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१. पदको विवरण (आन्तरिक तथा खुला प्रतियोगिताको पाठ्यक्रम)

पदको नाम :	**इञ्जिनियर**
सेवा :	**प्राविधिक**
समूह :	**इञ्जिनियरिङ**
उपसमूह :	**इलेक्ट्रिकल, इलेक्ट्रोनिक्स एण्ड कम्युनिकेशन (इइक)**
तह :	**७ (सात)**

२. आवश्यक न्यूनतम शैक्षिक योग्यता

मान्यता प्राप्त शिक्षण संस्थाबाट इलेक्ट्रोनिक्स वा इलेक्ट्रिकल, इलेक्ट्रोनिक्स एण्ड कम्युनिकेशन्स वा इलेक्ट्रिकल एण्ड इलेक्ट्रोनिक्स वा कम्युनिकेशन्स एण्ड ब्रोडकास्टिङ्ग वा इलेक्ट्रोनिक्स एण्ड टेलिकम्युनिकेशन्स विषय लिई इञ्जिनियरिङमा स्नातक (बिई) उपाधि प्राप्त गरेको ।

३. परीक्षा योजना र पाठ्यक्रम

परीक्षाको किसिम लिखित र अन्तर्वार्ता हुनेछ । पूर्णाङ्क १०० को लिखित परीक्षा र पूर्णाङ्क २० को अन्तर्वार्ता निम्नानुसारका चरणमा लिइने छ ।

परीक्षा योजना (Examination Scheme)

प्रथम चरण :- लिखित परीक्षा (Written Examination)					**पूर्णाङ्क :– १००**	
पत्र /विषय	**पूर्णाङ्क**	**उतीर्णाङ्क**	**परीक्षा प्रणाली**		**प्रश्नसंख्या X अङ्क**	**समय**
व्यवस्थापन, सान्दर्भिक कानून र सेवा सम्बन्धी	१००	४०	विषयगत	छोटो उत्तर लामो उत्तर	४ प्रश्न X ५ अङ्क ८ प्रश्न X १० अङ्क	३ घण्टा
द्वितीय चरण :- अन्तर्वार्ता (Interview)					**पूर्णाङ्क :– २०**	
व्यक्तिगत अन्तर्वार्ता	२०		मौखिक			

द्रष्टव्य :

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

२. प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरु मात्र द्वितीय चरणको परीक्षामा सम्मिलित हुन पाउनेछन् ।

नेपाल टेलिभिजन
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प्राविधिक सेवा, इञ्जिनियरिङ समूह, इलेक्ट्रिकल, इलेक्ट्रोनिक्स एण्ड कम्युनिकेशन (इइक) उपसमूह, ७ (सात) तह, इञ्जिनियर पदको प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

पत्र/विषय :- व्यवस्थापन र सान्दर्भिक कानून र सेवा सम्बन्धी

खण्ड (क) - व्यवस्थापन (१०अङ्क)

१. विश्वमा टेलिभिजन प्रविधि तथा प्रसारण विकासक्रम
२. नेपालमा टेलिभिजन प्रसारणको संक्षिप्त इतिहास, स्थापनाको उद्देश्य र वर्तमान अवस्था
३. सार्वजनिक प्रसारण सेवा (Public Broadcasting Service) र त्यसका विशेषताहरु
४. प्रसारण व्यवस्थापन (Broadcasting Management) को महत्व र आवश्यकता
५. आधुनिक व्यवस्थापनको अवधारणा तथा व्यवस्थापनमा उत्प्रेरणा, तालिम, नेतृत्व र निर्णय प्रक्रिया
६. कुशल व्यवस्थापकका कार्य र गुणहरु

खण्ड (ख) - सान्दर्भिक कानून (१०अङ्क)

१. नेपालको वर्तमान संविधान
२. राष्ट्रिय प्रसारण ऐन, २०४९
३. राष्ट्रिय प्रसारण नियमावली, २०५२ (संशोधन सहित)
४. सञ्चार सँस्थान ऐन, २०२८
५. सञ्चार नीति, २०४९
६. नेपाल टेलिभिजनको प्रचलित कर्मचारी सेवा शर्त विनियमावली तथा आर्थिक प्रशासन सम्बन्धी विनियमावली
७. प्रतिलिपि अधिकार सम्बन्धी ऐन, २०५९
८. भ्रष्टाचार निवारण ऐन, २०५९
९. सूचनाको हक सम्बन्धी ऐन, २०६४

खण्ड (ग) - सेवा सम्बन्धी (८० अङ्क)

1. **Electrical and Electronics Devices and Circuits**

   Diodes (Tunnel, varactor, zener, diac, Triac, bridge, Impatt, Gunn, photo) and applications, bipolar transistors and switching characteristics, unijunction transistor, MOS transistors and switching characteristics, SCR, UJT, TTL logic circuits, MOS logic circuits, memory: RAM, DRAM, PROM, EPROM, operational amplifiers, Butterworth and Chebysev filters, A/D converters, adders, arithmetic operations, digital comparators, parity check generator, multiplexer and demultiplexer, flip-flops, shift register, counters, sequence generators, oscillators (wien bridge oscillators, tuned, LC oscillators, crystal, clap modification), resonant circuits, thyristor, controlled rectifier circuits, seven segment display, amplifier (Untuned, push-pull, feedback amplifiers, Klystron, Magetrons), emitter, clipper, collector, clamper circuits, integrated circuit concepts, SSI, MSI, VLSI, ULSI integrated circuits and commercial ICs, bode plot analysis

2. **Electromagnetics and Signal Analysis**

   Frequency spectrum (discrete and continuous) and bands, coulomb's law and electric field intensity, electric flux density and gauss' law, spectral density, noises (atmospheric, thermal, partition, white noise, Gaussian noise, noise ratio(s)), Maxwell's equations and applications, divergence theorem, energy and power, Fourier series, Laplace equation and Poisson equation, biot-svart's law, ampere's circuital law, curl, electromagnetic waves, wave motion in free space, perfect dielectric and losses, wave medium, skin effect, impedance matching, random signal theory (Ergodic processes, correction function, white noise)

3. **Communication Techniques**

Basic communication elements, wire and radio communication, analog and digital communication techniques, transmitters, receivers, RF energy, audio and video signaling, digital and analog signals, signal and noise in communication system, Amplitude Modulation, Frequency Modulation, Phase Modulation, Frequency Division Multiplexing (FDM), Time Division Multiplexing (TDM), CDM, PCM, PAM, ADPCM, Phase Shift Keying (PSK), Quadrature Amplitude Modulation (QAM), Frequency Shift Keying (FSK), digital to analog and analog to digital conversion, Coding (NRZ/HDB3/AMI), error detection and correction, Parity check, digital modulation (ASK/PSK/BPSK/QPSK/MSK), pulse modulation, modulation and demodulation circuits, frequency hopping, frequency converter and mixers, phase locked loop, techniques (simplex, half duplex and full duplex)

4. **Instrumentation and Control System**

Dynamometer, Multimeter, Oscilloscopes, Signal generator, Impedance Bridges (Maxwell, Hay, Schering, Anderson, Desauty), Transducers (Strain Guages, Thermistor, Piezoelectric tacheometer, thermocoupler) Open loop and closed loop control system, system stability and sensitivity, system transfer functions and responses, poles and zeros location and their significance, root locus method, frequency response method, Bolometers technique for measurement of power

5. **Antenna and Propagation**

Antenna fundamentals, basic antenna parameters, directional, non-directional and reflective antennas, Yagi and Log Periodic Arrays, HF, VHF, UHF and microwave antennas and their radiation patterns, polarization, radiation from dipole antenna.

Radio propagation in different waves, propagation characteristics, propagation between antennas, requency availability, limitation element at VHF, UHF, stray capacitance, internal load inductance, dummy load, traveling and standing waves, match and mismatch lines, distribution component of line, variable impedance along a mismatched line, tune circuit and filters, phase velocity, phase shift, group velocity, wave guides

6. **Optical System**

Laser, photocell, photo device (LED, CRT, photovoltaic, photodetectores), principle of optical communication, total internal reflection, Snell's law, optical fibers types, capacity and properties, dispersion, fibre losses, optical transmission, optical transmitters and receivers, splicing, connectors and coupling, fiber optics networks, optical switching, underground cabling (Route and ambient consideration, tension prediction)

7. **Satellite Communication**

Fundamental of satellite communication (tracking, Satellite orbits and Radio spectrum, satellite wave propagation and satellite antennas), digital satellite communication system, earth stations, Kepler's laws, satellite orbits, Geostationary orbit, uplink and down link, VSAT and its applications, transponder

8. **TV Technology and Broadcasting**

Basic TV technology; Modulation technique for TV; TV equipments (production and broadcasting); Audio and Video Recording (Analogue and Digital, Audio level and audio

quality, Recording in different medium, Recording process and equipments; monophonic, stereophonic and recording process, Recording in field and studios, Different audio formats and different formats of video recording system, Magnetic Recording Process); Storing, Compression Techniques, TV Transmission and Regeneration, Radio Frequency band and allocation, type of radio services, broadcasting band, frequency monitoring systems (techniques and procedures, scanning, location & direction finding)

9. **Power Supply Systems**

   Basic knowledge of Diesel/Petrol/Gas/Thermal Generators, Solar Power System, Storage Batteries, Electric Motors, Single Phase/Three Phase AC supplies, Star/Delta connection, DC Supply, Voltage and Current Regulators, Inverters, UPS, SMPS, Isolation and Power transformers, Surge protectors, Earthing system, Lightning protection

10. **Test Equipment**

    Measurement of AC/DC Voltage, Current and Resistance, Analog and Digital Signal waveforms, Frequency, Audio/Video Signaling, RF Field Strength, Modulation, RF Power output, VSWR, Earth Resistance, Spectrum analysis

द्रष्टव्य : यस पत्रमा लिखित परीक्षामा यथासम्भव पाठ्यक्रममा भएका सबै पाठ्यांशहरुबाट निम्नानुसार प्रश्नहरु सोधिनेछ ।

खण्ड	विषयगत	अङ्कभार
खण्ड (क) - व्यवस्थापन	२ प्रश्न X ५ अङ्क = १०	१०
खण्ड (ख) - सान्दर्भिक कानून	२ प्रश्न X ५ अङ्क = १०	१०
खण्ड (ग) - सेवा सम्बन्धी	८ प्रश्न X १० अङ्क =८०	८०
जम्मा अङ्क		१००