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

1950

RADIO AMATEURS' EXAMINATION

Saturday, 7th October, 1950 2.30 p.m. to 5.30 p.m.

Answer ALL questions.

1. Explain what is meant by modulation. Describe briefly with the aid of a diagram one method of modulating a radio frequency transmitter.

(20 marks)

2. State Ohm's Law. A battery of 36 volts E.M.F. is connected to a resistor of 5 ohms joined in series with two resistors of 2 and 3 ohms connected in parallel. If the current through the 3 ohms resistor is 2 amperes what is the internal resistance of the battery ?

(15 marks)

3. What requirements have to be met under the 'Power and Frequencies' condition of the Postmaster-General's licence? What purposes are these requirements intended to serve ?

(15 marks)

4. Describe a transmitting aerial suitable for one of the amateur bands, and show how it may be tuned to frequencies above and below its natural frequency.

(10 marks)

[SEE OVER]

5. What is the reactance of an inductor having an inductance of 2 Henrys at a frequency of (a) $100/\pi$ c/s.; and (b) $10/\pi$ kc/s.

(10 marks)

6. Explain briefly why pentode or tetrode valves are commonly used in preference to triode valves in the radio frequency stages of receivers.

(10 marks)

7. What steps should be taken in the design of a receiver to minimise the risk of instability ?

(10 marks)

8. The D.C. feed to the output stage of a transmitter is 250 volts at 80mA. It is found that the R.F. current flowing in the artificial aerial load resistor of 1,000 ohms is 0.1 ampere. Calculate (a) the power input; (b) the power output; and (c) the efficiency of the stage.

(10 marks)