

Department of Examinations Sri Lanka

Examination for the issue of Amateur Radio Operator's License by the Telecommunications Regulatory Commission of Sri Lanka (Advance Class) – 2012

**Advance Electrical Technology and  
Radio Communications**

*Three hours*

Answer **any Ten (10)** questions. All questions carry equal marks.

1. (i) State **two** kinds of filters commonly used in electronic circuits and explain their operation with the help of suitable circuit diagrams.  
(ii) Draw frequency response graphs of the filters.
2. State the classes of amplifiers with the suitable diagrams and explain their operations.
3. Primary side of a single phase step down transformer is connected to 230V, 50Hz main supply.  
(i) Draw the out put wave form of the transformer.  
(ii) The above transformer to be used to obtain DC voltage to operate a receiver circuit. Explain the steps with the suitable diagrams.
4. (i) Draw the waveform of potential difference across a capacitor, when it is connected to a constant DC supply.  
(ii) Explain the operation of parallel tuned and series tuned circuits with suitable diagrams.
5. Explain the functions of the following devices which are commonly used in electronic circuits.  
(i) Silicon controlled Rectifier.  
(ii) Field Effective Transistor.  
(iii) Zenor Diode.
6. Define the following terms of an amplifier.  
(i) Current gain  
(ii) Voltage gain  
(iii) Power gain
7. Write short notes on the following.  
(i) Mixer  
(ii) Electromagnetic Induction  
(iii) Screening  
(iv) Tracking

8. Describe the following with the aid of suitable diagrams:
  - (i) Ring Bridge Modulator
  - (ii) Balance Modulator
  
9. (i) Briefly explain the terms “reflection Co-efficient” and standing wave ratio of a transmission line  
(ii) If the standing wave ratio of a transmission line is 2, find the reflection co-efficient.
  
10. Write short notes on the following
  - (i) Radiation patterns
  - (ii) Half – wave dipoles
  - (iii) Polarization of antenna
  
11. Describe the following related to radio propagation:
  - (i) Maximum usable frequency
  - (ii) Skip distance
  - (iii) Free space loss
  
12. Write down steps that can be taken to minimize the damages due to the lightning of an amateur station.