

प्रदेश लोक सेवा आयोग, मधेश प्रदेश
इन्जिनियरिङ्ग सेवा, मेकानिकल इन्जिनियरिङ्ग समूह, जनरल मेकानिकल उपसमूह, सहायक पाँचौं तहको
खुला र अन्तर सेवा प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम ।

द्वितीय पत्र (Paper II) :-
सेवा सम्बन्धित कार्य-ज्ञान (Job Based Knowledge)

खण्ड (Section) (A):- ५० अङ्क

1. Machine Drawing

- 1.1 Finding out the missing views from two given projection and dimensioning
 - 1.1.1 Missing views of prismatic work pieces
 - 1.1.2 Missing views of cylindrical work pieces
 - 1.1.3 Missing views of pyramidal, conical, cylindrical cut work pieces
- 1.2 Isometry drawing of machine parts including sections
- 1.3 Drawing of joints
 - 1.3.1 Permanent joints
 - 1.3.2 Temporary joints
 - 1.3.3 Drawing Exercises
 - 1.3.3.1 Nut bolt and threaded joints
 - 1.3.3.2 Riveted joints
 - 1.3.3.3 Welded joints and symbols
 - 1.3.3.4 Gears, Keys and Spline joints.
 - 1.3.4 Orthographic projection

2. Heat Engines

- 2.1 Different types of heat engines
 - 2.1.1 Internal Combustion engines
 - 2.1.1.1 Two Stroke engines
 - 2.1.1.2 Four Stroke engines
 - 2.1.2 External combustion engines
- 2.2 Different cycles involved in heat engines
 - 2.2.1 Carnot cycle
 - 2.2.2 Diesel cycle
 - 2.2.3 Otto cycle
 - 2.2.4 Brayton cycle
- 2.3 Basic difference in Steam Engine and Automotive engines
- 2.4 Different types of power plants (engine) used in civil Aircraft
- 2.5 Automobile maintenance
 - 2.5.1 Preventive
 - 2.5.2 Periodic
 - 2.5.3 Breakdown
 - 2.5.4 Fuels / Lubricants

3. Thermodynamics

- 3.1 General
 - 3.1.1 Boyle's law, Charles' law and combined gas law
 - 3.1.2 Characteristics of gas constant
 - 3.1.3 Terms used in thermodynamics
- 3.2 First law of thermodynamics
 - 3.2.1 Definition of the first law

प्रदेश लोक सेवा आयोग, मधेश प्रदेश
इन्जिनियरिङ्ग सेवा, मेकानिकल इन्जिनियरिङ्ग समूह, जनरल मेकानिकल उपसमूह, सहायक पाँचौं तहको
खुला र अन्तर सेवा प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम ।

- 3.2.2 Total internal energy
- 3.2.3 Mechanical equivalent of heat engine
- 3.3 Second law of thermodynamics
 - 3.3.1 Definition of the second law
 - 3.3.2 Thermal efficiency of heat engine
- 3.4 Thermodynamics Properties of Fluid (Definitions only)
 - 3.4.1 Internal energy
 - 3.4.2 Enthalpy
 - 3.4.3 Entropy
 - 3.4.4 Specific heat at constant volume
 - 3.4.5 Specific heat at constant pressure
- 3.5 Basic thermodynamics process
 - 3.5.1 Constant volume process
 - 3.5.2 Constant pressure process
 - 3.5.3 Constant temperature process
 - 3.5.4 Adiabatic process
 - 3.5.5 Polytropic process
- 3.6 Petrol and Diesel Engine Cycles
 - 3.6.1 Constant volume cycle
 - 3.6.2 Constant pressure cycle
 - 3.6.3 Mixed cycle
- 4. Basic Industrial Management**
 - 4.1 Labour law
 - 4.2 Rights of Unions
 - 4.3 Wages and compensation
 - 4.4 Labour and Management relations
 - 4.5 Basic functions of ILO
 - 4.6 Industrial Hygiene and safety
 - 4.7 Basic functions of ICAO

खण्ड (Section) (B):- ५० अङ्क

- 5. Basic Knowledge of Electro-Mechanical Principle**
 - 5.1 Design of workshop / Selection of workshop equipment
 - 5.2 Lathe/shaper/grinder/drilling machines etc.
 - 5.3 Automatic pneumatic tools and hand tools
 - 5.4 Different types of welding /Casting /Molding
 - 5.5 Basic Knowledge of AC and DC Motors
 - 5.6 Basic Knowledge of Generator
- 6. Industrial Boiler**
 - 6.1 Basic working principle
 - 6.2 Common types of Boilers
 - 6.3 Boilers Fules
 - 6.3.1 Coal
 - 6.3.2 Oil

प्रदेश लोक सेवा आयोग, मधेश प्रदेश
इन्जिनियरिङ्ग सेवा, मेकानिकल इन्जिनियरिङ्ग समूह, जनरल मेकानिकल उपसमूह, सहायक पाँचौं तहको
खुला र अन्तर सेवा प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम ।

6.3.3 Gas

6.4 Boilers Efficiency

7. Estimating and costing

7.1 General

7.1.1 Concept of profitability, break-even point, return on investment, liability, assets, fixed cost, variable cost, fixed capital, working capital equity, depreciation and amortization

7.1.2 Elements of cost and classification

8. Applied Mechanics

8.1 Statics

8.1.1 Coplanar system of intersecting forces

8.1.2 Coplanar parallel forces, the moment of a force

8.1.3 Centre of Gravity

8.1.4 Friction

8.2 Kinematics

8.2.1 Definition of technical terms: speed, velocity, acceleration, distance traversed and their units

8.2.2 The trajectory of particles, distance and time

8.2.3 Rectilinear motion of a particle

8.3 Composition of a simple motion of a particle

8.3.1 Curvilinear motion of a particle

8.3.2 Simple motion of a solid body

8.4 Dynamics

8.4.1 Fundamental laws of dynamics: Newton's law of motion

8.4.2 Work, Energy and Power

8.4.3 Mechanical Energy

8.4.4 Relation between RPM. Torque and Power

8.4.5 Law of conservation of energy

द्वितीय पत्रको लागि यथासम्भव निम्नानुसार प्रश्नहरू सोधिनेछ ।

द्वितीय पत्र (विषयगत)					
पत्र	विषय	खण्ड	अङ्कभार	छोटो उत्तर	लामो उत्तर
द्वितीय	सेवा सम्बन्धित कार्य-ज्ञान (Job Based Knowledge)	(A)	५०	६ प्रश्न X ५ अङ्क = ३०	२ प्रश्न X १० अङ्क = २०
		(B)	५०	६ प्रश्न X ५ अङ्क = ३०	२ प्रश्न X १० अङ्क = २०