



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)

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4. What do you understand by the terms " ωL " and " $1/\omega C$ "? 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)