

लोक सेवा आयोग

नेपाल इजिनियरिङ्ग सेवा, इलेक्ट्रिकल इञ्जिनियरिङ्ग समूह अन्तर्गत जनरल इलेक्ट्रिकल इञ्जिनियरिङ्ग र एभिएशन इलेक्ट्रिकल इञ्जिनियरिङ्ग उपसमूह राजपत्र अनंकित प्रथम श्रेणी, अन्तर्गतका ओभरसियर पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

पाठ्यक्रमको रूपरेखा :- यस पाठ्यक्रमको आधारमा निम्नानुसार दुई चरणमा परीक्षा लिइने छ ।
 प्रथम चरण :- लिखित परीक्षा पूर्णाङ्क :- १००
 द्वितीय चरण :- अन्तर्वार्ता पूर्णाङ्क :- २०

प्रथम चरण – लिखित परीक्षा योजना (Examination Scheme)

विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्याXअङ्कभार	समय
सेवा सम्बन्धी	१००	४०	वस्तुगत बहुउत्तर (Multiple Choice)	५०X२ = १००	४५ मिनेट

द्वितीय चरण

विषय	पूर्णाङ्क	परीक्षा प्रणाली
व्यक्तिगत अन्तर्वार्ता	२०	मौखिक

- यथासम्भव पाठ्यक्रमको सबै एकाइहरूबाट प्रश्नहरू सोधिनेछ ।
- वस्तुगत बहुउत्तर (Multiple Choice) प्रश्नहरूको 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 ।
- यस पाठ्यक्रममा जेसुकै लेखिएको भएता पनि 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 सम्भन्तु पर्दछ ।
- पाठ्यक्रम लागू मिति :- २०५१/४/१९

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1. **Electric Circuit**

Definition, Unit, Explanation and applications of Ohm's Law and Kirchoff's Law, Connection of resistors in series, parallel and series parallel Combination

2. **Electro magnetism and Electro statics**

Definition and formation of hysteric loop, force on a current carrying conductor placed in magnetic field, Self Inductance, Factors affecting the inductance of coil, Capacitor, Factors affecting the capacitance of capacitor, Time Constant ($T=RC$)

3. **A. C. Fundamentals**

Comparison between A.C. & D.C. Voltage and current, Generation of A. C. emf, Frequency, Angular velocity, phase & phase difference, A. C. Circuit with R. L. C. use of J-operator in circuit analysis

4. **Fundamental principles of Star and Delta connection of Three phase Windings, Effect of unbalanced load in three phase system, Voltage drop, Principles and applications of Super Position Theorem, Thevenis's theorem and Norton's theorem**

5. **Objective of earthing of Power system, Causes of Over voltages and its protection, Neutral earthing, Body earthing , Lightning Arrestors - Types, Ratings and Characteristics, applications & locations**

6. **Principles of A. C. Transformer**

Operating principle, connecting load, No load operation, Reactance, Losses and Efficiency, Cooling, Parallel operation of Single phase and Three phase transformer, Tap changing, Noises and Temperature Rise

7. **D. C. Generator**

Introduction and Principle of operation, constructional details, types, Losses and efficiency, Parallel operation of d. c. generators

8. **Ammeters and voltmeters**

Principle of operation, Power factor meter, General concept of measurement of Power, Energy, Frequency

9. **Operating Principle, characteristics, construction features of Current Transformer and Potential Transformer and their application**

10. **General concept of load factor, maximum demand, diversity factor, system and line losses, power factor corrections, measurement of resistance, inductance and capacitance**

11. **Generation of Electrical Energy**

Types of generating plants, Diesel and Hydro (Working principle, equipments, Bus bars and Reactors, Automatic Voltage Regulator, Circuit Breakers, CTs, PTs, Relays etc.)

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- 12. Lay out concept of Sub-stations and Power-stations (Cabling, auxiliary plants-such as batteries etc., Fire protection and grounding system)**
- 13. Transmission Lines**
Introduction-Overhead lines and Underground cables, Types of cables, Selection of cables & Selection criteria, Mechanical and electrical design of Overhead lines, Sag, Tension, Earthling, Corona, Skin effect, Connection Schemes of distribution system
- 14. Principle of operation of D. C. Motor-Types, Torque, Losses and efficiency, speed control, speed-torque characteristics**
- 15. Introduction and types or single phase A. C. Motor (Motors and their characteristics for particular service-Domestic use.)**
- 16. Introduction, Types, Constructional details and principle of operation of Synchronous Generator (Alternator) and Synchronous Motor, Parallel operation and Synchronizing of Alternator**
- 17. Principles of Illumination (Primary and Secondary illumination, street lighting)**
- 18. Fundamentals of Protection systems**
Fuses, MCB Isolators, Contactors, Circuit Breakers - Classification, Construction Operating principle
- 19. Importance of Communication in power system**
- 20. Principles of cost estimate for distribution system for domestic**
- 21. Three phase induction motor**
Construction, Principle of operation, torque speed characteristics, stand still and running condition, method of starting
- 22. Basic Electronics**
Characteristics of diode, transistor and thyristor, Rectifier and filter, inverter, speed control of DC and AC motor by using thyristor
