

SYLLABUS FOR JR. EXECUTIVE ASSISTANT

Duration of Written Test- 2 ½ Hours		Total- 120 Marks	
Sl. No	Descriptive		Marks
1.	General Awareness	:	(20 Marks)
	a) Current national events b) Current international events c) Physical Geography of India & Odisha d) Scientific Invention & use of Science in everyday life e) Issues of environment, Ecology, Bio-diversity & Climate Change f) Books and Authors		
2.	Reasoning & Mental Ability	:	(20 Marks)
	A. Verbal I. Number Series II. Alphabet Series III. Test of Direction Sense IV. Coding-decoding V. Number Ranking VI. Arithmetic Reasoning VII. Problem of Age Calculation		
	B. Non-verbal I. Non-verbal Series II. Mirror Images III. Cubes & Dice IV. Grouping Identical Figures V. Embedded Figures etc		
3.	Quantitative Aptitude	:	(30 Marks)
	a) Ratio and Proportion b) Time and Work c) Speed and Distance d) Square roots e) Percentages and Averages f) Profit, Loss and Discount g) Probability		
4.	English	:	(50 Marks)
	A. Grammar		
	I. Fill in the blanks with articles II. Verb III. Agreement of the verb with subject IV. Adverb V. Preposition VI. Tenses VII. Conjunction VIII. One word substitution IX. Synonyms & Antonyms X. Correct the sentence		
	B. Comprehension		
	C. Sentence Re-arrangement		

SYLLABUS FOR JR. ENGINEER (MECHANICAL)**Duration of Written Test- 2 Hours****Total- 120 Marks****A. Core Subject****(60 Marks)**

1. **Engineering Mechanics:** Static Mechanics, Resolution of force, Moment, Equilibrium, Friction, Centroid and Moment of Inertia, Dynamics, Simple Machines.
2. **Strength of Material:** Simple stress & strain, Thin Cylinder and spherical shell under internal pressure, Two dimensional stress systems, Bending moment & shear force, Theory of simple bending, combined direct & bending stresses, Torsion.
3. **Engineering Material:** Engineering materials and their properties, Ferrous Materials and alloys, Iron-Carbon system, Crystal imperfections, Heat Treatment, Non-ferrous alloys, Bearing Material, Spring Materials, Polymers, Composites and Ceramics, Surface preparation and Industrial painting.
4. **Thermal Engineering I:** Thermodynamics Concepts and terminology, Energy and Work Transfer, Laws of Thermodynamics, Working Substances, Properties of gases, Ideal Gases and real gases, IC engine, Gas power cycle, Fuels and combustions.
5. **Production Technology:** Metal Forming Processes, Welding, Casting, Powder Metallurgy, Press Work, Jigs and fixtures.
6. **Theory of Machine:** Simple mechanism, Friction, Power Transmission, Governors and Flywheel, Balancing of Machine, Vibration of machine parts.
7. **Manufacturing Technology:** Tool Materials, Cutting Tools, Lathe Machine, Shaper, Planning Machine, Milling Machine, Slotter, Grinding, Internal Machining Operations (Drilling, Boring, Broaching), Surface finish, lapping.
8. **Thermal Engineering II:** Properties of Vapour and Vapour Power Cycles, Steam Generators, Steam Turbines, Gas Power Cycles, Fuels and Combustion, Heat Transfer, Refrigeration Cycles, Air Compressors.
9. **Fluid Mechanics and Hydraulics Machines:** Properties of Fluid, Fluid Pressure and its measurements, Hydrostatics, Fluid Flow, Flow through pipe, Impact of jets, Hydraulic turbines, Hydraulic Pumps.
10. **Environmental Studies:** Renewable and non renewable resources, ECO Systems, Biodiversity, Environmental Pollution, Disaster Management, Social Issues and the Environment, Sustainable development, Water conservation, Rain water harvesting.
11. **Machine Design:** Design of fastening elements, Design of shafts and keys, Design of belt drivers and pulleys, Design of closed coil helical spring and leaf spring.
12. **Industrial Engineering and Quality Control:** Plant location and Layout, Operations Research, Inventory Control, Plant maintenance, Inspection and Quality Control, Contemporary Quality Management concepts.
13. **Automobile Engineering:** Automobiles: Definition, need and classification, Layout of automobile chassis with major components, Transmission system, Braking system, Auto electric system, Suspension System, Cooling and Lubrication, Fuel and Ignition system.

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B.	General Awareness	:	(15 Marks)
	a) Current national events b) Current international events c) Physical Geography of India & Odisha d) Scientific Invention & use of Science in everyday life e) Issues of environment, Ecology, Bio-diversity & Climate Change f) Books and Authors		
C.	Reasoning & Mental Ability	:	(15 Marks)
	A. Verbal I. Number Series II. Alphabet Series III. Test of Direction Sense IV. Coding-decoding V. Number Ranking VI. Arithmetic Reasoning VII. Problem of Age Calculation		
	B. Non-verbal I. Non-verbal Series II. Mirror Images III. Cubes & Dice IV. Grouping Identical Figures V. Embedded Figures etc		
D.	Quantitative Aptitude	:	(15 Marks)
	a) Ratio and Proportion b) Time and Work c) Speed and Distance d) Square roots e) Percentages and Averages f) Profit, Loss and Discount g) Probability		
E.	English	:	(15 Marks)
	Grammar		
	I. Fill in the blanks with articles II. Verb III. Agreement of the verb with subject IV. Adverb V. Preposition VI. Tenses VII. Conjunction VIII. One word substitution IX. Synonyms & Antonyms X. Correct the sentence		

SYLLABUS FOR JR. ENGINEER (ELECTRICAL)**Duration of Written Test- 2 Hours****Total- 120 Marks****A. Core Subject**

(60 Marks)

1. **Basic concepts:** Concepts of resistance, inductance, capacitance, and various factors affecting them. Concepts of current, voltage, power, energy and their units.
2. **Circuit law:** Kirchhoff's law, Simple Circuit solution using network theorems.
3. **Magnetic Circuit:** Concepts of flux, mmf, reluctance, Different kinds of magnetic materials, Magnetic calculations for conductors of different configuration e.g. straight, circular, solenoidal, etc. , Electromagnetic induction, self and mutual induction.
4. **AC Fundamentals:** Instantaneous, peak, R.M.S. and average values of alternating waves, Representation of sinusoidal wave form, simple series and parallel AC Circuits consisting of R.L. and C, Resonance, Tank Circuit. Poly Phase system — star and delta connection, 3 phase power, DC and sinusoidal response of R-L and R-C circuit.
5. **Measurement and measuring instruments:** Measurement of power (1 phase and 3 phases, both active and re-active) and energy, 2 wattmeter method of 3 phase power measurement, Measurement of frequency and phase angle, Ammeter and voltmeter (both moving oil and moving iron type), extension of range wattmeter, Multimeters, Megger, Energy meter AC Bridges, Use of CRO, Signal Generator, CT, PT and their uses, Earth Fault detection.
6. **Electrical Machines:**
 - (a) D.C. Machine — Construction, Basic Principles of D.C. motors and generators, their characteristics, speed control and starting of D.C. Motors. Method of braking motor, Losses and efficiency of D.C. Machines.
 - (b) 1 phase and 3 phase transformers — Construction, Principles of operation, equivalent circuit, voltage regulation, O.C. and S.C. Tests, Losses and efficiency. Effect of voltage, frequency and wave form on losses. Parallel operation of 1 phase /3 phase transformers. Auto transformers.
 - (c) 3 phase induction motors, rotating magnetic field, principle of operation, equivalent circuit, torque-speed characteristics, starting and speed control of 3 phase induction motors. Methods of braking, effect of voltage and frequency variation on torque speed characteristics.

Fractional Kilowatt Motors and Single Phase Induction Motors: Characteristics and applications.
7. **Synchronous Machines:** Generation of 3-phase e.m.f. armature reaction, voltage regulation, parallel operation of two alternators, synchronizing, control of active and reactive power, Starting and applications of synchronous motors.

8. **Generation, Transmission and Distribution:** Different types of power stations, Load factor, diversity factor, demand factor, cost of generation, interconnection of power stations. Power factor improvement, various types of tariffs, types of faults, short circuit current for symmetrical faults, Switchgears — rating of circuit breakers, Principles of arc extinction by oil and air, H.R.C. Fuses, Protection against earth leakage/ over current, etc. Buchholtz relay, Merz-Price system of protection of generators & transformers, protection of feeders and bus bars., Lightning arresters, various transmission and distribution system, comparison of conductor materials, efficiency of different system. Cable — Different type of cables, cable rating and derating factor.
9. **Estimation and costing:** Estimation of lighting scheme, electric installation of machines and relevant IE rules, Earthing practices and IE Rules.
10. **Utilization of Electrical Energy:** Illumination, Electric heating, Electric welding, Electroplating, Electric drives and motors.
11. **Basic Electronics:** Working of various electronic devices e.g. P N Junction diodes, Transistors (NPN and PNP type), BJT and JFET., Simple circuits using these devices.
12. **Electrical Engineering Materials:** Conducting materials, semi conducting materials, Insulating materials, dielectric materials, materials for special purpose.
13. **Instrumentation And Control:** Sensor & transducer, oscilloscope, measurement on non-electric quantities, control system, servo mechanism, mathematical model of physical system, servo motor, block diagram of control system, stability of control system.
14. **Power Electronic & Drives:** Thyristor, Firing ckt of thyristor, Phase controlled rectifier, inverter, chopper, cycloconverter, power semiconductor devices, thyristor application, AC & DC drives

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C.	<u>Reasoning & Mental Ability</u>	:	(15 Marks)
	A. Verbal I. Number Series II. Alphabet Series III. Test of Direction Sense IV. Coding-decoding V. Number Ranking VI. Arithmetic Reasoning VII. Problem of Age Calculation		
	B. Non-verbal I. Non-verbal Series II. Mirror Images III. Cubes & Dice IV. Grouping Identical Figures V. Embedded Figures etc		

D.	<u>Quantitative Aptitude</u>	:	(15 Marks)
	<ul style="list-style-type: none"> a) Ratio and Proportion b) Time and Work c) Speed and Distance d) Square roots e) Percentages and Averages f) Profit, Loss and Discount g) Probability 		
E.	<u>English</u>	:	(15 Marks)
	Grammar		
	<ul style="list-style-type: none"> I. Fill in the blanks with articles II. Verb III. Agreement of the verb with subject IV. Adverb V. Preposition VI. Tenses VII. Conjunction VIII. One word substitution IX. Synonyms & Antonyms X. Correct the sentence 		

SYLLABUS FOR JR. NURSE**Duration of Written Test- 2 Hours****Total- 120 Marks****A. Core Subject****(60 Marks)**

1. **Nursing Art:** Preparation of patient unit, Admission of patient, Observation, Personal hygiene, Nutrition, Comfort major, Elimination, Hot & Cold application, administration of medicine, Injection, Skeletal skull and maternal pelvis, Antenatal care, Normal labour, Antepartum Hemorrhage, Gynaecology, Multiple pregnancy, Complication third stage of labour, Abnormal Puerperium, Operating obstetrics.
2. **Anatomy Physiology:** Cardiovascular system, lymphatic system, Nervous system, Endocrine system, Respiratory system, Digestive system, Urinary system, Skin, Immunity, Reproductive system, Muscular system.
3. **Microbiology:** Fungi, Bacteria, Virus, Parasites, Common parasitic diseases- Protozoal & Helminthic.
4. **Medical Surgical Nursing:** Common problems of adult patients, Respiratory nursing, Oncological nursing, Alimentary nursing, Gastrointestinal nursing, Hepatobiliary pancreatic nursing, Orthopedic nursing, Neurological nursing, Endocrinological nursing, Urological nursing, Renal Nursing, Dermatological nursing, Ophthalmic nursing, Cardiovascular resuscitation.
5. **Mental Health:** Principles and concept, Nurse patient relations, Schizophrenia Management, Psychotic disorder, Management of Mood disorder, Neurotic, Stress related, Substance use, Personality, Sexual, Eating disorder, Organic brain disorder management, legal issue in mental health nursing, Community mental health nursing.
6. **Midwifery &Gynaecology:** Anatomy of female reproductive system, Fundamentals of reproduction, Diagnosis of pregnancy, Fetus in utero, The fetus.
7. **Paediatric Nursing:** Immunization, Nutrition, Newborn infant, Healthy child, Sick child, Congenital anomalies, Nutrition deficiency disorder.
8. **Community Health Nursing:** Health System in India, Health care delivery system, Health planning in India, Specialized community health services and Nurse's role, National health problem, National health programs, Demography and family welfare, Health Team, Health Information System, Health Agencies.

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C.	<u>Reasoning & Mental Ability</u>	:	(15 Marks)
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	a) Ratio and Proportion b) Time and Work c) Speed and Distance d) Square roots e) Percentages and Averages f) Profit, Loss and Discount g) Probability		
E.	<u>English</u>	:	(15 Marks)
	Grammar		
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SYLLABUS FOR JR. PHARMACIST**Duration of Written Test- 2 Hours****Total- 120 Marks****A. Core Subject****(60 Marks)****1. Pharmaceutics-I**

- a) Metrology
- b) Sterilization
- c) Processing of Tablets
- d) Processing of Capsules

2. Pharmaceutical Chemistry- I

- a) Acids, Bases and Buffers, Boric Acid, Hydrochloric Acid, Strong Ammonium Hydroxide, Calcium Hydroxide, Sodium Hydroxide and official Buffers.
- b) Antioxidants, Hypophosphorous acid, Sulfur dioxide sodium bisulphate, Sodium metabisulfate, Sodium thiosulphate, Nitrogen and Sodium Nitrite.
- c) Gastrointestinal Agents, Topical Agents, Dental Products, Inhalants, Respiratory Stimulants Expectorants and Emetics, Antidotes.
- d) Electrolytes used for Replacement Therapy, Physiological Acid Base- Balance and Electrolytes used.

3. Human Anatomy and Physiology

- a) Structure and Functions of Various Parts of Heart, Respiratory Systems, Urinary Systems, Skeletal Muscle, Central Nervous System, Brain, Taste, Smell, Ear, Eye & Skin.
- b) Digestive System, Endocrine Glands and Hormones and Reproduction System.

4. Pharmacognosy

- a) Occurance, distribution Organoleptic, evaluation- Laxative, Cardiotonics, Carminatives and G. I regulations, Astringents, Drugs acting on Nervous System
- b) Anti Hypertensive, Antitussives, Anti rheumatics, Anti tumour, Antileprotics, Anti Diabetics, Antidysenterics, Anti septic and disinfectants, Anti malarials, Oxytocics, Vitamins, Enzymes, Perfumes and Flavouring Agents, Pharmaceutical Aids, Miscellaneous.
- c) Study of Source, Preparations & identification of Fibres used in sutures and surgical dressing.
- d) Gross anatomical Studies of Senna, Dhatura, Cinnamon, Clove, Ginger, Nux-vomica and Ipecacuanhe.

5. Biochemistry and Clinical Pathology

- a) Brief Chemistry and role of proteins, Polypeptides and Amino Acids, Carbohydrates, Vitamins and Co-enzymes.
- b) Brief Concepts of normal and abnormal metabolism of Proteins, Carbohydrates and Lipids.
- c) Introduction to pathology of Blood and Urine- Lymphocytes and Platelets, Erythrocytes, Abnormal Constituents of Urine and their Significance in disease.

6. Health Education And Community Pharmacy

- a) Concept of Nutrition and Health
- b) First Aid
- c) Communicable Diseases- Respiratory Infection, Intestinal Infections, Arthropod Bone Infections, Surface Infections, Sexually transmitted diseases.
- d) Non-communicable diseases

7. **Pharmaceutics-II**

- a) Dispensing Pharmacy- Prescription, Incompatibilities in prescriptions, Posology.
- b) Dispensing Medications- Powders, Liquid oral Dosage forms, Ointments, Pastes, Jellies, Suppositories and pessaries.
- c) Sterile dosage forms- Parenteral, Sterility testing, ophthalmic products.

8. **Pharmaceutical Chemistry- II:** Pharmaceutical Organic Chemistry- Antiseptics and Disinfectants, Sulfonamides, Antileprotic Drugs, Antitubercular drugs, Anti Amoebic & Antihelminthic Drugs, Antibiotics, Antifungal Agents, Antimalarials drugs, Hypnotics, General Anesthetics, Local Anesthetics, Anti Depressant Drugs, Diuretic Drugs, Cardiovascular Drugs, Hypoglycemic Agents, Coagulants & Anticoagulants, Histamine & Antihistamine Agents, Analgesics and Antipyretics, Non Steroidal & Inflammatory Agents, Thyroxine & Anti Thyroids, Diagnostic Agents, Anti Neoplastic drugs.

9. **Pharmacology & Toxicology**

- a) General Mechanism of Drugs Action
- b) Pharmacological Classification- Local Anaesthetics, Respiratory System, Cardiovascular, Hormones & Hormone Antagonists.
- c) Chemotherapy of Microbial Disease, Protozoal Diseases, Cancer.
- d) Disinfectants & Antiseptics

10. **Pharmaceutical Jurisprudence**

- a) Pharmacy act, 1948
- b) The Drugs & Cosmetics Act, 1940
- c) The Drugs & Magic remedies (Objectionable Advertisement) Act, 1954
- d) Narcotic Drugs & Psychotropic Substances Act, 1985
- e) Poisons Act, 1919
- f) Medicinal & Toilet preparations (excise duties) Act, 1955, Medical Termination of Pregnancy Act, 1971

11. **Drug Store and Business Management:** Forms of Business Organisation, Channels of Distribution, Drugs House Management, Cash Book, General Ledger and Trial Balance

12. **Hospital and Clinical Pharmacy**

- a) Drug distribution system in Hospitals- Out Patients service, inpatients service
- b) Manufacturing- Economical Considerations, Sterile Manufacture, Non- Sterile Manufacture, Procurement of stores and Testing Raw Materials
- c) Pharmacy Therapeutic Committee (PTC)
- d) Surgical Dressing, Application of Computers in Hospital Pharmacy
- e) Drugs Interactions, Drug-Drug Interaction, Drug Food interaction, Mechanism of drug interaction
- f) Adverse Drug reaction, Drugs in Clinical Toxicity
- g) Drug Dependence, Drug Abuse, Addictive Drugs & Treatment.

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