Code No: RR210401　　　　　　$\boxed{\textbf{RR}}$　　　　　　$\boxed{\textbf{Set No. 2}}$

II B.Tech I Semester Examinations,November 2010
ELECTRONIC CIRCUIT ANALYSIS
Electronics And Communication Engineering

Time: 3 hours　　　　　　　　　　　　　　　　　　Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Define about class A, class B, class AB and class C operation of power amplifiers.

   (b) Design a class B power amplifier to deliver 25w to a load resistor R_L=8Ω, using transformer coupling. V_m=V_{cc}=25V. Assume reasonable data wherever necessary.　　　　　　　　　　　　　　　　　　　　　　[6+10]

2. (a) What are the specifications of amplifiers? Explain them. Give their typical values.

   (b) The LF parameters of a transistor at $I_e = 20$mA, $V_{ce} = 10$V and at room temperature $h_{ie} = 400$ Ω, $h_{oe} = 10^{-5}$ A/V, $h_{fe} = 150$, $h_{re} = 10^{-4}$. At the same operating point $f_T = 60$ MHz, and $C_{ob} = 3$PF , compute the values of all the hybrid $-\pi$ parameters.　　　　　　　　　　　　　　[6+10]

3. (a) What are the limitations of various Linear regulators. Explain.

   (b) In the given Zener diode regulator circuit, Zener diode conducts if the supply voltage V_i is greater than 20V. Zener diode voltage is 16V. The meter resistance is 500 ohms. Find R_1 and $R_2$where $R_1 + R_2 = 99.5$KΩ. {As shown in the Figure3b}　　　　　　　　　　　　　　　　　　　　[6+10]
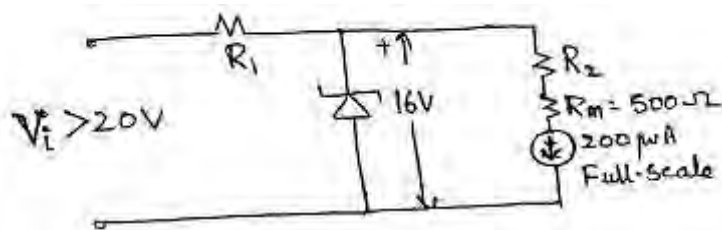

Figure 3b

4. (a) Obtain the theoretical expressions for f_1n and f_2n when n-stages of identical amplifiers are cascaded.

   (b) For a given transistor (BJT), $h_{fe} = 100$. $f_B = 5$ KHzs. Determine the Bandwidth of the transistor. If the lower cut off frequency $f_1 = 100$ Hzs and upper cut off frequency $f_2 = 100$ KHzs, then determine the midband frequency f_0 of the amplifier circuit.　　　　　　　　　　　　　　　　　　[10+6]

5. (a) Explain the principle of stagger tuning technique of transformer - coupled amplifier that is used to obtain band pass filter characteristic with pass band of 10 KHZ with all necessary diagrams for illustration.

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(b) Also mention the class of operation of the amplifier for limiting the amplitude of gain to the desired level.

6. (a) What is thermal resistance? What is the unit of thermal resistance.

(b) Derive a relation to prove that the effective surface area of the transistor case could be increased, the resistance of heat flow could be decreased. [8+8]

7. (a) List out the limitations of three terminal voltage regulator circuits.

(b) Draw the circuit of 3 terminal voltage regulator to use it as a current source and explain its operations.

(c) What are the advantages of switched mode power supplies over linear voltage Regulators [5+5+6]

8. (a) Mention typical values for the h-parameters of a transistor connected in CE, CB, and CC configurations. Compare the characteristics of CE, CB and CC amplifiers.

(b) A 1 – stage CE amplifier with emitter bypass resistor circuit has $R_1 = 50\Omega$, $R_2 = 2K$, $R_C = 1K\Omega$, $R_E = 270\Omega$, $R_S = 1K\Omega$, $R_L = 1.2K$. Find A_i, R_i, R_o, A_V. The h-parameters are $h_{ie} = 1100$, $h_{fe} = 50$, $h_{oe} = h_{re} = 0$. [8+8]

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Code No: RR210401 |RR| |Set No. 4|

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Electronics And Communication Engineering

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2. (a) List out the limitations of three terminal voltage regulator circuits.

   (b) Draw the circuit of 3 terminal voltage regulator to use it as a current source and explain its operations.

   (c) What are the advantages of switched mode power supplies over linear voltage Regulators [5+5+6]

3. (a) What are the limitations of various Linear regulators. Explain.

   (b) In the given Zener diode regulator circuit, Zener diode conducts if the supply voltage V_i is greater than 20V. Zener diode voltage is 16V. The meter resistance is 500 ohms. Find R_1 and R_2 where $R_1 + R_2 = 99.5K\Omega$. {As shown in the Figure3b} [6+10]
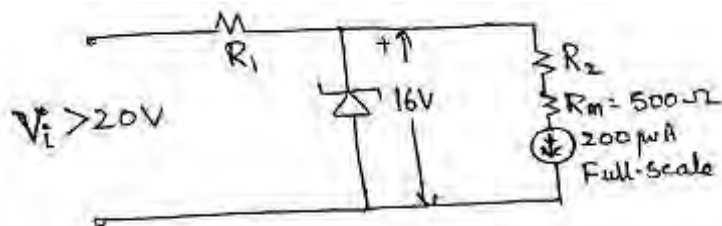

Figure 3b

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(b) The LF parameters of a transistor at $I_c = 20$mA, $V_{ce} = 10$V and at room temperature $h_{ie} = 400$ Ω, $h_{oe} = 10^{-5}$ A/V , $h_{fe} = 150$, $h_{re} = 10^{-4}$. At the same operating point $f_T = 60$ MHz, and $C_{ob} = 3$PF , compute the values of all the hybrid -π parameters.   [6+10]

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RR **Set No. 1**

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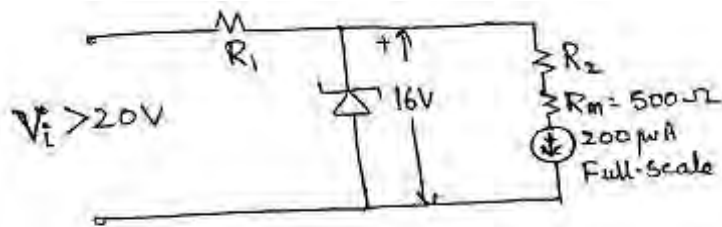

Figure 3b

5. (a) List out the limitations of three terminal voltage regulator circuits.

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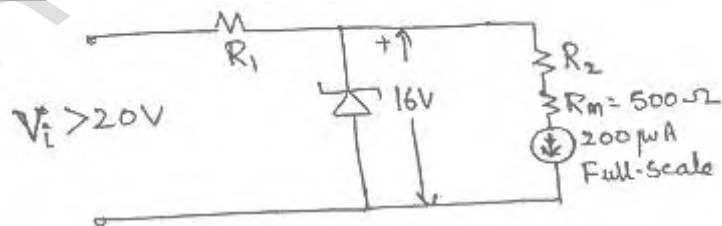

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