

Part (A). Basic Science

1. **Mathematics** : Arithmetic, Geometric and Harmonic Progressions, Binomial expansion, Matrices, Elementary operations, Rank of a matrix, Parabola, Ellipse and Hyperbola, Differentiation of a function, implicit function, parametric function. Successive differentiation. Maxima and Minima, Partial Differentiation, Definite and indefinite Integration. First order and first degree ordinary differential equations.
2. **Physics** : Units and Dimensions with Dimensional analysis and their Limitation, Motion in one and two dimensions and Newton's Laws of Motion, Work and Energy and Conservation Laws of energy, Properties of matter i.e. Elasticity, Surface tension and viscosity in fluent motion, waves and vibration, Characteristics of waves and Simple Harmonic Motion, Rotational Motion, Conservation on angular momentum, Gravitation, Newton's law of gravitation, Kepler's law and Satellite, Heat and temperature, measurement of temperature and mode of transfer of heat and their laws, geometric optics and simple optical instruments, Simple Law of electrostatics and their use to find the E and potential, Capacitors and dielectric constant, Laser, its principle and use, Superconductivity, Conventional and Non-Conventional energy sources.
3. **Chemistry** : Hard and soft water, types of hardness, Disadvantages of hardness of water, it causes and its remedies, Brief introduction of the term- Acidity, Basicity, Ionization, Equivalent weight, PH value, Definition of symbol, formula, Valency and Chemical equations.
4. **Communication Skills** : Words, Antonyms and Synonyms, Communication Technique Grammatical ability, Preposition, Correction, Voice, Narration, Punctuation, Tenses, Correction incorrect sentences.
5. **General Awareness** : General awareness about Technical Education in Haryana such as: Name of polytechnic, Number of polytechnic and Sanction intake, Eligibility for admission to LEET, General information about Haryana, Name of Minister/Chief Minister/Governor, No of Districts and Tehsils/Blocks/villages, Total population of State/Area of state/Boundary states of Haryana, History of Haryana General awareness about country, General awareness about Polytechnics.

Part (B) Electronic Stream Courses

1. **Elements of Electrical Engineering** : Electrical and Magnetic circuits, EMF, Kirchhoff's law and Faraday's Laws, Network Theorems, AC circuit, RMS value, Behavior of RLC elements, Series and parallel circuits, series and parallel resonance circuits, Transformers, Introduction to single phase and three phase transformers, DC Machines, Theory, Constructions and Operation of three phase induction motors, Transmission and Distribution, Advantages of high voltages for transmission, Comparison of 3 phase, single phase, 2 Phase and three wire D.C. Systems.
2. **Elements of Electronic Engineering** : Measurements & Instrumentations, Errors, standards, accuracy precision resolution, Ammeters, Voltmeters, watt meters, Energy meters, insulation tester, multimeter, CRO, measurement of V, I & F on CRO low, medium & high resistance measurement, AC bridges, Transducers for measurement of temperature, displacement, communication system, types of modulation, demodulation, Analog Electronics, Semiconductor diode circuits, zener diode and zener diode circuits,

LED, photo diode, BJT, FET & their configurations and characteristics, Biasing, small signal and Large signal amplifier, OPAMPS, oscillators, regulated power supply.

3. **Element of Computer Engineering** : Fundamental of computer, Organization of Digital Computers, Data Processing, High level Language, Translators, compilers, Interpreter, algorithms, Flow Charting, Instruction, assembly language programming. Computer organization, Overview of registers, bus organized computers, Instruction set, Instruction execution, Hard-wired and Micro programmed control units, processor. Programming in C, Steps in program development, flowcharting, algorithm, C language: Data types, Console I/O program control statements, arrays, structures, unions functions, pointers, pointers, enumerated data types and type statement, File handling, C standard library and header files. LAN, WAN, Internet & Applications.

Part (C) Mechanical Stream Courses

1. **Elements of Mechanical Engineering** : Applied mechanics, Frictions, Laws of friction, Friction applications, centroid of a plane area, simple machines, screw jack, wheel & axles, system of pulleys, projectile, work, power, energy. Strength of materials, stress, strain, Hooks law, stress-strain diagram, temperature stresses, Composite section, relation between elastic constants, (E.C.G.) Resilience, principal stresses, principal planes, B.M. & S.F. diagram for simply supported and Cantilevers, beams, Columns & struts. Thermodynamics, first law of thermodynamics, second law of thermodynamics, zeroth law, steam properties, Diesel cycle, otto cycle. Mode of heat Transfer (Conduction, Convection, Radiation). Fluid Mechanics, properties of fluid, viscosity, Newtonian and Non-Newtonian fluids, Bernoulli's theorem, Types of fluid flows, Dimension less numbers, Measurement of fluid flow by the pilot tube, Venturimeter, Darcy equation.
2. **Elements of Production Engg./Manufacturing Processes** : Material science, Engg. Materials, Mechanical properties of materials, hardness testing methods, heat treatment, hardening annealing, tempering, carburizing, Normalizing. Engineering Graphics & Drawing, First angle and third angle projection methods orthographic views, Isometric views, Conventions for lines and materials, projection on lines and solids. Foundry pattern and their types, molds and molding materials. Plastic & their properties, Various molding process of plastic. Industrial Management, Types of Organizational structure, Qualities & responsibilities of good leader, methods of quality control, productivity.
3. **Automobile Engineering** : Power flow in auto mobile. Gear box & its types, use and types of breaks, types of clutches, basic knowledge of differential, cooling, lubrication of engine, Types of wheels and tyres used in Automobile, major automobile industries.

Part (D) Other Engineering Courses

1. **Civil Engineering Courses** : Introduction of brick, raw materials for bricks, manufacturing, of bricks, bricks work in foundation. Index properties of soil, seepage of soil. Water demand for industrial/commercial & domestic purposes, per capita demand, various sources of water, treatment & disposal of sludge. types of foundation (Design is not included), Repair & Maintenance of Buildings, Basic principles of surveying chain surveying, Bench Mark, compass surveying, Basic of RCC (elementary knowledge) different grades of concrete, workability, mixing of concrete, compaction of concrete.

Classification & suitability of various types of doors, roofs. Name of earth moving machinery, different types of road material, flexible & rigid pavements, classification of bridges. Water recruitment of crops, methods of irrigations
Concept/meaning/need/competencies/qualities of Entrepreneur classification of dams & site selection for reservoir classifications of rocks. various types of cement & their uses. Basic of Ecology, pollution of water, its causes & remedial near, Role of non-conventional sources of energy.

2. **Textile Engineering Courses :** Different types of fibers, Fabric & yarn manufacturing & performance, Weaving Technology, Textile testing & quality control, Modern methods in yarn products, Bleaching, Dying & Printing.
3. **Chemical/Printing Engineering :** Elementary knowledge of ; Fluid flow, Chemical process industry, Agro based industries, Petro Chemicals introduction of printing machines/presses, types of printing.
4. **Ceramic Engineering :** Classification of various pottery productions, ceramic materials & their properties.
5. **Food Technology :** Vitamins, cereals & pulses milk & milk powder preservation of food process.
6. **Others Engineering Courses :**
 - **Agriculture :** Introduction to Farm equipment.
 - **Architecture :** History of Indian Architecture, Building topologies.
 - **Fashion Design & Fashion Technology :** Knowledge of fashion Technology, History & Culture, Introduction to garment, Manufacturing Machines & tools.