

नेपाल आयल निगम लि.
आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पद: उप निर्देशक तह: ९ (नौ)

सेवा: प्राविधिक

समूह: इन्जिनियरिङ्ग

पाठ्यक्रमको रूपरेखा: यस पाठ्यक्रमको आधारमा निम्नानुसार दुई चरणमा परीक्षा लिइनेछ :

परीक्षा योजना (Examination Scheme)

प्रथम चरण: लिखित परीक्षा पूर्णाङ्क १००
द्वितीय चरण: अन्तर्वार्ता पूर्णाङ्क २०

प्रतियोगिताको किसिम: लिखित परीक्षा
परीक्षा प्रणाली: विषयगत/छोटो उत्तर

द्वितीय चरण-

विषय: व्यक्तिगत अन्तर्वार्ता
पूर्णांक: २०
परीक्षा प्रणाली: मौखिक

- लिखित परीक्षाको माध्यम अंग्रेजी वा नेपाली, अथवा अंग्रेजी र नेपाली दुवै भाषामा हुन सक्नेछ ।
- यस पाठ्यक्रममा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका ऐन, नियमहरू परीक्षाको मिति भन्दा ३ (तीन) महिना अगाडि (संशोधन भएका वा संशोधन भई हटाइएका वा थप गरी संशोधन भई कायम रहेकालाई यस पाठ्यक्रममा रहेको सम्झनु पर्दछ ।
- प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको अन्तर्वार्तामा सम्मिलित गराइनेछ ।

विषय : सेवा सम्बन्धी

सि.नं.	परीक्षा प्रणाली	प्रश्न संख्या	प्रतिप्रश्न अंकभार	पूर्णाङ्क	उत्तिर्णाङ्क	समय
क.	छोटो उत्तर	१३ मध्ये १०	$१० \times ६ = ६०$	१००	३५	२:३० मिनेट
ख.	लामो उत्तर	३ मध्ये २	$२ \times २० = ४०$			

खण्ड १ : विश्व सम्बन्धी जानकारी

- विश्व व्यापार संगठन (WTO) र अन्तर्राष्ट्रिय व्यापार प्रणाली
- तेल निर्यात गर्ने राष्ट्रहरूको संगठन (OPEC) र अन्तर्राष्ट्रियस्तरमा तेलको कारोवार
- दक्षिण एसियाली क्षेत्रीय संगठन (SAARC)
- विदेशी विनिमय प्रणाली ।

खण्ड २ : नेपाल सम्बन्धी जानकारी

१. नेपाल आयल निगमको संरचना र कार्य सञ्चालन बारे जानकारी ।
२. सौर्य एवं वैकल्पिक उर्जा तथा अन्य प्राकृतिक सम्पदाको उपयोग सम्बन्धी सामान्य जानकारी ।
३. पेट्रोलियम पदार्थको माग र आपूर्ति सम्बन्धी जानकारी ।
४. नेपाल गुणस्तर तथा नापतौल सम्बन्धी सामान्य जानकारी ।

खण्ड ३ : प्राविधिक ज्ञान

3.1 Basic Thermodynamics

- Boyle's law, Charles' law and combined gas law
- Characteristics of gas constant
- Terms used in thermodynamics
- Laws of thermodynamics, Mechanical equivalent of heat engine, Thermal efficiency of heat engine, Internal energy, Enthalpy, Entropy, Specific heat at constant volume, Specifics heat at constant pressure.
- Petrol and Diesel Engine Cycles, Different types of heat engines, Different cycles involved in heat engine, Basic difference in Steam Engine and Automotive Engine.

3.2 Fluid Mechanics

- Fluid Properties: Viscosity, Surface tension, Compressibility, Vapor Pressure.
- Fluid Statics: Pressure variations in static fluid, pressure head, manometer, Force on submerged surfaces
- Equations of Fluid Flow: Type of flow, Continuity equation, Bernoulli's equation and momentum equation
- Viscous Effects: Reynolds number, Boundary layer, Frictional resistance to flow in pipes
- Flow measurement: Pitot-static tube, Orifice, Venturimeter Nozzle, Rotameter

3.3 Engineering Economics

- Type of Engineering economics decisions
- Time value of Money: Simple interest, Compound interest, Continuous compound interest
- Project Evaluation Techniques: Payback period method, NPV method, Future value analysis, IRR method
- Benefit and Cost Analysis: Cost benefit ratio, breakeven analysis
- Corporate tax system in Nepal
- Depreciation and its types

3.4 Management

- Role of Production / Operation Management and System Concept
- Plant Location and Plant Layout Design
- Production Planning and Control: Selection of materials, methods, Project scheduling, machines and manpower
- Network methods: PERT, CPM

- Inventory Control: Inventory costs and Inventory models
- Forecasting Techniques: Requirements of forecasting, Time series and Moving average methods, Regression analysis
- Quality Management: Importance of quality, Statistical process control, Quality assurance.
- Statistical Analysis: Measurement of central tendency, Deviation, Distribution
- Public Procurement practices for works, goods and services and its importance
- Procurement cycle, Procurement Plan, preparation of Specifications, estimates and tender documents
- Tendering process, Contract Administration, Dispute management and Arbitration
- Importance of Information system in managerial decision making, Concept of Management Information System, Database system, Flow of information
- Concept of Operating System, Application software, Basic concept on internet, e-mail and web-page
- Labour law, Rights of Unions, wages and compensation, Labour and Management relations, Basic Functions of ILO

3.5 Environmental engineering

- Air Pollution : Causes and effects
- Water Pollution: Causes and effects, Waste water treatment
- Industrial waste: Collection and disposal
- Indoor Air Quality: Indoor pollutants, Effects of indoor pollutants and Control of indoor pollutions
- Global impacts: Green house effects, Acid rain, Montreal protocol
- Global-warming phenomenon
- Types of sources of pollution: Point/non-point (for air and water)
- Concept of Cleaner Production
- Energy consumption scenario of Nepal
- Solar Energy and its applications: Solar thermal, solar photovoltaic
- Biomass energy
- Hydroelectricity
- Consumption of fuel and its forecasting for future

3.6 Professional Practice

- Ethics and Professionalism: Perspective on morals, Codes of ethics and guidelines of professional engineering practice
- Legal aspects of Professional Engineering in Nepal: Provision for private practice and employee engineers
- Nepal Engineering Council Act, 2055 and regulation, 2056
- Relation with clients, contractor and fellow professionals

3.7 Operational Safety & Health

- Safety and Precaution
- Safety rules and regulations
- Safety tools and devices for fuel handling
- Explosions of fuel storage tank and fuel handling equipment in premises and precautions to be taken
- Fire hazards, fire fighting techniques and equipment

- Noise hazard, sources, Control and effect on health
- First aid requirements for post-event treatment
- Safety culture : Storage of dangerous materials
- Hazards due to high pressure & explosions, dust & vapor cloud explosions, vacuum temperature, inflammable materials, toxic materials, chemicals, chemical reactions and operations, electrostatics, ionizing radiation etc.
- Disaster management, insurance, worker's safety

3.8 Fuel and Lubricants

- Types of fuels and their properties, production process, uses of petroleum products, storing and transportation.
- Types of Lubricants, Properties, Viscosity units, Grading of lubricants oils, Multi grade oils, commonly available lubricating oils, their selection and applications.
- Origin and occurrence, composition ; classification and physico-chemical properties of petroleum: testing and uses of petroleum products: refining processes such as distillation, cracking, reforming
- Conversion of petroleum gases into motor fuel, aviation fuel, lubricating oils, petroleum waxes
- Chemical treatment of petroleum products, desulphurization
- Refining operations-dehydration, desalting, gas separation, natural gas production and gas sweetening
- Scope of alternative fuels in Nepal
- Quality Control and upgradeling of fuel characteristics

प्रश्नको वर्गीकरण:

- क. साथि उल्लिखित छोटो उत्तर अन्तर्गत प्रत्येक खण्ड (खण्ड १ देखि खण्ड ३.८ सम्म) बाट कम्तिमा एक/एकवटा प्रश्न सोधिनेछ ।
- ख. लामो उत्तर अन्तर्गत सोधिने प्रश्नहरु जुनसुकै खण्डबाट सोध्न सकिनेछ ।