Total No. of printed pages = 3

CAI-404/EC&D-I/4th Sem/2013/M

ELECTRONIC CIRCUITS AND DEVICES – I

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) Briefly explain the working principle of class A amplifier and derive its efficiency.

   (b) What do you mean by magnetic feedback? Explain its significance.

   (c) A CE class A amplifier is coupled to a load resistance of 12Ω by a transformer of primary to secondary turns ratio 8:1. The signal has a peak to peak swing of 250 mA. Calculate its output power. 7+3+4=14

2. (a) What do you mean by buffer amplifier? Explain the operation of OPAMP as subtractor and integrator. 2+8+4=14

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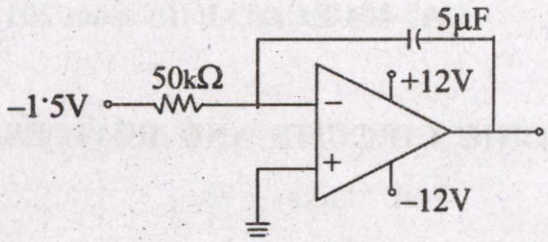
(b) When will the OPAMP get saturated ?

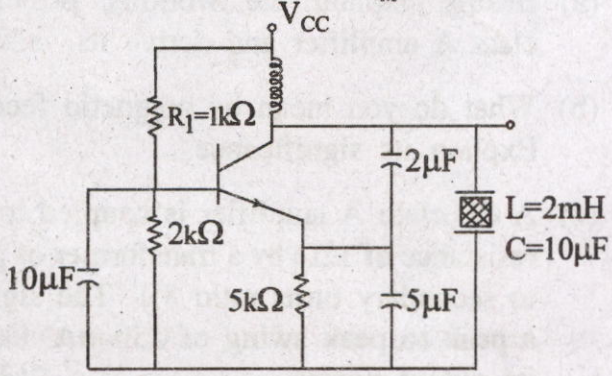


3. (a) What are the two criterions that must be followed by the oscillator circuits ?

2+6+6=14

(b) Describe the construction and operation of Hartley oscillator.

(c) Calculate the frequency of oscillation for the following circuit where $C_M = 5\mu F$.



4. (a) Determine the equation of output resistance and input resistance of a transistor amplifier using h-parameters.

(b) Explain the operation of voltage series feedback amplifier. 8+6=14

5. (a) Explain the operation of monostable multivibrator.

   (b) Determine the value of capacitor to be used in an astable multivibrator to provide train of pulse 2μs wide at a repetition rate of 100 kHz if $R_1 = R_2 = 20\ k\Omega$. 10+4=14

6. (a) What is pinch off voltage ? Explain the principle of operation of PJFET.

   (b) Describe the working principle of depletion mode MOSFET. 2+6+6=14

7. Write short notes on any *four* of the following : 3½×4=14

   (i) Push-pull amplifier

   (ii) NMOS

   (iii) Current series feedback amplifier

   (iv) Application of OPAMP as computational unit

   (v) BJT as amplifier.