अनुलग्नक – 'ए' /ANNEXURE -'A'

Syllabus

Name of the Post- HEMM Operator (Trainee)

(100 questions, MCQ of one mark each) -100 Marks

(100 प्रश्न, वस्तुनिष्ठ बहुविकल्पीय प्रश्न प्रत्येक 1 अंक का)- 100 अंक

CBT will be Common Paper for all Operators posts, the syllabus is as follows: -

1. Road Signs & Signals: Mandatory, Cautionary, Informatory signs.

2. Traffic Rules: Overtaking, parking, stopping, use of horn, speed limits, lane discipline.

3. Motor Vehicle Act Basics: Documents (RC, DL, Insurance, PUC), penalties, general road safety.

4.Elementary Knowledge of Machine: Functioning of engine, Braking System, cooling system, steering system, tyres, Gear system -Manual and Automatic, indicators, lights, rear-view mirrors and other safety devices, basic knowledge of common type of lubricant, Auto Electric with knowledge of battery, alternator etc.

5. General Awareness/ Knowledge: Current affairs, mental ability, reasoning, various Government Initiatives and Schemes etc. Awareness of Traffic rules & signals, Emission Standards, Driving rules, safety rules, meaning of different traffic signals, permissible speed at different location, Indian Emission standards for vehicles, Motor Vehicle Acts & Rules, General Science.

6.Basic Mathematical Aptitude: 10th Standard Arithmetic calculations, distance, displacement, speed/ velocity, relative velocity, acceleration related problems, Triangles, Simple trigonometry, heights and distance, Average, Time and work, Simple and Compound interest etc.

अनुलग्नक – 'बी' /ANNEXURE -'B'

Syllabus

Name of the Post- Paramedical Staff

Section A (1-70 questions, MCQ of one mark each) -70 Marks

खण्ड ए (1-70 प्रश्न, वस्तुनिष्ठ बहुविकल्पीय प्रश्न प्रत्येक 1 अंक का)- 70 अंक

Questions related to technical knowledge of discipline as per current curriculum of Indian Universities/Institutes (Indicative syllabus has been given below) / भारतीय विश्वविद्यालयों/संस्थानों के वर्तमान पाठ्यक्रम के अनुसार तकनीकी ज्ञान से संबंधित प्रश्न (सांकेतिक पाठ्यक्रम नीचे दिया गया है)

Detailed Syllabus for Section A (Technical section specific to different post) has been given in subsequent pages.

(1) Name of the Post: Staff Nurse (Trainee), T&S Gr C

1. Nursing- An Introduction
2. The Hospital, Medical and surgical asepsis, The Hospital House-Keeping
3. Body Mechanics
4. Preparation of Patient's Unit, Admission of a patient, Observation of the patient, Personal Hygiene, Nutrition, Comfort Measures, Elimination, Hot and cold Applications, Administration of Medicines, Injections
5. Discharge of Patient from Hospital
6. The Nursing Process, Care of unconscious patients, Nursing care of the aged.
7. Growth and Development of Adult (Anatomy).
8. Nursing care of Cardiovascular System disorders.
9. Nursing care of Respiratory System disorders.
10. Nursing care of Gastrointestinal System disorders.
11. Nursing care of endocrine System disorders.
12. Nursing care of Integumentary System disorders.
13. Nursing care of Neuromusculoskeletal System disorders.
14. Nursing care of Urinary/Reproductive System disorders.
15. Nursing care of Infectious disease.
16. Mental Health and Psychiatric Nursing.
17. Anatomy & Physiology.
18. Pregnancy: Abnormalities of Pregnancy, Normal Labor, Abnormal Labor.
19. Puerperium
20. The Newborn baby.
21. Miscellaneous

    Etc. as per the courses offered by the Recognized Institutes.

(2) Name of the Post: Pharmacist (Trainee), T&S Gr C

1. Introduction to different dosage forms.
2. Metrology, Packaging of pharmaceuticals, Size separation by sifting, Clarification and Filtration, Acids, Bases, and Buffers, Antioxidants, Gastrointestinal agents, Topical Agents, Dental Products, Pharmacognosy, Definition, history, and scope of Pharmacognosy.
3. Pharmaceutical aids, various systems of classification of drugs and natural origin, Adulteration and drug evaluation, Introduction to Biochemistry, Carbohydrates, Lipids, Vitamins, Enzymes, Therapeutics.

4. Scope of Anatomy and Physiology, Elementary Tissues, Skeletal Systems, Cardiovascular Systems, Respiratory Systems, Muscular Systems, Concept of Health, Nutrition and Health, First aid, Environment and Health.
5. Fundamental Principles of Microbiology, Communicable Diseases, Reading and understanding prescriptions, Study of various types of incompatibilities, Posology, Dispensed Medications, Types of Powders, Lipids and Dosage forms.
6. Introduction of nomenclature of organic chemical systems, Antiseptics and disinfectants, Antileprotic Drugs, Antibiotics, Hypnotics, Introduction to pharmacology, Scope of pharmacology, Drugs: their advantages and disadvantages, General mechanism of drug action, Drugs acting on the central nervous system, Origin and nature of pharmaceutical legislation in India, Principles and significance of professional ethics, Pharmacy Act, 1948.
7. The Drugs and Cosmetics Act, 1940, The Drugs and Magic Remedies Act, 1954, Introduction, Drug house management, Definition, function, and classification of Hospitals, Hospital pharmacy, the drug distribution system in the hospital, Manufacturing, Drug Information Service, Introduction to Clinical Pharmacy, Modern dispensing aspects.
8. General Pharmacy, Pharmacokinetics, Pharmacodynamics, Classification and pharmacological aspects of drugs, Uses of common drugs, Drug of toxicity

   Etc. as per the courses offered by the Recognized Institutes.

(3) Name of the Post: Technician (Pathological) Trainee, T&S Gr C

1. Sample collection
2. Sterilization
3. Hematology
4. Clinical pathology (urine examination, stool examination, sputum examination, semen examination, body fluids examination)
5. Biochemistry
6. Microbiology
7. Histopathology
8. Virology
9. Blood banking
10. Serology
11. Skin test
12. Measurement and volume

    Etc. as per the courses offered by the Recognized Institutes

(4) Name of the Post: Technician (Dental) Trainee, T&S Gr D

1. Applied Physics & Mechanics
2. Applied Chemistry
3. Applied Oral anatomy
4. Dental Materials & Metallurgy
5. Dental Mechanics
6. Basic Knowledge of Computers and Medical Record Management.

   Etc. as per the courses offered by the Recognized Institutes

(5) Name of the Post: Physiotherapist (Trainee), T&S Gr C

1. Human Anatomy
2. Human Physiology
3. Pathology
4. Pharmacology
5. Psychology
6. Medical and Surgical Condition
7. Biomechanics
8. Kinesiology
9. Disability Prevention
10. Rehabilitation

    Etc. as per the courses offered by the Recognized Institutes

(6) Name of the Post: Technician (Refraction/Optometry) (Trainee), T&S Grade D

1. **Ocular Anatomy & Physiology:** Structure and function of the eye, visual pathways, maintenance of corneal transparency, and aqueous humor dynamics.
2. **Physical & Geometrical Optics:** Laws of reflection/refraction, lens theories (concave, convex, toric), prisms, and mirror systems.
3. **Visual Science:** Visual acuity, accommodation, convergence, color vision, visual fields, low vision aids.
4. **Refraction & Visual Optics:** Types of refractive errors (Myopia, Hypermetropia, Astigmatism, Presbyopia).

   - Methods of Objective Refraction (Retinoscopy) and Subjective Refraction.
   - Accommodation and Convergence.

5. **Ophthalmic Instruments:** Handling and calibration of Slit Lamp, Auto refractor, Lensometer, Tonometer, and Keratometer.
6. **Ocular Diseases:** Recognition of common conditions like Cataract, Glaucoma, Conjunctivitis, and Retinal disorders.
7. **Contact Lenses & Low Vision Aids:** Basics of fitting, types of lenses, and assistive devices for the visually impaired.
8. **Binocular Vision & Squint:** Assessment of ocular motility and non-surgical management of squint.
9. **Patient Care:** Basic ophthalmic procedure, tonometry, syringing, teremetry, operating fundus camera, B scan, AB scan, teratometer, corneal staining.
10. **Sterilization & Maintenance of eye instrument:** Basics about sterilization & methods of sterilization of eye instruments.

    Etc. as per the courses offered by the Recognized Institutes.

(7) Name of the Post: Technician (Radiographer) Trainee T&S Gr C: -

1. Basic Radiographic technique
2. Image production and evaluation
3. Radiation physics including radiation protection
4. Equipment operation, newer development and quality control
5. Patient care and education
6. Anatomy of human body

   Etc. as per the courses offered by the Recognized Institutes.

(8) Name of the Post: Jr. Technician (ECG) Trainee, T&S Gr D:

1. Definition of the key terms for electrocardiography. Intro to Anatomy/Physiology of Cardiovascular System, Cardiac Cycle, Conduction, pathways, The ECG Aide/Tech Role
2. The electrical conduction system of the heart
3. Recognition, Explanation & the significance of waves, rhythms and artifacts produced by the 12-lead ECG, Name of the standard 12 leads and describe what area of the heart each lead represents.
4. Operation and Maintenance of electrocardiogram equipment. Single-channel or multichannel electrocardiograph.
5. Different types of artifact and its elimination.
6. Reading ECGs using a standard procedure.
7. Effect of medications and electrolyte disturbances which may cause changes to an ECG. Identification of the different types of abnormalities that can be determined from an ECG.
8. Explain the need for a Holter monitor, a treadmill stress test and a thallium stress test.

9. Describe how to use a Holter monitor with a patient.
10. The Purpose of Electrocardiograms, ECG terminology, Equipment/supplies required for ECG, Orientation of ECG exam room/lab, ECG instrumentation, Lead placement, Vectors, Normal ECGs, calculating rate, Introduce rhythms, Patient Preparation for ECG test.
11. Finding Heartbeat, Performing ECGs, Identifying Rhythms, Common Dysrhythmia
12. Charting ECGs, Reading ECGs, recognize interferences/malfunctions Correction of interferences/malfunctions, Recognizing, responding to, reporting emergencies, Emergency response in lab setting, ECG technique, rhythms, rates, charting, lead placement, patient preparation & education.
13. Description of machine types, description of papers, Description of jelly, Techniques of ECG recording, ECG of a Patient with pacemaker, Interpretation of Normal & Abnormal ECG

    Etc. as per the courses offered by the Recognized Institutes.

Section B (30 MCQ of one mark each) - 30 Marks

खण्ड बी (एक-एक अंक के 30 बहुविकल्पीय प्रश्न) - 30 अंक

This section is common for all Posts, will carry 30 questions belonging to / यह अनुभाग सभी पदों के लिए समान है, जिसमें 30 प्रश्न होंगे:

I. **General Knowledge** - About India and its international relations, General Science ,Indian Geography, Indian Economy, Art and Culture and Indian History, etc/ **सामान्य ज्ञान** - भारत और उसके अंतरराष्ट्रीय संबंध, सामान्य विज्ञान, भारतीय भूगोल, भारतीय अर्थव्यवस्था , कला और संस्कृति और भारतीय इतिहास आदि।

II. **General Awareness** - About Sports, Defence, Books, Prizes, About Indian democracy, Current Affairs (Sports, Defence, Books, Prizes) and Indian Polity, etc./ **सामान्य जागरूकता** - खेल, रक्षा, पुस्तकें, पुरस्कार, भारतीय लोकतंत्र के बारे में, करंट अफेयर्स (खेल, रक्षा, पुस्तकें, पुरस्कार) और भारतीय राजनीति, आदि।

III. **Reasoning, Verbal & Mental Ability** - Synonym & Antonym (Hindi/English), Grammar, Relationship etc./ **तर्क, मौखिक और मानसिक क्षमता -** पर्यायवाची और विलोम (हिंदी/अंग्रेजी), व्याकरण, संबंध इत्यादि ।

IV. **Quantitative Aptitude** - Work relationship, Profit & Loss, Speed etc / **मात्रात्मक रुझान** - वर्क रिलेशनशिप, लाभ एवं हानि, गति इत्यादि।

अनुलग्नक – 'सी' /ANNEXURE -'C'

Syllabus
Name of the Post- Overseer (Civil)

Section A (1-70 questions, MCQ of one mark each) -70 Marks

खण्ड ए (1-70 प्रश्न, वस्तुनिष्ठ बहुविकल्पीय प्रश्न प्रत्येक 1 अंक का)- 70 अंक

Questions related to technical knowledge of discipline as per current curriculum of Indian Universities/Institutes (Indicative syllabus has been given below) / भारतीय विश्वविद्यालयों/संस्थानों के वर्तमान पाठ्यक्रम के अनुसार तकनीकी ज्ञान से संबंधित प्रश्न (सांकेतिक पाठ्यक्रम नीचे दिया गया है)

Detailed Syllabus for Section A (Technical section specific to different post) has been given in subsequent pages.

Name of the Post- Overseer (Civil) Grade-C

1. **Civil Engineering Building Materials**: Physical and Chemical properties, classification, standard tests, uses and manufacture/quarrying of materials e.g. building stones, silicate based materials, cement, asbestos products, timber and wood based products, laminates, bituminous materials, paints, varnishes, etc.
2. **Estimating, Costing and Valuation**: Estimate, glossary of technical terms, analysis of rates, methods and unit of measurement, Items of work – earthwork, Brick work (Modular & Traditional bricks), RCC work, Shuttering, Timber work, Painting, Flooring, Plastering. Boundary wall, Brick building, Water-Tank, Septic tank, bar bending schedule, Centre line method, Mid-section formula, Trapezoidal
3. Formula, Simpson's rule. Cost estimate of Septic tank, flexible pavements, Tube well, isolated and combined footings, Steel Truss, Piles and pile-caps. Valuation – Value and cost, scrap value, salvage value, assessed value, sinking fund, depreciation and obsolescence, methods of valuation.
4. **Surveying**: Principles of surveying, measurement of distance, chain surveying, working of prismatic compass, compass traversing, bearings, local attraction, plane table surveying, theodolite traversing, adjustment of theodolite, Levelling, Definition of terms used in levelling, contouring, curvature and refraction corrections, temporary and permanent adjustments of dumpy level, methods of
5. Contouring, uses of contour map, tachometric survey, curve setting, earth work calculation, advanced surveying equipment.
6. **Soil Mechanics**: Origin of soil, Definitions-void ratio, porosity, degree of saturation, water content, specific gravity of soil grains, unit weights, density index and interrelationship of different parameters, Grain size distribution curves and their uses. Index properties of soils, Atterberg's limits, ISI soil classification and plasticity chart. Permeability of soil, coefficient of permeability, determination of coefficient of permeability, Unconfined and confined aquifers, effective stress, quick sand, consolidation of soils, Principles of consolidation, degree of consolidation, pre-consolidation pressure, normally consolidated soil, e-log p curve, computation of ultimate settlement. Shear strength of soils, direct shear test, Vane shear test, Triaxial test. Soil compaction, Laboratory compaction test, Maximum dry density and optimum moisture content, earth pressure theories, active and passive earth pressures, bearing capacity of soils, plate load test, standard penetration test.
7. **Hydraulics**: Fluid properties, hydrostatics, measurements of flow, Bernoulli's theorem and its application, flow through pipes, flow in open channels, weirs, flumes, spillways, pumps and turbines.
8. **Irrigation Engineering**: Definition, necessity, benefits, types and methods of irrigation, Hydrology –Measurement of rainfall, run off coefficient, rain gauge, losses from precipitation – evaporation, infiltration, etc. Water requirement of crops, duty, delta and base period, Command area, Time factor, Crop ratio, Overlap allowance,

Irrigation efficiencies. Different type of canals, types of canal irrigation, loss of water in canals. Canal lining – types and advantages. Shallow and deep to wells, yield from a well. Weir and barrage, Failure of weirs and permeable foundation, Slit and Scour, Kennedy's theory of critical velocity. Lacey's theory of uniform flow. Definition of flood, causes and effects, methods of flood control, water logging, preventive measure. Land reclamation, Characteristics of affecting

9. Fertility of soils, purposes, methods, description of land and reclamation processes.

10. **Transportation Engineering**: Highway Engineering – cross sectional elements, geometric design, types of pavements, pavement materials – aggregates and bitumen, different tests, Design of flexible and rigid pavements – Water Bound Macadam (WBM) and Wet Mix Macadam (WMM), Gravel Road, Bituminous construction, Rigid pavement, pavement maintenance, Highway drainage, Railway
11. Engineering- Components of permanent way – sleepers, ballast, fixtures and fastening, track geometry, points and crossings, track junction, stations and yards. Traffic Engineering – Different traffic survey, speed-flow-density and their interrelationships, intersections and interchanges, traffic signals, traffic operation, traffic signs and markings, road safety.

12. **Environmental Engineering**: Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage systems, sewer appurtenances, sewage and effluent treatments. Surface water drainage. Solid waste management – types, effects, engineered management system. Air pollution – pollutants, causes, effects, control.

13. **Theory of structures**: Elasticity constants, types of beams – determinate and indeterminate, bending moment and shear force diagrams of simply supported, cantilever and over hanging beams. Moment of area and moment of inertia for rectangular & circular sections, bending moment and shear stress for tee, channel and compound sections, chimneys, dams and retaining walls, eccentric loads, slope.
14. Deflection of simply supported and cantilever beams, critical load and columns, Torsion of circular section.

15. **Concrete Technology**: Properties, Advantages and uses of concrete, cement aggregates, importance of water quality, water cement ratio, workability, mix design, storage, batching, mixing, placement, compaction, finishing and curing of concrete, quality control of concrete, hot weather and cold weather concreting, repair and maintenance of concrete structures.

16. **RCC Design**: RCC beams-flexural strength, shear strength, bond strength, design of singly reinforced and double reinforced beams, cantilever beams, T-beams, lintels, One way and two way slabs, isolated footings, Reinforced brick works, columns, staircases, retaining wall, water tanks.

17. **Steel Design**: Steel design and construction of steel columns, beams, roof trusses, plate girders.

Section B (30 MCQ of one mark each) - 30 Marks

खण्ड बी (एक-एक अंक के 30 बहुविकल्पीय प्रश्न) - 30 अंक

This section, will carry 30 questions / इस अनुभाग 30 प्रश्न होंगे:

I. **General Knowledge** - About India and its international relations, General Science ,Indian Geography, Indian Economy, Art and Culture and Indian History, etc/ **सामान्य ज्ञान** - भारत और उसके अंतरराष्ट्रीय संबंध, सामान्य विज्ञान, भारतीय भूगोल, भारतीय अर्थव्यवस्था , कला और संस्कृति और भारतीय इतिहास आदि।

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III. **Reasoning, Verbal & Mental Ability** - Synonym & Antonym (Hindi/English), Grammar, Relationship etc./ **तर्क, मौखिक और मानसिक क्षमता -** पर्यायवाची और विलोम (हिंदी/अंग्रेजी), व्याकरण, संबंध इत्यादि ।

IV. **Quantitative Aptitude** - Work relationship, Profit & Loss, Speed etc / **मात्रात्मक रुझान** - वर्क रिलेशनशिप, लाभ एवं हानि, गति इत्यादि।