दुग्ध बिकास संस्थान
केन्द्रीय कार्यालय, लैनचौर

इन्जिनियरीङ अफीसर तह ७ प्राविधिक सेवा, इन्जिनियरीङ समूह पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

पाठ्यक्रमको रुपरेखा :– यस पाठ्यक्रमको आधारमा निम्नानुसार दुई चरणमा परीक्षा लिइने छ :

प्रथम चरण :– लिखित परीक्षा पूर्णाङ्क :– २००

द्वितीय चरण :– अन्तर्वार्ता पूर्णाङ्क :– ३०

प्रथम चरण – लिखित परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या x अङ्कभार	समय
प्रथम पत्र	मेन्टीनेन्स इन्जिनियरीङ	१००	४०	वस्तुगत बहुउत्तर (Multiple Choice)	५० x २ = १००	१ घण्टा
द्वितीय पत्र	क. डेरी मेशिनरी सम्बन्धि ख. ऐन नियम सम्बन्धि	७० ३०	४०	विषयगत (Subjective)	१० x ७ = ७० १५ x २ = ३०	३ घण्टा

द्वितीय चरण

विषय	पूर्णाङ्क	परीक्षा प्रणाली
व्यक्तिगत अन्तर्वार्ता	३०	मौखिक

१. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।

२. प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।

३. प्रथम तथा द्वितीय पत्रका एकाईहरुको प्रश्नसंख्या निम्नानुसार हुनेछ :

४. प्रथम पत्रमा वस्तुगत बहुउत्तर (Multiple Choice) प्रश्नहरुको उत्तर सही दिएमा प्रत्येक सही उत्तर बापत २ (दुई) अङ्क प्रदान गरिनेछ भने गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अर्थात् ०.४ अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।

५. द्वितीय पत्रको विषयगत प्रश्नका लागि तोकिएका १० अङ्कका ७ प्रश्नहरु र १५ अङ्कका २ वटा प्रश्नहरुको सोधिने छ ।

६. द्वितीय पत्रको पाठ्यक्रमलाई ४ वटा खण्ड/एकाईमा विभाजन गरिएको छ । ४ वटा खण्ड/एकाईको लागि एउटै उत्तरपुस्तिका दिईनेछ ।

७. यस पाठ्यक्रममा जेसुकै लेखिएको भएता पनि पाठ्यक्रममा परेका ऐन, नियमहरु 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 ।

८. प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र द्वितीय चरणको अन्तर्वार्तामा सम्मिलित गराइनेछ ।

९. पाठ्यक्रम लागू मिति :– २०७२/१०/२५

प्रथम पत्र :- मेन्टीनेन्स इन्जिनियरीङ (५० x २ = १००)

1. **Basic Electrical Engineering**:

   Network Analysis, Circuit Differential Equation, Circuit Dynamics, Laplace Transform, Transfer Function, Fourier series and Transform Frequency Response of Network, One –port Passive Network, Two ports Passive Network.

2. **Electronics Devices**:

   Non-Linear Model, Semiconductor Diode, Bipolar Junction Transistor (BJT), BJT biasing and Thermal Stabilization, The Small Signal Low Frequency Analysis, The High Frequency model of BJT, The junction Field Effect Transistor (JFET), The Metal oxide Semiconductor Field Effect Transistor (MOSFET), Clippers, Clamper and Rectifiers.

3. **Electronics Circuits**:

   Low Frequency, Transistor Amplifier Circuits, Untuned Amplifiers, Large Signal Amplifiers, Feedback Amplifiers, Oscillators, Differential Amplifier, Operational Amplifiers, Logarithmic Amplifier, A/D and D/A conversions, Regulated Power Supply.

4. **Engineering Material**:

   Dielectric Properties in Static Fields, Dielectric properties in Alternating Fields, Insulating Materials, Dielectric Breakdown, Magnetic Properties of Materials, Conductive Materials, Semiconductors, Materials for Direct Energy Conversion Devices, Materials for refrigeration and air –conditioning.

5. **Logic Circuits**:

   Introduction, Number System and Codes, Boolean Algebra and Logic Gates, Simplification of Boolean Function, Combination Logic, MSI and LSI Components in Combinational Logic Design, Sequential Logic, Registers, Counters and Memory Unit, Arithmetic Logic Units.

6. **Control System**:

   Introduction, Mathematical Modeling of Physical System, System Transfer Functions and Responses, State-Variable Analysis, Stability, Time-Domain analysis of Control Systems, Root Locus Technique, Frequency Domain (Response) Method, Control System Simulation using MATLAB* and TUTSIM, Performance specifications for control Systems, Design of Control System.

7. **Microprocessor**:

   Introduction, 8 Bit Microprocessor and Programming, 16 Microprocessor and Assembly language Programming, Bus Structure and Memory Devices, Input/Output Interfaces, Interrupt, Introduction to Advanced Microprocessor Architecture.

8. **Instrumentation:**

   Instrumentation System, Theory of Measurement, Transducer, Electrical Signal Processing, Transmission and Telemetry of data, Analog-Digital and Digital –Analog Conversion, Output Devices, Mechanical Instruments.

9. **Power Electronics:**

   Introduction, Power Semiconductor Diodes, Diodes, Circuits and Rectifiers, Thyristors, Thyrister Communication Techniques, Controlled Rectifiers, Power Transistor, DC Choppers, Power Supplies, DC Drives Controller, Protection of Devices and Circuites.

10. **Power System:**

    Introduction, Single Phase and Three Phase Power System, Generating Plants, Transmission System, Distribution System, Power System, Load Flow Study, Power System Stability.

11. Power System Control and Protection:

Introduction, Fault Calculation, Principle of Power System Protection, Foses Isolators and Contractors, Circuit Breakers, Current and Potential Transformers, Earthing and Protection against over Voltage, Relay and Protection Schemes, Power/frequency Control, Voltage/var Control.

द्वितिय पत्र :- खण्ड क. डेरी मेशिनरी सम्बन्धि

(७ x १० = ७०)

Maintenance & Dairy Machineries

1. **Machine**:

   Introduction, Transformer, DC Machines, DC Motors, DC Generators, Synchronous and Induction Machines, Fractional Horsepower (FHP) Drives, DC Drives, AC Drive.

2. **Safety Engineering**:

   Introduction, Effects of Non-ionizing Electromagnetic Fields on Human, Electrical Shock Hazards, Earthing and Shilding Techniques for Electrical Equipments, Electrical induction into Communication and other System near Transmission Lines, Lightning Protections, Chemical and Radiation Hazards, Fire Hazards and Fire Fighting Techniques in Electrical Equipments.

3. **High Voltage Engineering**:

   Introduction, High Stress Electrical fields, Introduction to High Voltage Testing, High Voltage Aspects of Terminal Station Equipments, High Voltage Transmission Lines, High Voltage Power Cables.

4. **Electrical Energy System Management:**

   Electrical Power Utility Organization, Economic Analysis and Control of Power Utility, Prediction of Electric Load Levels and Changes, Scheduling to meet Utility, Prediction of Electric Load Levels and Changes, Scheduling to meet Generation Requirements, Real-time Economic Generation and Energy Dispatches, System Reliability.

5. **Dairy Equipments: Milk Equipment:**

   Milk Analyzer, Milk Bottle Filter, Milk Tanker, Air Compressor, Shrink Packing Machine, Ink-jet Dating Machine,

6. **Cheese Equipments:**

   Cooking Mixer, Cheese Cutting Press, Cheese Cutter, Cheese Pump, Cheese Desk, Processing Machine, Can Seaming Machine, Yoghurt Equipment: Homoqeniser, Cream Separator, Pasteurizer, Centrifugal Pump, Milk Reception Power Mixing, Batch Pasteurizer, Cooling Room, Fermentation, Vacuum Evaporation, Yoghurt Filling Machine,

7. **Butter Equipment:**

   Butter Churn, Cream Pasteurizer, Butter Forming Machine, Butter Packing Machine, Cream Pump, Butter Trolley, Butter Table, Vacuum Packing.

8. **Breakdown & Preventive Maintenance system**

Section B (२ x १५ = ३०)

Rules Regulations

6. Corporation Act 2021
7. Personnel and Financial Regulation of DDC
8. Consumer Protection Act of Nepal
9. Labour Act of Nepal

History of constitutional development in Nepal and present const