SSC JE 2022 Syllabus for Mechanical Engineering

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SSC JE 2022 Syllabus for Mechanical Engineering: SSC JE exam is conducted by the Staff Selection Commission(SSC) of India. This SSC JE is a competitive Examination for Junior Engineers recruitment for various Ministries, Department Ministries, and Organizations in the Government of India. Candidates who have an engineering degree or diploma in Civil, Electrical, Mechanical, or Electronics engineering can apply for **SSC JE 2022**.

SSC JE 2022 Exam Syllabus

The SSC JE exam syllabus consists of two papers, Paper-I and Paper-II. Both papers are a slight difference in the syllabus of tier 1 and tier 2 exams. The SSC JE Paper-I syllabus has subjects that include General Intelligence & Reasoning, General Awareness, and General Engineering (Civil and Structural), (Electrical & Mechanical). And, **SSC JE Syllabus** for Paper-II consists only of Engineering subjects.

SSC Mechanical Syllabus 2022 PDF

SSC Mechanical Syllabus 2022 PDF download link is provided in this post below. You can download SSC JE 2022 Syllabus for Mechanical Engineering. You may download the official SSC JE Syllabus 2022 PDF for Paper-I and Paper-II here.

SSC JE 2022 Syllabus for Mechanical Engineering

The standard of the questions in Engineering subjects will be approximate to the level of a Diploma in Engineering. All the questions will be set in SI units. The details of the **SSC JE 2022 Syllabus for Mechanical Engineering** are given below:

Paper-I SSC JE Syllabus for Mechanical Engineering:

Paper-I Syllabus for SSC JE Mechanical Engineering is given below:

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(i) General Intelligence & Reasoning: The Syllabus for General Intelligence would include questions of both verbal and non-verbal types.

The test may include questions on analogies, similarities, differences, space visualization, problem-solving, analysis, judgment, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series, etc.

The test will also include questions designed to test the candidate's abilities to deal with abstract ideas and symbols and their relationships, arithmetical computations, and other analytical functions.

(ii) General Awareness: General Awareness Questions will be testing the candidate's general awareness of the environment around him/her and its application to society.

General Awareness Questions will also test knowledge of current events and of such matters of everyday 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 neighboring countries especially pertaining to History, Culture, Geography, Economic Scene, General Polity Scientific Research, etc.

(iii) General Engineering Syllabus for Mechanical Engineering:

The Mechanical Engineering syllabus for SSC JE 2022 is given below:

› Theory of Machines and Machine Design,
› Engineering Mechanics and Strength of Materials,
› Properties of Pure Substances,
› 1st Law of Thermodynamics,
› 2nd Law of Thermodynamics,
› Air standard Cycles for IC Engines,
› IC Engine Performance,
› IC Engines Combustion,
› IC Engine Cooling & Lubrication,
› Rankine cycle of System,
› Boilers, Classification, Specification, Fitting & Accessories,
› Air Compressors & their cycles,
› Refrigeration cycles,
› Principle of Refrigeration Plant,
› Nozzles & Steam Turbines.
› Properties & Classification of Fluids,
› Fluid Statics,
› Measurement of Fluid Pressure,
› Fluid kinematics,
› Dynamics of Ideal fluids,
› Measurement of Flow rate, basic principles,
› Hydraulic Turbines,
› Centrifugal Pumps,
› Classification of steels.

Paper-II SSC JE Syllabus for Mechanical Engineering:

Paper-II Syllabus for SSC JE Mechanical Engineering is given below:

(i) Theory of Machines and Machine Design
› Concept of a simple machine,
› Four bar linkage and link motion,
› Flywheels and fluctuation of energy,
› Power transmission by belts – V-belts and Flat belts,
› Clutches – Plate and Conical clutch,
› Gears – Type of gears, gear profile, and gear ratio calculation,
› Governors – Principles and classification,
› Riveted joint, Cams, Bearings, Friction in collars and pivots.
(ii) Engineering Mechanics and Strength of Materials
› Equilibrium of Forces,
› Law of motion, Friction,

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› Concepts of stress and strain,
› Elastic limit and elastic constants,
› Bending moments and shear force diagram,
› Stress in composite bars,
› Torsion of circular shafts, Bucking of columns – Euler's and Rankin's theories,
› Thin-walled pressure vessels.

(iii) Thermal Engineering

#Properties of Pure Substances:
› P-V & P-T diagrams of pure substances like H2O,
› Introduction of steam table with respect to steam generation process;
› Definition of saturation, wet & superheated status.
› Definition of dryness fraction of steam, degree of superheat of steam.
› H-s chart of steam (Mollier's Chart).

#1st Law of Thermodynamics:
› Definition of stored energy & internal energy,
› 1st Law of Thermodynamics of cyclic process,
› Non-Flow Energy Equation,
› Flow Energy & Definition of Enthalpy,
› Conditions for Steady State Steady Flow;
› Steady State Steady Flow Energy Equation.

#2nd Law of Thermodynamics:
› Definition of Sink,
› Source Reservoir of Heat, Heat Engine, Heat Pump & Refrigerator;
› Thermal Efficiency of Heat Engines & co-efficient of performance of Refrigerators,
› Kelvin – Planck & Clausius Statements of 2nd Law of Thermodynamics,
› Absolute or Thermodynamic Scale of temperature,
› Clausius Integral,
› Entropy, Entropy changes the calculation of ideal gas processes.
› Carnot Cycle & Carnot Efficiency, PMM-2; definition & its impossibility.

#Air standard Cycles for IC engines:
› Otto cycle; plot on P-V, T-S Planes;
› Thermal Efficiency, Diesel Cycle;
› Plot on P-V, T-S planes; Thermal efficiency.
› IC Engine Performance, IC Engine Combustion, IC Engine Cooling & Lubrication.

#Rankine cycle of steam:
› Simple Rankine cycle plot on P-V, T-S, h-s planes, Rankine cycle efficiency with & without pump work.
› Boilers; Classification; Specification; Fittings & Accessories: Fire Tube & Water Tube Boilers.

#Air Compressors & their cycles; Refrigeration cycles; Principle of a Refrigeration Plant; Nozzles & Steam Turbines

#Fluid Mechanics & Machinery
› Properties & Classification of Fluid: ideal & real fluids,
› Newton's law of viscosity,
› Newtonian and Non-Newtonian fluids,
› Compressible and incompressible fluids.
› Fluid Statics: Pressure at a point.
› Measurement of Fluid Pressure: Manometers, U-tube, Inclined tube.
› Fluid Kinematics: Stream line, laminar & turbulent flow, external & internal flow, continuity equation.
› Dynamics of ideal fluids: Bernoulli's equation, Total head; Velocity head; Pressure head; Application of Bernoulli's equitation.
› Measurement of Flow rate Basic Principles: Venturimeter, Pilot tube, Orifice meter.
› Hydraulic Turbines: Classifications, Principles.
› Centrifugal Pumps: Classifications, Principles, Performance.

#Production Engineering:

› Classification of Steels: mild steel & alloy steel, Heat treatment of steel,

› Welding – Arc Welding, Gas Welding, Resistance Welding, Special Welding Techniques i.e. TIG, MIG, etc. (Brazing & Soldering),

› Welding Defects & Testing;

› NDT, Foundry & Casting – methods, defects, different casting processes, Forging, Extrusion, etc,

› Metal cutting principles, cutting tools,

› Basic Principles of machining with (i) Lathe (ii) Milling (iii) Drilling (iv) Shaping (v) Grinding, Machines, tools & manufacturing processes.

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