

कृषि सामग्रीकम्पनी लिमिटेड
अधिकृत तृतीय श्रेणी (प्रा.) सिनियर प्लान्ट अपरेटर पदको खुला तथा आन्तरिक प्रतियोगितात्मक परीक्षाको
परीक्षा योजना तथा पाठ्यक्रम

यस पाठ्यक्रमलाई दुई चरणमा विभाजन गरिएको छ।

प्रथम चरण - लिखित परीक्षा (२ पत्र)
द्वितीय चरण - अन्तर्वार्ता

पूर्णाङ्क : २००
पूर्णाङ्क : ३०

लिखित परीक्षा योजना (Written Examination Scheme)

पत्र	विषय	परीक्षा प्रणाली	प्रश्नसंख्याX अङ्कभार	समय	पूर्णाङ्क	उत्तीर्णाङ्क
प्रथम	सामान्य ज्ञान र आधारभूत विषयवस्तु सम्बन्धी	विषयगत (Subjective)	६ प्रश्नX १०अङ्क ८ प्रश्नX ५अङ्क	३ घण्टा	१००	४०
द्वितीय	सेवा सम्बन्धी विषय	विषयगत(Subjective)	६ प्रश्नX १०अङ्क ८ प्रश्नX ५अङ्क	३ घण्टा	१००	४०

द्रष्टव्य :

- प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तर पुस्तिकाहरु हुनेछन्।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ।
- यस पाठ्यक्रममा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका ऐन, नियमहरु परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाइएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ।
- पाठ्यक्रम लागु मिति :-

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परीक्षा योजना तथा पाठ्यक्रम

प्रथम पत्र:

खण्ड (क) सामान्य विषय

१. सामान्य ज्ञान (३ प्रश्न X १० अंक र ४ प्रश्न X ५ अंक)
 - १.१ नेपालको संविधान सम्बन्धी सामान्य जानकारी ।
 - १.२ सार्वजनिक खरिद ऐन २०६३ ।
 - १.३ सार्वजनिक खरिद नियमावली २०६४ ।
 - १.४ कृषि सामग्री कम्पनी लिमिटेडको प्रबन्ध-पत्र र नियमावली ।
 - १.५ कृषि सामग्री कम्पनी लिमिटेड कर्मचारी प्रशासन विनियमावली २०५९ ।
 - १.६ कृषि सामग्री कम्पनी लिमिटेडको वर्तमान संगठन, संरचना, उद्देश्य, कार्य र उपलब्धी ।
 - १.७ भ्रष्टाचार निवारण २०५९ ।

खण्ड (ख) आधारभूत विषयको ज्ञान ।

(३ प्रश्न X १० अंक र ४ प्रश्न X ५ अंक)

1. Work shop technology and Metrology

- 1.1. Basic tools and Basic hand operations
- 1.2. Machine tools: Lathe, Shaper, Milling, Grinding, Drilling Machines
- 1.3. Metal Joining: Soldering, Brazing, Gas welding, Arc welding
- 1.4. Types of fits
- 1.5. Linear Measurement: Block Gages, Length Bars, Comparators
- 1.6. Errors in measurement

2. Thermodynamics and heat engines

- 2.1 Basic Concepts: Thermodynamic System, Thermodynamic Property, Pure Substance, Zeroth Law
- 2.2 First Law of Thermodynamics: Control mass and Control volume formulation
- 2.3 Second Law of Thermodynamics: Heat engine, Refrigerator and Heat pump, Kelvin Planck and Clausius Statements, Entropy
- 2.4 Refrigeration: Reversed Carnot cycle, Vapor compression cycle, Absorption refrigeration systems, Refrigerants and their properties
- 2.5 Air Conditioning: Psychometric properties and psychometric chart, Heating, cooling, humidification and dehumidification process, Air conditioning systems
- 2.6 Thermodynamic Cycles: Carnot cycle, Otto cycle, Diesel Cycle, Brayton cycle, Rankine cycle
- 2.7 IC engines: Classifications, components, two stroke and four stroke operations, performance of IC engines, Ignition system, Cooling system, Lubrication system
- 2.8 Modes of heat transfer: Conduction, Convection and Radiation

3. Material Science and Metallurgy

- 3.1 Types of Materials, Material Selection
 - 3.2 Imperfections in Atomic Arrangement: Slip and Twinning, Dislocation, Points and Surface Defects
 - 3.3 Mechanical Properties and Testing: Tension, Impact, Fatigue, Hardness Test
 - 3.4 Cold working and Hot working
 - 3.5 Types of steel
 - 3.6 Phase Transformation and Heat Treatment: Iron-carbon equilibrium diagram, Hardening, Tempering, Annealing, Normalizing
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परीक्षा योजना तथा पाठ्यक्रम

द्वितीय पत्र: सेवा सम्बन्धी विषय (अंक १००)

1. Pump, Compressors and Electric Machines (1 question X 10 Marks 2 question X 5 Marks)

1. Pumps: Centrifugal pump and Reciprocating pump (Working principle and Characteristic), Hydraulic ram
2. Compressors: Reciprocating compressors, Single and Multi-stage compressors, Intercooling, Volumetric efficiency; Rotary compressors, Centrifugal compressor, Axial compressors, Surging and stalling, Roots blower, Vaned compressor
3. DC Motors: Shunt field, Series field and Compound field motors, Torque-speed characteristics
4. DC Generators: Shunt, Series and Compound field machines, Voltage/speed/load characteristics, Effects of variable load, variable torque
5. Synchronous and Induction Machines: Basic structure of synchronous machines, Generator on isolated load, Generator on large system, Synchronous motor

2. Machine Component Design and Drawing (2 question X 5 Marks)

1. Types of Projection
2. Production Drawings
3. Terminologies of Mechanisms, Mobility and Degrees of Freedom
4. Design Process
5. Factors Affecting Choice of Materials for Design: Strength, Toughness, Durability, Hardness
6. Loading: Tensile, Compressive, Shearing, Bending, Bearing and Torsion
7. Common Types of Failure: Theories of failure, Stress concentration effects, Ductile and brittle materials, Factor of safety

3. Industrial Engineering and Management (2 question X 10 Marks)

1. Role of production/Operation Management and System Concepts
2. Plant Location and Plant Layout Design
3. Production Planning and Control: Selection of materials, methods, machines and manpower
4. Network methods: PERT, CPM
5. Inventory Control: Inventory costs and Inventory models
6. Forecasting Techniques: Requirements of forecasting, Time series and Moving average methods, Regression analysis
7. Quality Management: Importance of quality, Statistical process control
8. Statistical Analysis: Measurement of central tendency, Deviation, Distribution
9. Maintenance Management: Maintenance objectives and maintenance costs; Types of maintenance schemes; Basic maintenance decisions.

4. Automobile Engineering (2 question X 5 Marks)

1. Classification of vehicles
 2. Components of an automobile: Power transmission system, Suspension system, Brakes
 3. Engines & Emission control system: Major pollutant and methods of reduction
 4. Workshop layout: Calculation of workshop post, Number of workers
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5. Engineering Economics (2 question X 10 Marks)

1. Types of engineering economics decisions
2. Time Value of Money: Simple interest, Compound interest, Continuous compound interest
3. Project Evaluation Techniques: Payback period method, NPV method, Future value analysis, IRR method
4. Benefit and Cost Analysis: Cost benefit ratio, breakeven analysis
5. Tax System and Depreciation: Corporate tax system in Nepal
6. Types of depreciation

6. Pesticides/Insecticides and other Chemicals used in Seed Processing (1 question X 10 Marks)

1. Pesticide classification
2. Chemical nature, formulation, toxicity and action

7. Seed Processing Plant (2 question X 5 Marks)

1. Seed Processing Plant Layout and Functions of different parts.
 2. Common repair and maintenance works of seed processing plant
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