GENERAL POST OFFICE,
RADIO AND ACCOMMODATION DEPARTMENT,
HEADQUARTERS BUILDING, ST. MARTIN'S-LE-GRAND,
LONDON, E.C. 1.

1958

RADIO AMATEURS' EXAMINATION

Saturday, 4th October, 1958 2.30 p.m. to 5.30 p.m.

Part 1

Both questions in this part MUST be answered.

1. Licence Conditions.

(a) What are the main purposes for which an amateur station may be used ?

(b) In what localities or places may an amateur station *not* be established ?

(c) Who may operate an amateur station ?

(d) What log records should be kept ?

(20 marks)

2. With the aid of sketches and/or diagrams explain :

(a) The effects of and the precautions against over modulation;

(b) The arrangement and use of circuits to reduce "key clicks", "harmonics" and "spurious emissions".

(20 marks)

Part 2

Answer SIX of the eight questions in this Part.

3. With the aid of sketches, describe a method of making an electro-magnet. What factors would determine the efficiency of such a magnet ? Briefly describe two practical uses of electro-magnetic principles.

(10 marks)

[SEE OVER]

4. What do you understand by the terms "ωL" and "1/ωC" ? Why are these terms important in dealing with alternating current problems and under what condition may they be disregarded ?

(10 marks)

5. With the aid of characteristic curves and waveforms, describe the action of a cumulative grid detector valve.

(10 marks)

6. A superheterodyne receiver when tuned to 960 kc/s is found to be causing interference on 1425 kc/s. How would you account for this and what steps may be taken to reduce the interference ?

(10 marks)

7. Draw a circuit diagram of a crystal controlled oscillator. Describe its action in commencing and maintaining oscillations and say what refinements may be added to improve frequency stability. *(10 marks)*

8. Describe why changes in frequency may be necessary to maintain h.f. communication throughout a period of 24 hours.

(10 marks)

9. What is meant by the "radiation characteristics" of a half-wave dipole ? What practical steps could be taken to improve the radiation pattern or concentrate the beam in a specific direction ?

(10 marks)

10. Describe the construction of a moving coil ammeter. Say how you would adapt such an instrument to measure the anode current and voltage of a transmitter output stage.

(10 marks)