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06CS32

Third Semester B.E. Degree Examination, Dec.09/Jan.10

Electronic Circuits

Time: 3 hrs. Max. Marks:100

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

PART – A

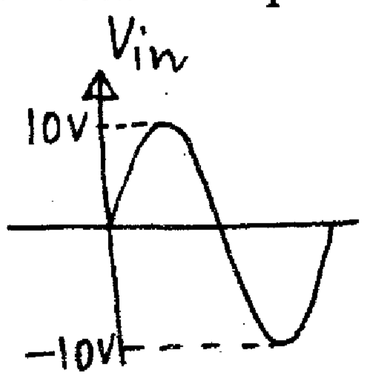
1 a. With a neat diagram and waveforms, explain the working of a positive damper with respect to the stiff clamper condition. **(08 Marks)**

b. An LED is used in the indicator circuit for the a.c. power line of 230V AC with 50Hz frequency. The circuit consists of a capacitor of 0.68μf. Calculate the capacitive reactance and average LED current. **(04 Marks)**

c. Explain with relevant diagrams, the principle of operation of a varactor diode. **(08 Marks)**

2 a. Explain with a neat circuit diagram and a.c. equivalent circuit, the working of base biased amplifier. **(08 Marks)**

b. Sketch the output waveform for the clipper circuit of FigQ2(b) shown below. Assume silicon diode and obtain the peak magnitude of the output waveform.



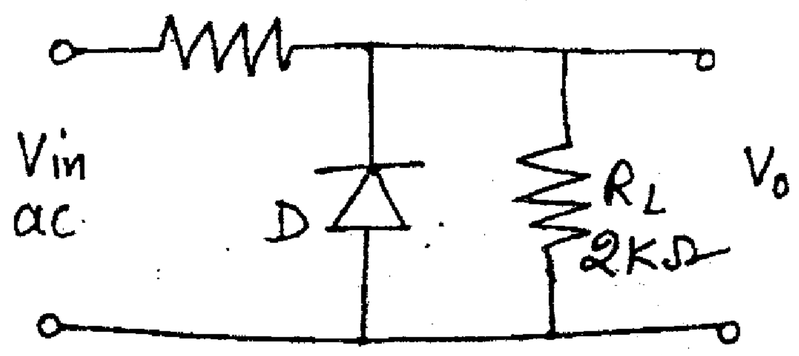


Fig.Q2(b) **(06 Marks)**

c. Find the voltage gain and output voltage across the load resistor for the given circuit of FigQ2(c).

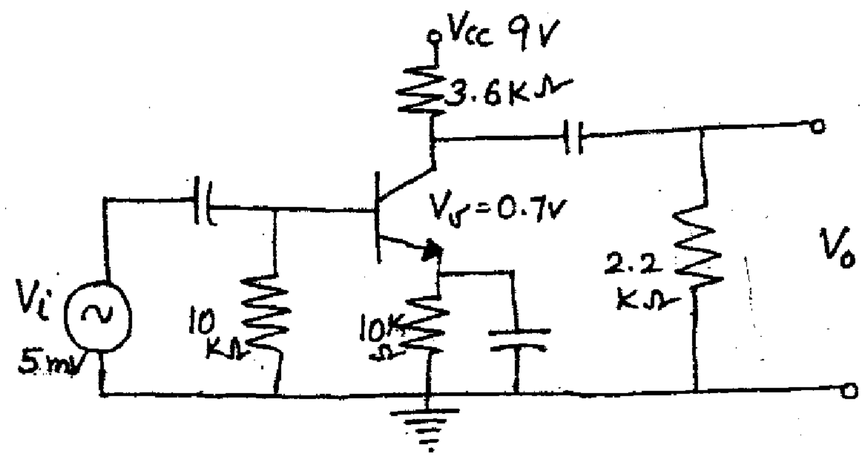


Fig.Q2(c) **(06 Marks)**

3 a. Explain the working of a swamped amplifier with a neat circuit diagram. Derive the expression for voltage gain. **(08 Marks)**

b. Draw the cascaded CE and CC stages of amplifier. Explain. **(06 Marks)**

c. Derive an expression for an output voltage for a series feedback type regulator. **(06 Marks)**

4 a. Explain the principal of operation of class B push-pull amplifier with a neat circuit diagram and relevant waveforms. **(08 Marks)**

b. In a class B amplifier, $V_{CE(min)}$ = 1 volt, supply voltage V_{CC} = 18 volts. Calculate the collector circuit efficiency. **(04 Marks)**

c. What is digital switching? Explain in detail passive load switching and active load switching. **(08 Marks)**

PART –B

5 a. What is impedance matching? Explain. **(04 Marks)**

b. Explain briefly decibel power gain and decibel voltage gain. **(06 Marks)**

c. Explain ideal closed loop voltage gain, gain stability, closed loop input impedance, closed loop output impedence and non linear distortion, with respect to VCVS amplifier. **(10 Marks)**

6 a. With relevant details, explain VCIS amplifier. **(06 Marks)**

b. Write a note on comparators with nonzero references. **(06 Marks)**

c. With a neat circuit diagram and waveforms, explain the sine wave to rectangular converter, using OP-AMP. **(08 Marks)**

7 a. Explain the principle of relaxation oscillator to generate rectangular output. Draw a neat circuit diagram and waveform. **(08 Marks)**

b. Explain with a neat connection diagram and waveforms, how IC555 timer is used as a stable multivibrator. **(08 Marks)**

c. What do you know about phase locked loops? Explain. **(04 Marks)**

8 Write an explanatory note on :

a. Opto electronic devices

b. Load lines in power amplifiers

c. Voltage controlled oscillator

d. Switching regulators. **(20 Marks)**

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