disease, natural history of diseases, the disease agents, concept of prevention of diseases.

**Nutrition and health:** Classification of foods, requirements, diseases induced due to deficiency of proteins, vitamins and minerals-treatment and prevention.

Demography and family planning: Demography cycle, fertility, family planning, contraceptive methods, behavioral methods, natural family planning methods, chemical methods, mechanical methods, hormonal contraceptives, population problem of India.

**First aid:** Emergency treatment in shock, snake-bite, burns, poisoning, heart disease, fractures and resuscitation methods, Elements of minor surgery and dressings.

**Environment and health:** Source of water supply, water pollution, purification of water, health and air, noise, light-solid waste disposal and control-medical entomology, arthropod borne diseases and their control. rodents, animals and diseases.

**Fundamental principles of microbiology:** Classification of microbes, isolation, staining techniques of organisms of common diseases.

**Communicable diseases:** Causative agents, mode of transmission and prevention. Respiratory infections- chicken pox, measles, influenza, diphtheria, whooping cough and tuberculosis.

**Intestinal infection-**poliomyelitis, Hepatitis, cholera, Typhoid, food poisoning, Hookworm infection.

**Arthropod borne infections-**plague, Malaria, filariases.

**Surface infection-**Rabies, Trachoma, Tetanus, Leprosy.

**Sexually transmitted diseases-**Syphilis, Gonorrhoea, AIDS.

**Non-communicable diseases:** causative agents, prevention, care and control.

**Epidemiology:** Its scope, methods, uses, dynamics of disease transmission. Immunity and immunization: Immunological products and their dose schedule. Principles of disease control and prevention, hospital acquired infection, prevention and control. Disinfection, types of disinfection procedures, for-faces, urine, sputum, room linen, dead-bodies, instruments.

### PHARMACEUTICS (Dispensing Pharmacy)

**Prescriptions-**Reading and understanding of prescriptions; Latin terms commonly used (Detailed study is not necessary), Modern methods of prescribing, adoption of metric system. Calculations involved in dispensing.

**Incompatibilities in prescriptions-** study of various types of incompatibilities-physical, chemical and therapeutic.

**Posology-** Dose and dosage of drugs, factors influencing dose, calculations of doses on the basis of age, sex, surface area and veterinary doses.

**Dispensed Medications:** (Note: A detailed study of the following dispensed medication is necessary. Methods of preparation with theoretical and practical aspects, use of appropriate containers and closures. special labeling requirements and storage conditions should be highlighted).

**Powders-**Type of powders-Advantages and disadvantages of powders, Granules, cachets and tablet triturates. preparation of different types of powders encountered in prescriptions. Weighing methods, possible errors in weighing, minimum weighable amounts and weighing of a material below the minimum weighable amount, geometric dilution and proper usage and care of dispensing balance.

Liquid oral Dosage forms:

**Monophasic**-Theoretical aspects including commonly used vehicles, essential adjuvant like stabilizers, colorants and flavors, with examples.

Review of the following monophasic liquids with details of formulation and practical methods.

Liquids for internal administration Liquids for external administration or used on mucous membranes

Mixtures and concentrates, Gargles

Syrups Mouth washes

Douches

Throat-paints

Ear Drops

Elixirs

Nasal

drops

Lotions.

Sprays

Liniments

Biphasic Liquid Dosage Forms:

**Suspensions** (elementary study)-Suspensions containing diffusible solids and liquids and their preparations. Study of the adjuvant used like thickening agents, wetting agents, their necessity and quantity to be incorporated, suspensions of precipitate forming liquids like tinctures, their preparations and stability. suspensions produced by chemical reaction. An introduction to flocculated /non-flocculated suspension system.

**Emulsions**-Types of emulsions, identification of emulsion system, formulation of emulsions, selection of emulsifying agent. Instabilities in emulsions, preservation of emulsions.

Semi-Solid Dosage Forms:

**Ointments:** Types of ointments, classification and selection of dermatological vehicles.

Preparation and stability of ointments by the following processes:

Trituration

fusion

chemical reaction

Emulsification.

**Pastes:** Differences between ointments and pastes, Bases of pastes. preparation of pastes and their preservation.

**Jellies:** An introduction to the different types of jellies and their preparation. An elementary study of poultice.

**Suppositories and pessaries**-Their relative merits and demerits, types of suppositories, suppository bases, classification, properties, preparation and packing of suppositories. Use of suppositories of drug absorption.

**Dental and cosmetic preparations:** Introduction to Dentifrices, facial cosmetics, Deodorants. Antiperspirants, shampoo, Hair dressings and Hair removers.

Sterile Dosage forms:

**Parenteral dosage forms**-Definition, General requirements for parenteral dosage forms. Types of parenteral formulations, vehicles, adjuvant, processing and personnel, Facilities and quality control. Preparation of Intravenous fluids and admixtures-Total parenteral nutrition, Dialysis fluids.

**Sterility testing:** particulate matter monitoring- Faculty seal packaging.

**Ophthalmic products:** study of essential characteristics of different ophthalmic preparations. Formulation: additives, special precautions in handling and storage of ophthalmic products.

**PHARMACEUTICAL CHEMISTRY**

3. Introduction to the nomenclature of organic chemical systems with particular reference to heterocyclic system containing up to 3 rings.
4. The chemistry of following pharmaceutical organic compounds covering their nomenclature, chemical structure, uses and the important physical and chemical properties (chemical structure of only those compounds marked with asterisk (\*)). The stability and storage conditions and the different type of pharmaceutical formulations of these drugs and their popular brand names.

1/29/2023

**Antiseptics and Disinfectants**-Proflavine\*, Benzalkonium chloride, Cetrimide, Phenol, chloroxylonol, Formaldehyde solution, Hexachlophene, Nitrofurantoin.

**Sulphonamides**-Sulphadiazine, Sulphaguanidine, Phthalylsulphathiazole, Succinylsulphathiazole, Sulphadimethoxine, Sulphamethoxy-pyridazine, Co-trimoxazole, sulfacetamide\*

**Antileprotic Drugs**- Clofazimine , Thiambutosine, Dapsone\*, solapsone,

**Anti-tubercular Drugs**- Isoniazid\*, PAS\*, Streptomycin, Rifampicin, Ethambutol\*, Thiacetazone, Ethionamide, cycloserine, pyrazinamide\*.

**Antimoebic and Anthelmintic Drugs**- Emetine, Metronidazole, Halogenated hydroxyquinolines, Diloxanide furoate, Paromomycin , Piperazine\*, Mebendazole ,D.E.C.\*

**Antibiotics**- Benzyl penicillin\*, Phenoxy methyl penicillin\*, Benzathine penicillin, Ampicillin\*, Cloxacillin, Carbencicillin, Gentamicin, Neomycin, Erythromycin, Tetracycline, Cephalexin, Cephaloridine, Cephalothin, Griseofulvin, Chloramphenicol.

**Antifungal agents**- Udecylenic acid, Tolnaftate, Nystatin, Amphotericin, Hamycin.

**Antimalarial Drugs**-Chloroquine\*,Amodiaquine, Primaquine, Proguanil, Pyrimethamine\*, Quinine, Trimethoprim.

**Tranquilizers**-Chlorpromazine\*,Prochlorperazine,Trifluoperazine, Thiothixene,Haloperidol\*, Triperiodol, Oxypertine, Chlordizepoxide, Diazepam\*, Lorazepam, Meprobamate.

**Hypnotics**-Phenobarbitone\*,Butobarbitone, Cylobarbitone, Nitrazepam, Glutethimide\*, Methypylon, Paraldehyde, Triclofosodium.

**General Anaesthetics**-Halothane\*, Cyclopropane\*, Diethyl ether\*, Methohexital sodium, Thiopecal sodium, Trichloroethylene .

**Antidepressant Drugs**- Amitriptyline, Nortriptyline, Imperamine\*, Phepelzine, Tranylcypromine.

**Analeptics**- Theophylline, Caffeine\*, Coramine\*, Dextro-amphetamine.

**Adrenergic drugs**- Adrenaline\*, Noradrenaline, Isoprenaline\*, Phenylephrine, Salbutamol, Terbutaline,Ephedrine\*, Pseudoephedrine.

**Adrenergic antagonist**- Tolazoline, Propranolol\*, Practolol.

**Cholinergic Drugs**- Neostigmine\*, Pyridostigmine, Pralidoxime, Pilocarpine, Physostigmine\*.

**Cholinergic Antagonists**- Atropine\*, Hyoscine, Homatropine, Propantheline\*, Benztropine, Tropicamide,Biperiden\*.

**Diuretic Drugs**- Furosemide\*, Chlorothiazide, Hydrochlorothiazide\*, Benzthiazide, Urea\*, Mannitol\*,Ethacrynic Acid.

**Cardiovascular Drugs**- Ethylnitrite\*, Glyceryl trinitrate, Alpha methyl-dopa, Guanethidine, Clofibrate,Quinidine.

**Hypoglycemia Agents**- Insulin, Chlorpropamide\*, Tolbutamide, Glibenclamide, Phenformin\*, Metformin. **Coagulants and Anti coagulants**- Heparin, Thrombin, Menadione\*, Bisphydroxycoumarin, Warfarin sodium.

**Local Anaesthetics**- Lignocaine\*, Procaine\*, Benzocaine,



1/29/2023  
**Histamine and anti Histaminic Agents-** Histamine, Diphenhydramine\*, Promethazine, Cyproheptadine, Mepyramine\*, Pheniramine, Chlorpheniramine\*,

**Analgesics and Anti-pyretics-**Morphine, Pethidine, Codeine, Mathadone, Aspirin\*, Paracetamol, Analgin, Dextropropoxphene, Pentazocine.

**Non-steriodal anti-inflammatory agents-** Indomethacin\*, Phenylbutazone\*, Oxyphenbutazone, Ibuprofen.

**Thyroxine and Antithyroids-** Thyroxine\*, Methimazole, Methyl thiouracil, Propylthiouracil.

**Diagnostic Agents-** Lopanoic Acid, Propyliodone, Sulfobromophthalein-sodium, Indigotindisulfonate, Indigo Carmine, Evans blue, Congo Red, Fluorescein sodium.

Anticonvulsants, cardiac glycosides, Antiarrhythmic, Antihypertensives & Vitamins.

**Steroidal Drugs-** Betamethasone, Cortisone, Hydrocortisone, Prednisolone, Progesterone, Testosterone, Oestradiol, Nandrolone.

**Anti-Neoplastic Drugs-** Actinomycin, Azathioprie, Busulphan, Chloramubucil, Cisplatin, Cyclophosphamide, Daunorubicin Hydrochloride, Fluorouracil, Mercaptopurine, Methotrexate, Mytomycin.

## PHARMACOLOGY & TOXICOLOGY

### **Introduction to Pharmacology, Scope of Pharmacology.**

**Routes of administration of drugs**, their advantages and disadvantages. Various processes of absorption of drugs and the factors affecting them. Metabolism, distribution and excretion of drugs.

**General mechanism of drugs action** and their factors which modify drugs action. Pharmacological classification of drugs. The discussion of drugs should emphasize the following aspects:

#### Drugs acting on the central Nervous system:

General anaesthetics- adjunction to anaesthesia, intravenous anaesthetics. Analgesic antipyretics and non-steroidal

Anti-inflammatory drugs- Narcotic analgesics. Antirheumatic and anti-gout remedies.

Sedatives and Hypnotics, psychopharmacological agents, anticonvulsants, analeptics. Centrally acting muscle relaxants and anti-parkinsonism agents. Local anesthetics.

Drugs acting on autonomic nervous system.

Cholinergic drugs, Anticholinergic drugs, anticholinesterase drugs. Adrenergic drugs and adrenergic receptor blockers.

Neurone blockers and ganglion blockers. Neuromuscular blockers, used in myasthenia gravis.

Drugs acting on eye: Mydriatics, drugs used in glaucoma.

Drugs acting on respiratory system, Respiratory stimulants, Bronchodilators, Nasal decongestants, Expectorants and Antitussive agents.

1/29/2023  
**Autocoids:** physiological role of histamine and serotonin, Histamine and Antihistamines, prostaglandins.

Cardio vascular drugs

Cardiotonics, Antiarrhythmic agents, Anti-anginal agents, Antihypertensive agents, peripheral Vasodilators and drugs used in atherosclerosis.

Drugs acting on the blood and blood forming organs. Haematinics, coagulants and anticoagulants, Haemostatic, Blood substitutes and plasma expanders.

**Drugs affecting renal function-** Diuretics and anti-diuretics.

**Hormones and hormone antagonists-** Hypoglycemic agents, Anti--thyroid drugs, sex hormones and oral contraceptives, corticosteroids.

**Drugs acting on digestive system-**carminatives, digest ants, Bitters, Antacids and drugs used in pepticulcer, purgatives and laxatives, Anti-diarrohoeals, Emetics, Anti-emetics, Antispasmodics.

Chemotherapy of microbial diseases:

Urinary antiseptics, sulphonamides, penicillin, streptomycin, Tetracyclines and other antibiotics. Anti-tubercular agents, Antifungal agents, antiviral drugs, anti-leprotic drugs. Chemotherapy of protozoal diseases, Anthelmintic drugs. Chemotherapy of cancer.

## **PHARMACEUTICAL JURISPRUDENCE**

**Origin and nature of pharmaceutical legislation in India,** its scope and objectives. Evolution of the "Concept of pharmacy" as an integral part of the Health care system.

**Principles and significance of professional Ethics.** Critical study of the code of pharmaceutical Ethics drafted by pharmacy council of India.

**Pharmacy Act, 1948-**The General study of the pharmacy Act with special reference to Education Regulations, Working of state and central councils, constitution of these councils and functions, Registration procedures under the Act.

**The Drugs and Cosmetics Act, 1940-**General study of the Drugs and cosmetics Act and the Rules there under. Definitions and salient features related to retail and whole sale distribution of drugs. The powers of Inspectors, the sampling procedures and the procedure and formalities in obtaining licenses under the rule. Facilities to be provided for running a pharmacy effectively. General study of the schedules with special reference to schedules C,C1,F,G,J,H,P and X and salient features of labeling and storage conditions of drugs.

**The Drugs and Magic Remedies (objectionable Advertisement) Act, 1954-**General study of the Act, objectives, special reference to be laid on Advertisements, magic remedies and objections<sup>1</sup> and permitted advertisements -diseases which cannot be claimed to be cured.

**Narcotic Drugs and psychotropic substances Act, 1985-**A brief study of the act with special reference to its objectives, offences and punishment.

Brief introduction to the study of the following acts:

1/29/2023 Best Drugs (price control) order in force (as amended to date)

**Medicinal and Toilet preparations (excise Duties) Act, 1955** (as amended to date). **Medical Termination of Pregnancy Act, 1971.**

### **DRUG STORE AND BUSINESS MANAGEMENT**

**Introduction**-Trade, Industry and commerce, Functions and subdivision of commerce, Introduction to Elements for Economics and Management. Forms of Business Organizations. Channels of Distribution.

**Drug House Management**-selection of site, space Lay-out and legal requirements. Importance and objectives of purchasing, selection of suppliers, credit information, tenders, contracts and price determination and legal requirements thereto. Codification, handling of drug stores and other hospital supplies. Inventory Control-objects and importance, modern techniques like ABC,VED analysis, the lead time, inventory carrying cost, safety stock, minimum and maximum stock levels, economic order quantity, scrap and surplus disposal.

**Sales** promotion, Market Research, Salesmanship, qualities of a salesman, Advertising and Window Display.

**Recruitment, training**, evaluation and compensation of the pharmacist.

**Banking and Finance**-Service and functions of bank, Finance planning and sources of finance.

### **HOSPITAL AND CLINICAL PHARMACY**

**Hospital**-Definition, Function, classifications based on various criteria,organization, Management and health delivery system in India.

**Hospital Pharmacy:** Definition Functions and objectives of Hospital pharmaceutical services. Location,Layout, Flow chart of materials and men. Personnel and facilities requirements including equipments based on individual and basic needs. Requirements and abilities required for Hospital pharmacists.

**Drug Distribution system in Hospitals.** Out-patient service, In-patient services- types of services detailed discussion of unit Dose system, Floor ward stock system,satellite pharmacy services, central sterile services, Bed side pharmacy.

**Manufacturing:** Economical considerations, estimation of demand.

**Sterile manufacture**-Large and small volume parenterals, facilities, requirements, layout production planning, man-power requirements.

**Non-sterile manufacture**-Liquid orals, externals, Bulk concentrates. Procurement of stores and testing of raw materials.

Nomenclature and uses of surgical instruments and Hospital Equipments and health accessories.

**Hospital Formulary system** and their organization, functioning, composition.

1/29/2023

**Drug Information service** and Drug Information Bulletin.

**Surgical dressing** like cotton, gauze, bandages and adhesive tapes including their pharmacopoeial tests for quality. Other hospital supply eg. I.V. sets, B.G. sets, Ryals tubes, Catheters, Syringes etc.

**Application of computers** in maintenance of records, inventory control, medication monitoring, drug information and data storage and retrieval in hospital retail pharmacy establishment.

**Clinical Pharmacy:**

**Introduction to Clinical pharmacy practice-** Definition, scope.

**Modern dispensing aspects-** Pharmacists and patient counseling and advice for the use of common drugs, medication history.

Common daily terminology used in the practice of Medicine.

**Disease, manifestation and patho-physiology** including salient symptoms to understand the disease like Tuberculosis, Hepatitis, Rheumatoid Arthritis, Cardio-vascular diseases, Epilepsy, Diabetes, Peptic Ulcer, Hypertension.

Physiological parameters with their significance.

**Drug Interactions:** Definition and introduction. Mechanism of Drug Interaction. Drug-drug interaction with reference to analgesics, diuretics, cardiovascular drugs, Gastro-intestinal agents. Vitamins and Hypoglycemic agents. Drug-food interaction.

**Adverse Drug Reaction:** Definition and significance. Drug-Induced diseases and Teratogenicity.

**Drugs in Clinical Toxicity-** Introduction, general treatment of poisoning, systemic antidotes, Treatment of insecticide poisoning, heavy metal poison, Narcotic drugs, Barbiturate, Organophosphorus poisons.

**Drug dependences,** drug abuse, addictive drugs and their treatment, complications.

**Bio-availability of drugs,** including factors affecting it.

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**SYLLABUS FOR THE POST OF RECEPTIONIST****A. General Intelligence & Reasoning (5 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (5 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (10 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

**D. English Language (10 Marks):**

Candidates' understanding of the Basics of English Language, its vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage, etc. his/her writing ability would be tested.

**E. Basic Computer Knowledge (10 Marks):**

- General Computer Processing ability in MS-Office like Word Processing, Excel, Power Point etc. & Operating Systems.
- Professional Software/Hardware System relevant to the Post.
- Any other Computer/IT related questions.

1/29/2023

**F. Subject Knowledge (60 Marks):**

- (i) **Communication:-** Types of communication, Elements of communication, Communication process, Introduction to Public Relations, Communication Skills, Introduction to Aesthetics and, Audio-Visual Communication, Inter-Personal and Intra-Personal Communication, Communication with the Public authorities and Media, Mass Communication theories and Practices, Business and Managerial Communication, Language, Culture & Communication, Consumer/Patient Behaviour and Insights,
- (ii) **Knowledge of Hospital System:-** Hospital as an organization. Introduction of Hospital (Medical Services): Outpatient services, Inpatient services, Accident and Emergency Services, Trauma management and triage, Surgical Services, Intensive care unit, Coronary care unit, Organ transplant Cell, Bone marrow transplant unit, Kidney transplant unit, Dialysis unit, Day Care units, Nursing Services, Ward management including welfare and recreational facilities, Radio imaging and radiotherapy services, Hospital laboratory services, Physiotherapy Center, Blood bank and Transfusion Services, Medical stores and pharmacy services: Hospital formulary, Essential Drugs list (EDL), CSSD, Medical Records, Mortuary, Transportation (Ambulance services), Intramural, Extramural (Patient; Staff; Visitors), Patients' rights and responsibilities, Methods of Registration- fallacies/ difficulties and sample registration, Legal issues in Hospital Administration, Medico Legal Issues in Hospital, Laws governing Medical System (Drugs and cosmetics act, Consumer protection act, PCPNDT act), Hospitals of India: an introduction (Number, Type, Size, Distribution, Ownership, Utilization, Trends and problems, Government hospitals, Private hospitals, Specialized hospitals, Cancer Hospitals, AYUSH hospitals, Psychiatric hospitals, Children's hospitals, Maternity hospitals, General hospitals, District hospitals, Taluka hospitals and Municipal hospitals), Indian Red Cross society and hospitals, Medical boards, Entitlement of treatment, Inspection, Medical Superintendent's rounds, Hospital Standing orders, Exit interview and Discharge procedure, Code of medical ethics, Sick role of patients, End of life care decisions , Ethics of caring hospital dependent, Grievance redressed and complaint handling system, Settlement of disputes, Emergency services in the hospitals: Supreme Court guideline.
- (iii) **Hospital Front Desk Services: -**  
**Medical Billing:** Prerequisites, Introduction to Healthcare, Health Insurance Models, Patient Registration Process/Data Capture, Introduction to ICD-9-CM Coding, Introduction to CPT® Coding, Introduction to HCPCS Level II Coding, Medical Necessity, Claim Forms (CMS-1500 and UB-04), Billing, A/R and Collection Concepts, Government Carriers (Medicare, Medicaid, and TRICARE), Blue Cross/Blue Shield, Commercial Insurance Carriers, Workers' Compensation, Methods of Evaluation, Included Reading Material.  
**Hospital Information System (HIS):** National Health Program, Health scenario of India-past, present and future, Demography & Vital Statistics, Epidemiology Introduction to computer, input output devices, Processor and memory, Storage Devices, windows, MS-Word, Introduction to Excel, power-point, Operating System, Computer networks, Internet and its Applications, Application of Computers in clinical settings Medical ethics, Code of conduct, Malpractice and negligence.  
**Patient satisfaction:** Patient experience, hospitality, service excellence, Components of Service Product, Risk and Uncertainty in Health-Care Service, Definition of patient experience, Outcomes of patient experience—for the patient, for the employees, and for the organization, Definition of service, Empowering patients by enhancing perceived control.  
**First aid and basic life support:** Prevention of conditions leading to cardiac arrest, immediate recognition of cardiac arrest and activation of the emergency medical service system Basic life support (CPR and AED) Advanced life support and post-cardiac arrest care Chain of survival for all ages. The links in the chain are: prevention, immediate recognition and activation, early CPR and rapid defibrillation, and advanced life support with integrated post-cardiac arrest care Check the safety of the surroundings – Speak loudly to the person patting lightly on the shoulder.

1/29/2023

**Knowledge of different Government Health Schemes:** Ayushman Bharat scheme, Pradhan Mantri Jan Arogya Yojana (PM-JAY), National Health Scheme, Atal Ayushman Yojna, Janani Shishu Suraksha Karyakaram (JSSK), Rashtriya Kishor Swasthya Karyakram(RKSK), Rashtriya Bal Swasthya Karyakram (RBSK), Universal Immunisation Programme, Mission Indradhanush (MI), Janani Suraksha Yojana (JSY), Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA), National Leprosy Eradication Programme (NLEP), National AIDS Control Programme (NACP), National Viral Hepatitis Control Program (NVHCP), National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke (NPCDCS) etc.

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**SYLLABUS FOR THE POST OF SECURITY-CUM-FIRE JAMADAR****A. General Intelligence and Reasoning (20 Marks):**

It would include questions of both verbal and non-verbal type. The test will include questions on Semantic Analogy, Symbolic operations, Symbolic/Number Analogy, Trends, Figural Analogy, Space Orientation, Semantic Classification, Venn Diagrams, Symbolic/Number Classification, Drawing inferences, Figural Classification, Punched hole/pattern-folding & unfolding, Semantic Series, Figural Pattern-folding and completion, Number Series, Embedded figures, Figural Series, Critical Thinking, Problem Solving, Emotional Intelligence, Word Building, Social Intelligence, Coding and de-coding, Other sub-topics, if any Numerical operations.

**B. General Awareness (20 Marks):**

Questions are designed to test the candidate's general awareness of the environment around him and its application to society. Questions are also designed to test knowledge of current events and of such matters of everyday observation and experience in their scientific aspect as may be expected of an educated person. The test will also include questions relating to India and its neighbouring countries especially 10 pertaining to History, Culture, Geography, Economic Scene, General policy and scientific research.

**C. Quantitative Aptitude (20 Marks):**

Number Systems: Computation of Whole Number, Decimal & Fractions, Relationship between numbers

Fundamental arithmetical operations: Percentages, Ratio and Proportion, Square roots, Averages, Interest (Simple and Compound), Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time and work.

Algebra: Basic algebraic identities of School Algebra and Elementary surds (simple problems) and Graphs of Linear Equations.

Geometry: Familiarity with elementary geometric figures and facts: Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles.

Mensuration: Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square Base

Trigonometry: Trigonometry, Trigonometric ratios, Complementary angles, Height and distances (simple problems only) Standard Identities like  $\sin^2\theta + \cos^2\theta = 1$  etc.

Statistical Charts: Use of Tables and Graphs: Histogram, Frequency polygon, Bar-diagram, Pie-chart

**D. English Language (20 Marks):**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Misspelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**E. Subject Knowledge (20 Marks):**

Security and Fire related questions

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**SYLLABUS FOR THE POST OF SOCIAL WORKER****A. General Intelligence and Reasoning (20 Marks) :**

It would include questions of both verbal and non-verbal type. The test will include questions on analogies, similarities and differences, space visualization, problem solving, analysis, judgement, decision making, visual memory, discriminating observation, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series, non-verbal series etc. The test will also include questions designed to test the candidate's abilities to deal with abstract ideas and symbols and their relationship, arithmetical computation and other analytical functions.

**B. English Language (20 Marks) :**

Spot the Error, Fill in the Blanks, Synonyms/Homonyms, Antonyms, Spellings/ Detecting Misspelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/Passive Voice of Verbs, Conversion into Direct/Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage.

**C. Subject Knowledge (80 Marks) :**

Framework: Social Welfare- The concept of Social Welfare Social Welfare: Concept, need and objectives Philosophy of Social Welfare and Social work Social welfare in historical perspective Changing concepts and practices of social welfare in relation to social, economic and industrial development Changing political philosophy and its impact on social welfare Social Welfare and related terms:

(1) Social Development

(2) Social Planning and social administration

(3) Social reform

(4) Social Security

(5) Social Policy

(6) Social Action

(7) Social justice

(8) Social and welfare services

(9) Social legislation

(10) Human Rights Professional Social work an Introduction The concept of professional social work-alignment of scientific and humanitarian motives for promoting social welfare.

Framework: Social Welfare- The basic principles and values of professional social work and their relationship to the values of Indian Society Evolution of professional social work in UK, USA, Evolution of Professional Social work in India. Social work as a profession Nature and characteristics of a profession.

The basic values and Principles of professional social work Professional status of Social work in India Code of ethics for social workers

Methods of Social Work Primary Methods of Social work Secondary methods of Social work Integrated approach of social work Interface between Professional and voluntary social work

**Psychology and Mental Health: Fundamentals –**

Mental Health & Psychology, Psychology: Definitions and Fields, Mental Health: Meaning, Definitions, Characteristics

**Developmental Sociology:**

Characteristics Normal & Abnormal Behaviour: Meaning, Characteristics

1/29/2023 Human Development: Heredity and Environment Meaning, Definition and scope of Mental Hygiene Characteristics and Importance of Mental Hygiene Aims of Mental Hygiene

Principles of Mental Hygiene Programme of Mental Hygiene

Developmental Stages

Developmental Stages I: Prenatal, Infancy

Developmental Stages II: Babyhood, Childhood

Developmental Stages III: Puberty, Adolescence, Adulthood.

Developmental Stages III: Middle age, Old age.

Personality Development

Psycho-Sexual development theory:

1. Sigmund Freud

2. Psycho Social development theory: Erick Erickson

3. Defence Mechanism

4. Perspectives of Psychopathology Unit Social Psychology Nature and scope of social psychology Attitude: nature and measurement of attitude prejudice and discrimination Communication: concept, methods, skills in communication, major obstacles Mass communication, public opinion, propaganda, fashion, social facilitation crowd behaviour.

Normal & Abnormal Behaviour: Meaning, Characteristics

Human Development : Heredity and Environment Meaning, Definition and scope of Mental Hygiene Characteristics and Importance of Mental Hygiene Aims of Mental Hygiene Principles of Mental Hygiene Programme of Mental Hygiene Developmental Stages

Developmental Stages I : Prenatal, Infancy

Developmental Stages II : Babyhood, Childhood

Developmental Stages III : Puberty, Adolescence, Adulthood.

Developmental Stages III : Middle age, Old age.

Personality Development

1. Psycho-Sexual development theory: Sigmund Freud

2. Psychosocial development theory: Erick Erickson

3. Defence Mechanism

4. Perspectives of Psychopathology Unit Social Psychology Nature and scope of social psychology Attitude: nature and measurement of attitude prejudice and discrimination Communication: concept, methods, skills in communication, major obstacles Mass communication, public opinion, propaganda, fashion, social facilitation crowd behaviour.

Sociology: Theoretical Perspective-

Conceptual & Theoretical Perspectives to Understand Society

1. Society: Nature, Approaches, Functions, Theories of Society (Evolutionary, Cyclical, Conflict and Systems theories).
2. Social Group: Concept & Characteristics of Primary Group, Secondary Group, Reference Group.
3. Social Institutions: Family, Marriage, Kinship, Property (Present trends).
4. Culture: Concept of Culture, Traditions, Customs, Values and Norms Social System and Social Process of Contemporary Society
5. Social System & Sub system: Structure & Function, Classification of System.
6. Social Structures: Status & Role.  
Social Process: Meaning and kinds of Social Interaction, Socialization, Cooperation, Conflict, Assimilation, Social control.

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**SYLLABUS FOR THE POST OF TAILOR GRADE III****A. General Intelligence & Reasoning (15 Marks):**

It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & decoding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/pattern –folding & unfolding, Figural Pattern – folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence, Other sub-topics, if any.

**B. General Awareness (15 Marks):**

Questions in this component will be aimed at testing the candidate's general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

**C. Quantitative Aptitude (15 Marks):**

The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons , Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

**D. English Language (15 Marks):**

Candidates' understanding of the Basics of English Language, its vocabulary, grammar, sentence structure, synonyms, antonyms and its correct usage, etc. his/her writing ability would be tested.

**E. Subject Knowledge (40 Marks):****TRADE THEORY SUBJECTS –**

Tools and equipment; Sewing machinery; Sewing techniques; Methods of finishing; Components; Fibers and fabrics; Buttonholes and fasteners; Trimming materials and accessories ; Patterns; Layouts; Color scheme; Quality criteria; Safety precautions; Anatomy of human figure

1/29/2023

**TRADE PRACTICAL SUBJECTS –**

Identification and familiarization of trade tools; First aid; Measuring (body, materials and components); Making patterns (flat and block patterns); Cutting with hand-held tools; Arranging layouts; Pressing (using hand-held iron); Folding garments; Operating sewing machine (treadle, motorized and overlock); Maintaining sewing machine (treadle, motorized and overlock); Stitching by hand; Stitching by machine; Finishing; Fixing fasteners; Making buttonholes; Shaping garment; Stitching components; Finishing edges; Making corners and openings; Attaching collars and sleeves; Finishing neckline; Preparing waistline

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