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06CS32

Third Semester B.E. Degree Examination, June / July 08
Electronic Circuits

Time: 3 hrs. Max. Marks:100

Note : ***Answer any FIVE full questions, choosing atleast two questions from each part.***

PART - A

1 a. Explain the working of a negative clipper with its ct diagram. **(05 Marks)**

b. Sketch the wave form output V_{out} in the following circuit, indicating the values of maximum positive and negative output voltages.

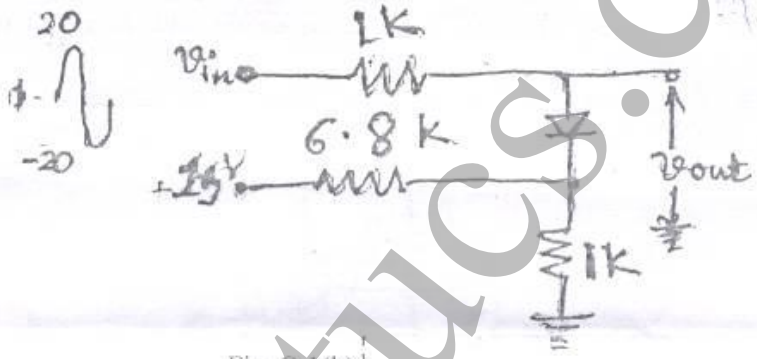

Fig. Q 1(b) **(05 Marks)**

c. Explain the working of a positive clamper with suitable diagrams. **(05 Marks)**

d. Explain the working of Schottkey diode. **(05 Marks)**

2 a. What is the ac collector voltage in the first stage of the amplifier circuit shown in Fig. Q 2(a)? Calculate the output voltage V_{out} across the load resistor.

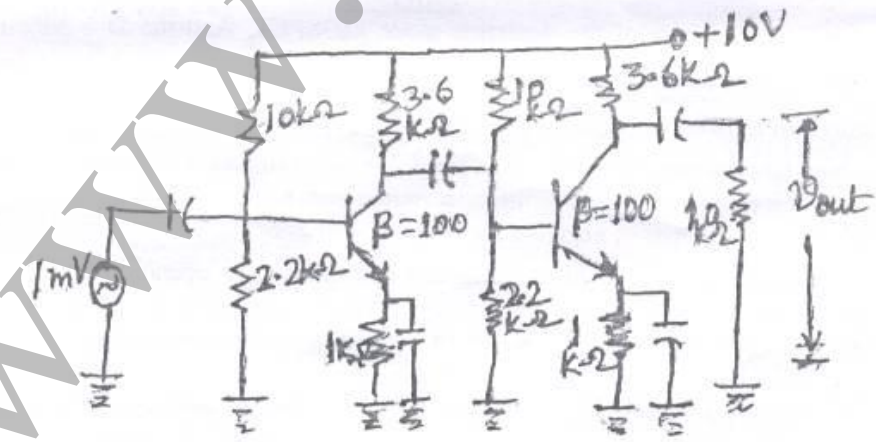

Fig. Q 2(a) **(10 Marks)**

b. Draw the circuit diagram of a swamped amplifier. Write down its ac equivalent circuit and derive expressions for Zin (base) and voltage gain A_v. **(10 Marks)**

3 a. With the help of a circuit diagram, explain the working of a voltage divider biased (VDB) amplifier, highlighting on bias stabilization. (08 Marks)

b. In the following circuit, what is the value of capacitor 'C' needed to efficiently short the point E to ground, if the input frequency is 1 kHz?

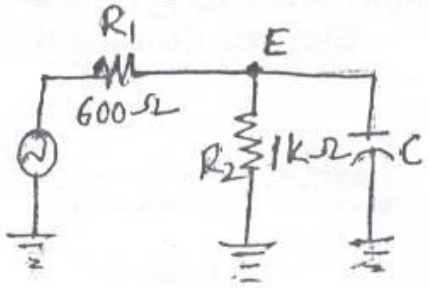

Fig. Q 3(b) (06 Marks)

c. Write down the circuit diagram of a base – biased amplifier and its ac equivalent circuit replacing the transistor by its π model. (06 Marks)

4 a. Explain the working of an emitter follower circuit with its circuit diagram and its ac equivalent circuit. (06 Marks)

b. Distinguish between class A, class B, class AB and class C amplifier. (04 Marks)

c. Calculate the voltage gain and the ac voltage of the following emitter follower if $\beta = 150$.

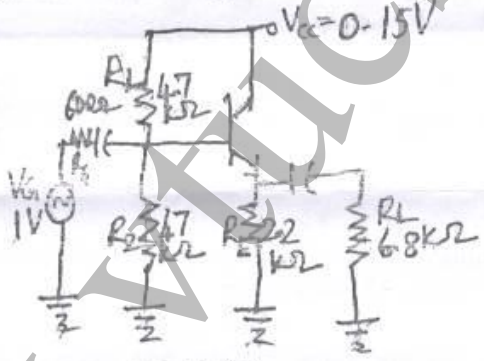

Fig. Q 4(c) (10 Marks)

PART - B

5 a. Explain the structure of the depletion mode MOSFET. And the D – MOSFET curves. (10 Marks)

b. Explain the active load switching circuit using the MOSFET. Draw its equivalent circuit and its two terminal curves. (10 Marks)

6 a. Explain the frequency response of an amplifier. Describe the effect of the components that reduces the response of the amplifier below and above the midband. (08 Marks)

b. Explain the four types of negative feed back amplifiers. (12 Marks)

7 a. Draw the circuit diagram of an integrator and explain its operation with a typical input pulse. (10 Marks)

b. Draw and explain the circuit diagram of voltage controlled oscillator using the 555 timer. (10 Marks)

8 a. Define the terms 'Load Regulation' and 'Line Regulation' with respect to a power supply. (06 Marks)

b. Describe with circuit diagram, the operation of a shunt regulation power supply.

c. What are the advantages and disadvantages of shunt regulator? What are the advantages of a series regulator? (10 Marks)

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06CS32

Third Semester B.E. Degree Examination, Dec. 07 / Jan. 08
Electronic Circuits

Time: 3 hrs. Max. Marks:100

Note : ***Answer any FIVE full questions.***

1 a. Sketch and explain the circuits of a combination clipper which limit the output between ± 10 V. Assume the diode voltage is 0.7 V. **(08 Marks)**

b. With neat diagram and waveforms explain the working of a negative clamper and also write the condition for stiff clamper. **(08 Marks)**

c. Explain how charge storage is overcome in Schottky diodes. **(04 Marks)**

2 a. Explain small signal operation of amplifiers **(06 Marks)**

b. What is the significance of ac emitter resistance in common emitter amplifier? **(04 Marks)**

c. Calculate the input impedance of the base in Fig. Q 2(c) with $\beta = 150$ also draw the ac equivalent circuit using π model. **(10 Marks)**

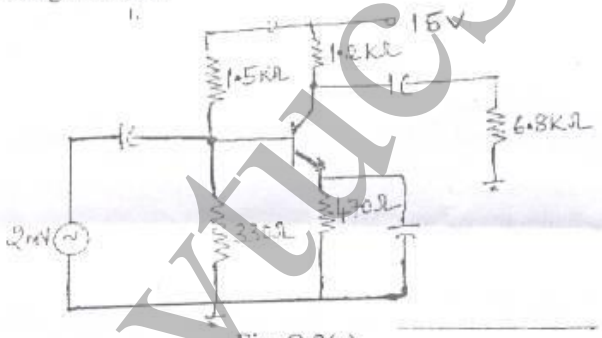

Fig. Q 2(c)

3 a. With a neat sketch explain the working of a swamped amplifier and derive the expressions for voltage gain and input impedance of the base. **(10 Marks)**

b. Calculate the output impedance of the amplifier in Fig. Q 3(b). **(06 Marks)**

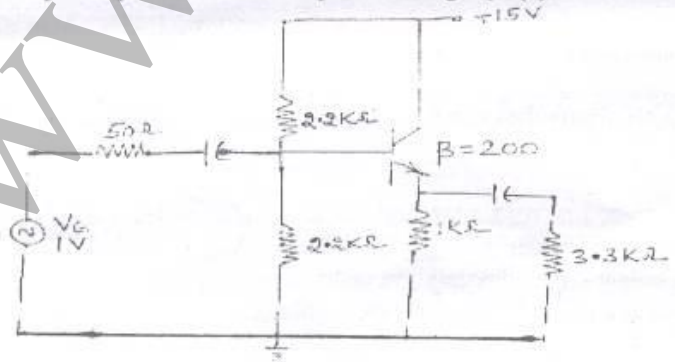

Fig. Q 3(b)

c. Write a note on complementary Darlington pair. **(04 Marks)**

4 a. Explain the working of class B push pull emitter follower. Draw its DC and AC load lines. **(10 Marks)**

b. Calculate the efficiency and transistor power dissipation of the class A amplifier shown in Fig. Q 4(b) if the peak to peak output voltage is 18 V and input impedance of the base is 100Ω.

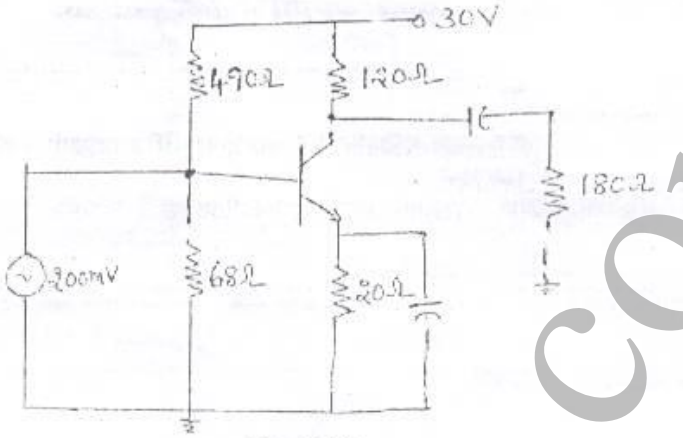

Fig. Q4(b) **(10 Marks)**

5 a. Describe the drain curves and Transconductance curve of enhancement mode MOSFET. **(08 Marks)**

b. Explain active load switching. How it advantages over passive load switching? **(06 Marks)**

c. With a neat circuit diagram explain CMOS inverter. **(06 Marks)**

6 a. Draw the frequency response of an AC amplifier. Define the terms cut off frequency, mid band gain. Derive the expression for gain in terms of mid band gain and cut off frequencies. **(06 Marks)**

b. OP Amp 74 IC has a mid band gain of 100,000, lower cut off frequency of 10 Hz and roll of rate 20 dB per decade. What is the voltage gain at 10 kHz? **(06 Marks)**

c. Explain ICVS amplifier. **(08 Marks)**

7 a. Design an OP Amp relaxation oscillator for a frequency of 1 kHz. Also draw the output waveform and waveform across the capacitor. **(10 Marks)**

b. Write the functional block diagram of IC 555 timer. Explain astable operation with the circuit diagram. Also draw the output waveform and waveform across the capacitor. **(10 Marks)**

8 a. Define load regulation, line regulation and output resistance for a voltage regulator. For a regulator the measured values are V_{NL} = 9.91 V, V_{FL} = 9.81 V, V_{HL} = 9.94 V and V_{LL} = 9.79 V. Calculate the load regulation and line regulation. **(10 Marks)**

b. What are switching regulators? Explain buck regulator. **(10 Marks)**