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BII1302

Analog Electronics (New) (1010)

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any two** from each unit, all units are compulsory.
5. Assume suitable data if necessary.
6. Draw diagrams whenever necessary.
7. Figure to the right indicate full marks.
8. Use of non-programmable calculator is allowed.

UNIT - I

1. a) State & prove maximum power transfer theorem for DC circuit. 10
b) Calculate current through $4\text{k}\Omega$ resistance using thevenin's theorem for circuit shown in fig. I 10

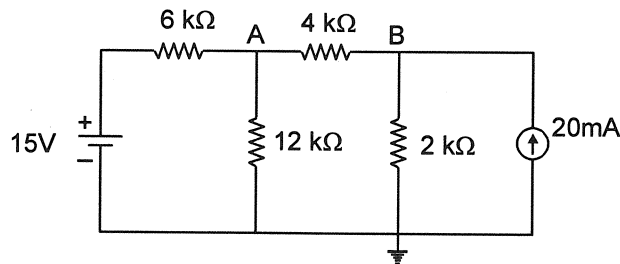


Fig. (i)

- c) Find out current through 10Ω resistance using Norton's theorem for circuit shown in fig. II. 10

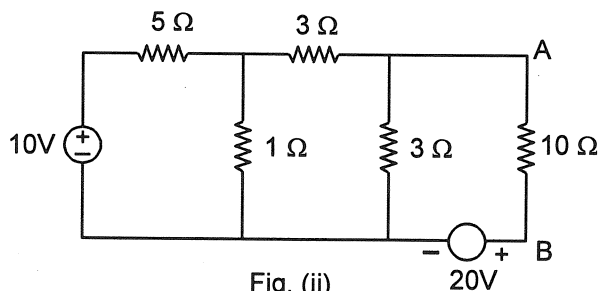


Fig. (ii)

UNIT - II

2. a) A common base transistor amplifier is driven by voltage source of internal resistance $R_S = 1200\Omega$, $R_L = 1k\Omega$, $h_{ib} = 22\Omega$, $h_{rb} = h_{ob} = 0$, $h_{fb} = -0.98$ findout A_V , A_{VS} , A_I , A_{IS} & R_i . 10
- b) For a transistor amplifier $I_C = 10mA$, $V_{CE} = 10V$ at room temperature. $h_{fe} = 100$, $h_{re} = 10^{-4}$, $h_{ie} = 500\Omega$, $h_{oe} = 10^{-4} A/V$. Findout values of high frequency π - model parameters and draw the circuit. 10
- c) Explain miller theorem & it's dual with neat diagram. 10

UNIT - III

3. a) For differential amplifier
 $V_{CC} = 15V$, $V_{EE} = 15V$, $R_C = 4.7k\Omega$, $R_E = 6.8k\Omega$, $R_S = 100\Omega$,
 $h_{fe} = 100$, $h_{ie} = 2.8k\Omega$, $V_{BE} = 0.7V$,
 Find out I_{CQ} , V_{CEQ} , A_d , A_C , CMRR & V_o if $V_{s1} = 70mV$ & $V_{s2} = 40mV$. 10
- b) Explain how the square wave testing method is used to calculate bandwidth of an amplifier. 10
- c) Draw circuit diagram for class - A transformer coupled amplifier. Show that, maximum efficiency is 50%. 10

UNIT - IV

4. a) Explain self bias method for JFET. 10
- b) Draw the block diagram for four different topologies of negative feedback amplifier. Give advantages of negative feedback. 10
- c) State & explain barkhausain criteria for oscillation. Explain the working of wien bridge oscillator. 10

UNIT - V

5. a) Explain the working of transistor shunt regulator. 10
- b) Explain the working of current limiting circuit. 10
- c) Draw the block diagram of SMPS & explain it's operation. 10
