ANNEXURE I
MECHANICAL ENGINEERING

Unit I: Workshop Technology
Basic Workshop tools and Operations (carpentry, fitting and sheet metal) Metrology – liner, angular and surface measurement – comparators.
Working and operations of lathe, Drilling, Shaper, slottor, Planner, milling machines – Capstan and turret lathes – copying lathes – surface finishing operations – Honing, lapping, super finishing, electro plating, metal spraying.
Basic components of NC, CNC, and DNC machines – FMS and robotics, CNC part programming - Manual and Computer assisted

Unit II: Welding, Forging, Foundry and Conventions in drawing

Unit III: Engineering Materials, and Solid Mechanics
Resolution of Forces, Simple Machines, Simple stresses and strains – Shear force and bending moment diagrams – Strain energy – Deflection of beams.

Unit IV: Design of Machine Elements

Unit V: Thermodynamics
Laws of Perfect gases and Basic thermodynamics, Thermodynamic processes, Air standard Cycles, fuels and combustion, LC Engines - two and four stroke engines – Petrol and Diesel engines, Indicated and brake powers, Indicated and brake thermal efficiencies, Air Compressors, Gas turbines and Jet propulsion.

Unit VI: Hydraulic Machines and Pneumatics

Unit VII: Steam Boilers, Nozzlers and Turbines

Unit VIII: Refrigeration
Methods of refrigeration, Cycles and Analysis - Air, Vapor Compression and vapor absorption refrigeration, refrigeration equipment

Unit IX: Industrial Management and Engineering
Work study, Inspection and SQC, Estimation and Costing, Principles and function of management, organization structures, Production and materials management, financial management, entrepreneurial development, Marketing and sales, Principles of ISO 9000.

Unit X: Automobile Engineering
Automobile Chassis construction, Function of transmission system, Gear boxes, single and multiplate clutches, Function and construction of propeller shaft, Universal Joint, Differential, semi and full floating rear axle, Front and Stub axles, wheel alignment and balancing, steering mechanisms. Braking system - weight transfer during braking, skidding, Hydraulic braking and air pressure braking systems.
ANNEXURE II
Number of questions to be set (each question carries one mark)

MECHANICAL ENGINEERING

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ANNEXURE III

MODEL QUESTIONS FOR MECHANICAL ENGINEERING

1. Speed Control Valves are
   1. Flow Control Valves
   2. Pressure regulating Valves
   3. Non – Return Valves
   4. Direction Control Valves

2. A simply supported beam has a uniformly distributed load on it. The bending movement diagram is in the form of
   1. Rectangle
   2. Triangle
   3. Parabola
   4. Semicircle

3. The first law of Thermodynamics deals with conservation of
   1. Velocity
   2. Mass
   3. Momentum
   4. Energy