

लोक सेवा आयोग
नेपाल इञ्जिनियरिङ्ग सेवा, मेकानिकल इञ्जिनियरिङ्ग समूह, जनरल मेकानिकल, राजपत्र अनंकित
प्रथम श्रेणी पद पदको खुला प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रमलाई दुई भागमा विभाजन गरिएको छ ।

भाग	परीक्षा	विषय	पूर्णाङ्क	प्रश्न संख्या	समय	परीक्षा प्रणाली	उत्तीर्णाङ्क
१	लिखित	सेवा सम्बन्धी	१००	५०	४५ मिनेट	वस्तुगत बहुउत्तर (Multiple Choice)	४०
२	अन्तर्वार्ता		२०				

१. यथासम्भव पाठ्यक्रमका सवै एकाईवाट प्रश्नहरु सोधिनेछन् ।
२. लिखित परीक्षामा गल्ती गरेको प्रश्नोत्तरका लागि २० प्रतिशत अङ्क कट्टा गरिने छ ।
३. यस पाठ्यक्रममा जेसुकै लेखिएको भएता पनि पाठ्यक्रममा परेका ऐन, नियमहरु परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाइएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्भन्नु पर्दछ ।
४. पाठ्यक्रम लागू हुने मिति २०५१।४।१९

समय :- ४५ मिनेट

प्रश्न संख्या :- ५०

पूर्णाङ्क :- १००

1. Civil Service Act, 2049 and Regulation, 2050

2. Machine Drawing

- 2.1 Finding out the missing views from two given projection and dimensioning
 - 2.1.1 Missing views of prismatic work pieces
 - 2.1.2 Missing views of cylindrical work pieces
 - 2.1.3 Missing views of pyramidal, conical, cylindrical cut work pieces
- 2.2 Isometry drawing of machine parts including sections
- 2.3 Drawing of joints
 - 2.3.1 Permanent joints
 - 2.3.2 Temporary joints
 - 2.3.3 Drawing Exercises
 - 2.3.3.1 Nut bolt and threaded joints
 - 2.3.3.2 Riveted joints
 - 2.3.3.1 Welded joints and symbols
 - 2.3.3.1 Gears, Keys and Spline joints
 - 2.3.4 Orthographic projection

3. Heat Engines

- 3.1 Different types of heat engines
- 3.2 Different cycles involved in heat engines
- 3.3 Basic difference in Steam Engine and Automotive engines
- 3.4 Different types of power plants (engine) used in civil Aircraft

4. Thermodynamics

- 4.1 General
 - 4.1.1 Boyle's law, Charles' law and combined gas law
 - 4.1.2 Characteristics of gas constant
 - 4.1.3 Terms used in thermodynamics
- 4.2 First law of thermodynamics
 - 4.2.1 Definition of the first law
 - 4.2.2 Total internal energy
 - 4.2.3 Mechanical equivalent of heat engine
- 4.3 Second law of thermodynamics
 - 4.3.1 Definition of the second law
 - 4.3.2 Thermal efficiency of heat engine
- 4.4 Thermodynamics Properties of Fluid (Definitions only)
 - 4.4.1 Internal energy
 - 4.4.2 Enthalpy
 - 4.4.3 Entropy
 - 4.4.4 Specific heat at constant volume
 - 4.4.5 Specific heat at constant pressure

- 4.5 Basic thermodynamics process
 - 4.5.1 Constant volume process
 - 4.5.2 Constant pressure process
 - 4.5.3 Constant temperature process
 - 4.5.4 Adiabatic process
 - 4.5.5 Polytropic process
- 4.6 Petrol and Diesel Engine Cycles
 - 4.6.1 Constant volume cycle
 - 4.6.2 Constant pressure cycle
 - 4.6.3 Mixed cycle
- 5. Basic Industrial Management**
 - 5.1 Labour law
 - 5.2 Rights of Unions
 - 5.3 wages and compensation
 - 5.4 Labour and Management relations
 - 5.5 Basic functions of ILO
 - 5.6 Industrial Hygiene and safety
 - 5.7 Industrial Policy and Act, 2049
 - 5.8 Basic functions of ICAO
- 6. Basic Knowledge of Electro- Mechanical Principle**
 - 6.1 Basic Knowledge of AC and DC Motors
 - 6.2 Basic Knowledge of Generator
- 7. Industrial Boiler**
 - 7.1 Basic working principle
 - 7.2 Common types of Boilers
 - 7.3 Boilers Fules
 - 7.4 Boilers Efficiency
- 8. Estimating and costing**
 - 8.1 General
 - 8.1.1 Concept of profitability, break-even point, return on investment, liability, assets, fixed cost, variable cost, fixed capital, working capital equity, depreciation and amortization
 - 8.1.2 Elements of cost and classification
- 9. Applied Mechanics**
 - 9.1 Statics
 - 9.1.1 Coplaner system of intersecting forces
 - 9.1.2 Coplaner parallel forces, the moment of a force
 - 9.1.3 Centre of Gravity
 - 9.1.4 Friction
 - 9.2 Kinematics
 - 9.2.1 Definition of technical terms: speed, velocity, acceleration, distance traversed and their units

- 9.2.2 The trajectory of particles, distance and time
- 9.2.3 Rectilinear motion of a particle
- 9.3 Composition of a simple motion of a particle
 - 9.3.1 Curvilinear motion of a particle
 - 9.3.2 Simple motion of a solid body
- 9.4 Dynamics
 - 9.4.1 Fundamental laws of dynamics: Newton's law of motion
 - 9.4.2 Work, Energy and Power
 - 9.4.3 Mechanical Energy
 - 9.4.4 Relation between RPM, Torque and Power
 - 9.4.5 Law of conservation of energy

Model Questions

1. The constant pressure cycle is called
 - a) Otto cycle
 - b) Diesel cycle
 - c) Mixed cycle
 - d) Above mentioned all

2. The first law of thermodynamics is
 - a) $dQ = du - dw$
 - b) $dQ = du + dw$
 - c) $du = dQ - dw$
 - d) $dw = dQ + du$

3. The purpose of estimating is
 - a) to design
 - b) to find out the amount
 - c) to constant
 - d) to demonstrate