सञ्चार तथा सूचना प्रविधि मन्त्रालय
ऐमेच्योर रेडियो लाइसेन्स परीक्षाको पाठ्यक्रम

पाठ्यक्रमको रुपरेखा:- यस पाठ्यक्रमको आधारमा निम्नानुसार दुई चरणमा परिक्षा लिइने छ ।

प्रथम चरण :- लिखित परीक्षा पूर्णाङ्क-८०

द्वितीय चरण :- प्रयोगात्मक परीक्षा **(Practical)** पूर्णाङ्ग-२०

प्रथम चरण लिखित परीक्षा योजना **(Examination Scheme)**

क्र.सं.	परीक्षा प्रणाली	पूर्णाङ्क	उतीर्णाङ्क	प्रश्न संख्या अङ्कमा	समय
१.	वस्तुगत बहुउत्तर **(Multiple Choice)**	७०	३२ (४० %)	७०×१=७०	२ घण्टा
२.	विषयगत **(Subjective)**	१०		२×५=१०	

द्वितीय चरण

विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली
प्रयोगात्मक	२०	८ (४० %)	मोर्सकोड आदि

१. लिखित परिक्षाको माध्यम भाषा अंग्रेजी वा नेपाली, अथवा अंग्रजी र नेपाली दुवै हुन सक्नेछ ।

२. लामो उत्तर दिने ५ अङ्गमा पूरा प्रश्नहरु सोध्न सकिनेछ। एउटै प्रश्न लाई दुई वा दुई भन्दा बढी भागमा विभाजन गरी सोध्न सकिनेछ ।

३. बस्तुगत वहुउत्तर प्रश्नहरुको उत्तर सही दिएको प्रत्येक सहि उत्तर वापत १ अङ्क प्रदान गरिनेछ भने गलत उत्तर दिएबापत अङ्क कट्टी गरिने छैन ।

४. प्रथम चरणको लिखित परिक्षा छनौट भएका उम्मेदवारहरुलाई मात्रै द्वितीय चरणको प्रयोगात्मक परिक्षामा सम्मिलित गराइने छ ।

५. यसभन्दा अगाडि लागू भएका पाठ्यक्रमहरु खारेज गरिएका छन् ।
६. यो पाठ्यक्रम मिति २०८१/०८/१९ देखि लागु हुनेछ ।

सञ्चार तथा सूचना प्रविधि मन्त्रालय
ऐमेच्योर रेडियो लाइसेन्स परीक्षाको पाठ्यक्रम

1. Licensing conditions and station identification *(10-15%)*

1.1. Nature and purpose of amateur radio, types of license and call signs

1.2. Ministry of Communication and Information Technology and its role in amateur radio licensing

1.3. Rules and Regulations governing amateur license

2. Basic Technical Aspects *(20-30%)*

2.1. **Fundamental theory:** Elementary theory of Electricity and Magnetism, Current, Voltage, Conductors, and Insulator

2.2. **Resistance:** Resistivity and Resistance, Resistance in series and parallel, Power and Energy

2.3. **Reactive Components:** Capacitance and Inductance, unit, connections, and applications

2.4. **AC Theory:** AC and DC, frequency, wavelength, the relationship between frequency and wavelength (λ) phase, amplitude, RMS value of a sinusoidal signal, frequency range. Circuits using R, L, and C.

2.5. **Digital signals:** Analog and Digital signal, ADC, DAC principle

2.6. **Transformers and tuned circuits:** structure and working principle and types of the transformer, series and parallel circuits of capacitors and inductors, reactance, Q-factor

2.7. **Semiconductor devices:** working principle, types and applications of general and Zener diode; working principle, types and applications of BJT and MOSFET

2.8. **Cells and power supplies:** batteries and cell; working principle of different types of rectifier; integrated circuit linear power supplies

3. Transmitters and Receivers *(10-15%)*

3.1. **Transmitter concepts:** Modulation and its types (DSBAM, DSB-SC, SSB, and FM) and comparison, block diagrams of the transmitters, Transmitter interference

3.2. Oscillators, Frequency multipliers, Microphone amplifiers, and RF power amplifier

3.3. **Receiver concepts:** Demodulation and its types (DSBAM, DSB-SC, SSB, and FM) and comparison, block diagrams of the receivers, and Super heterodyne concepts.

4. Feeders and antennas *(10-15%)*

4.1. **Feeders:** cable types to use for RF signals

4.2. **Antenna concepts:** Antenna definitions, applications, Baluns, the difference between balanced and unbalanced antennas, radiation pattern, half wave dipole, Yagi antenna, EIRP, antenna gain

5. Radio propagation: key concepts *(5-7%)*

5.1. Standing waves and matching, SWR

5.2. Propagation of HF, VHF, and UHF waves

6. Electro-magnetic compatibility (EMC) *(5-8%)*

6.1. Station design and antenna placement/general principles

6.2.**EMC:** immunity, interference, sources of interference, EMC problem minimization

7. Operating practices and procedures *(10-15%)*

7.1. **Good Operating practices and procedures:** CQ call, Centre of Activity, log keeping, offensive language

7.2. **Band Plans:** importance and common bands for amateur radio, broadcasting, aeronautical, and maritime, CTCSS tone

7.3. **Codes and abbreviations:** the meaning and the reason for use of the Q codes: QRM, QRN, QRO, QRP, QRT, QSB, QSL, QSO, QSY, QTH, QRZ, QST, QRL, QRS,

7.4. **Digital modes:** RTTY, AMTOR, PSK31, FT8, WSJT

7.5. **Satellite:** Amateur Radio Orbiting Satellite (OSCARs - Normal Operating Procedure and Frequencies), Amateur Radio Geostationary Satellite (QO-100, frequencies and operating procedure), Communicating with ISS (International Space Station) and receiving SSTV Images from ISS (International Space Station)

8. Safety *(5-7%)*

8.1. **Electricity:** high voltage, fuses, and earthing

8.2. Precautions using tools

8.3. Working with RF

8.4. Lightening

9. Measurement and Construction *(5-8%)*

9.1. **Measurement:** Ammeter, Voltmeter, Multimeter, Power measurement

Model Question

Multiple choice

1. Who enforces the rules and regulations of the amateur service in Nepal?

A. The Parliament

B. The Ministry of Communication and Information Technology(MoCIT)

C. Nepal Telecommunication Authority

D. The Press Council

2. Which of the following will produce an alternating current (AC)?

A. A lead-acid automotive battery

B. A solar array

C. A fuel cell

D. A commercial generating station

3. Which instrument would you use to measure electric current?

A. An ohmmeter

B. A wavemeter

C. A voltmeter

D. An ammeter

4. What is the basic unit of capacitance?

A. The farad

B. The ohm

C. The volt

D. The henry

5. If a 100-ohm resistor is connected to 200 volts, what is the current through the resistor?

A. 1 ampere

B. 2 amperes

C. 300 amperes

D. 20,000 amperes

6. What is the definition of an amateur station?

A. A station in a public radio service used for radio communications

B. A station using radio communications for a commercial purpose

C. A station using equipment for training new radio communications operators

D. A station in the Amateur Radio service used for radio communications

7. What letters must be used for the first two letter in Nepali amateur call signs?

A. BV

B. 9N

C. 9G

D. 9M

8. How often must an amateur station be identified?

A. At the beginning of a contact and at least every ten minutes after that

B. At least once during each transmission

C. At least every ten minutes during and at the end of a contact

D. At the beginning and end of each transmission

Subjective

1. Define AM. How does it differ from FM?

2. Explain the VI characteristic of Zener diode and its working as a voltage regulator.

एमेच्योर रेडियो लाइसेन्स परीक्षा अन्तर्गत प्रयोगात्मक परीक्षा(मोर्स केड) को परीक्षा विधि

क. परीक्षामा जम्मा पाँच अक्षर र अङ्क मश्रित पच्चीस वटा शब्दहरु प्रयोग गरिने । जसमध्ये कम्तीमा

दस वटा शब्द विचमा कुनै अङ्क उल्लेख भएको एमेच्योर रेडियो कल साइन प्रयोग हुने ।

ख. परीक्षामा मोर्स संकेत प्रषेणको सरुवात तीन वटा लहरै प्रेषित VVV अक्षरबाट गरिने ।

ग. कल साइन बाहेक अन्य शब्दहरु सार्थक शब्द वा नाम हुने । अर्थ नआउने शब्दको समहु प्रयोग नगरिने ।

घ. परीक्षा समाप्त भएपछी परिक्षार्थीहरुलाई आफ्नो उत्तरपुस्तिकामा भएको कुनै खालि ठाउँ भर्न वा त्रुटि सच्चाउन पाँच मिनेटको समय प्रदान गरिने ।

ङ. परीक्षामा मोर्स संकेत सम्प्रेषण Farnsworth पद्दतिबाट हुने । सम्प्रेषित अक्षरको गति पच्चीस अक्षर प्रति मिनेट दरको तर सम्प्रेषित शब्दको गति पाँच शब्द प्रति मिनेटको हुनेछ ।

च. कुनै सहभागी मोर्सकोडको परीक्षामा उतिर्ण हुन नसकेको अवस्थामा निजले विना कुनै दस्तुर दुई सप्ताह पछि हुने मौका परिक्षामा सहभागी हुन पाउने छन ।