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06CS32

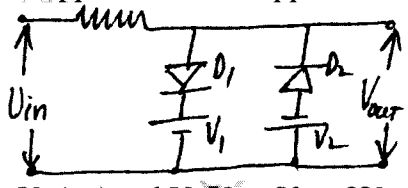
Third Semester B.E. Degree Examination, June/July 2013
Electronic Circuits

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain negative clipper, with output waveforms. For the Fig. Q1 (a) show output voltages. Give the applications of clippers. **(06 Marks)**



$V_{in}(pp) = 6$ V, $V_1 = V_2 = 2$V,
$D_1 = D_2 = 0$ V
Fig. Q1 (a)

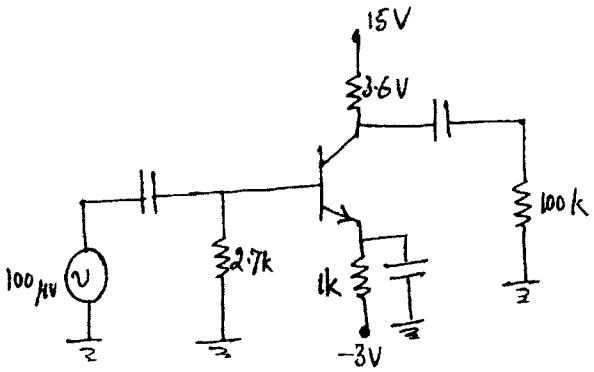


Fig. Q1 (c)

b. What are optocouplers? Explain with diagram. **(04 Marks)**

c. For the TSEB amplifier circuit (Fig. Q1 (c)), make the dc analysis and draw the waveforms at different instances of the dc values calculated. Also draw the ac equivalent T model. **(10 Marks)**

2 a. Define coupling capacitor and its importance. Using Fig. Q2 (a), if R = 2 KΩ and the frequency range is from 20 Hz to 20 kHz, find the value of C needed to act as a good coupling capacitor. **(04 Marks)**

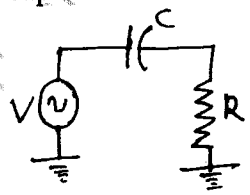


Fig. Q2 (a)

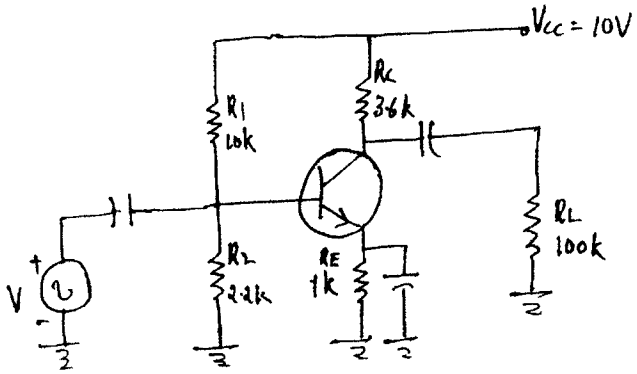


Fig. Q2 (c)

b. Draw ac equivalent circuits for : base-biased amplifier; UDB amplifier and TSEB amplifier. **(12 Marks)**

c. For the circuit of Fig. Q2 (c) show the DC circuit and AC π model. **(04 Marks)**

3 a. What is the voltage gain in Fig. Q3 (a)? The output voltage across the load resistor? (dc emitter current is 1.1 mA) **(04 Marks)**

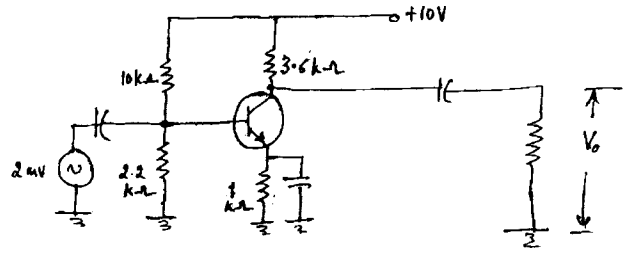


Fig. Q3 (a)

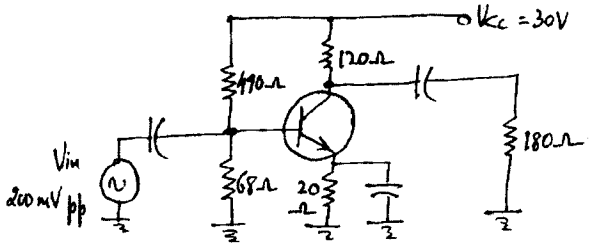


Fig. Q4 (a)

b. With a neat diagram, explain the operation of a swamped amplifier. Draw the ac equivalent circuit. Derive the equations for voltage gain and Zin (base). **(10 Marks)**

c. Draw the figure of transistor voltage regulator and explain its working. **(06 Marks)**

4 a. What is the transistor power dissipation and efficiency of Fig. Q4 (a).
Given : If peak to peak output voltage = 18 V. **(06 Marks)**

b. With figure explain class B push-pull amplifier with advantages and disadvantages. **(08 Marks)**

c. Explain about transistor power rating. **(06 Marks)**

PART – B

5 a. The D-MOSFET amplifier shown in Fig. Q5 (a) has $V_{ts(off)}$ = -2 V, I_{DSS} = 4 mA and g_{mo} = 2000 μS. What is the circuits output voltage? **(05 Marks)**

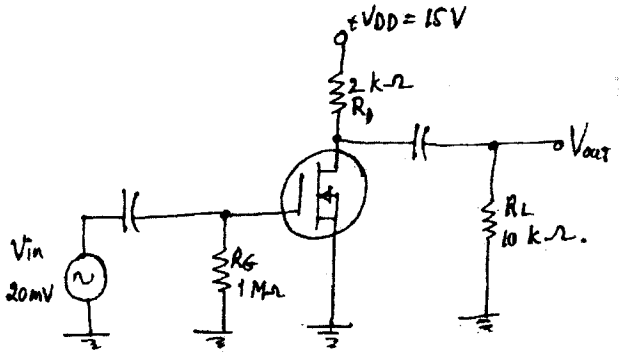


Fig. Q5 (a)

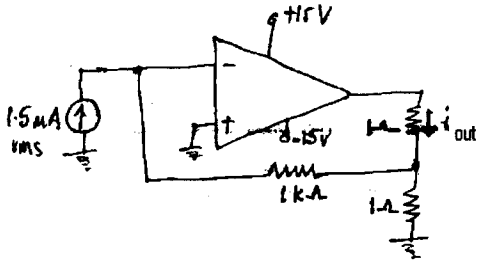


Fig. Q6 (c)

b. Explain the operation of D MOSFET. Draw the drain and Transconductance curve. **(07 Marks)**

c. With figure, explain about active-load and passive-load switching. **(08 Marks)**

6 a. Explain the frequency response of an AC amplifier with necessary figure and illustrate about cut off frequencies, mid band and outside the midband. **(10 Marks)**

b. Four types of negative feedback exist. Name them with figures. **(04 Marks)**

c. What is the load current and load power in Fig. Q6 (c)? If the load resistance is changed to 2Ω, what are the load current and power? **(06 Marks)**

7 a. Explain with figure inverting Schmitt trigger with hystersis response. **(06 Marks)**

b. With neat circuit diagram and output response waveform, explain relaxation oscillator. **(06 Marks)**

c. Explain with figure the working of monostable operation using 555IC. **(08 Marks)**

8 a. Draw the circuit of two-transistor series regulator and explain its working. Also what is headroom voltage, power dissipation and efficiency of about circuit. **(10 Marks)**

b. Explain working of series regulator with foldback current limiting circuit and show the graph of load voltage versus load current with foldback current limiting. **(10 Marks)**

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