

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER- III (NEW) EXAMINATION – SUMMER 2015

Subject Code: 2131006

Date: 29/05/2015

Subject Name: Electronic Devices and Circuits

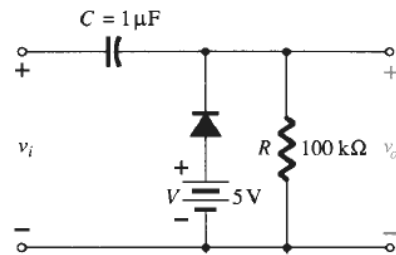
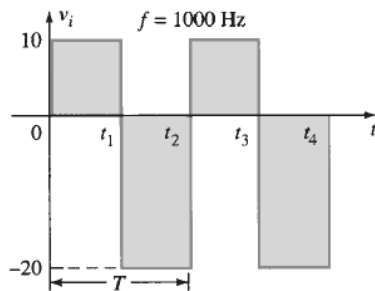
Time: 02.30pm-05.00pm

Total Marks: 70

Instructions:

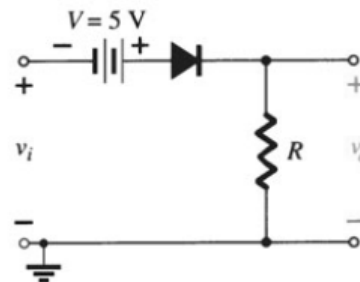
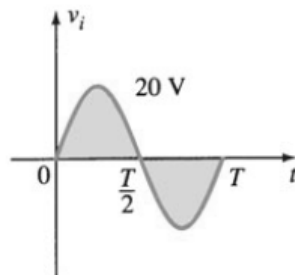
1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Categorize power amplifiers by its class. Compare the each class by its operation cycle and power efficiency. **07**
- (b) Explain the working of center taped full wave rectifier with waveforms. **07**
- Q.2** (a) Explain how a Schottky diodes work. List its advantages over common diode and applications. **07**
- (b) Determine v_o for network given below. **07**

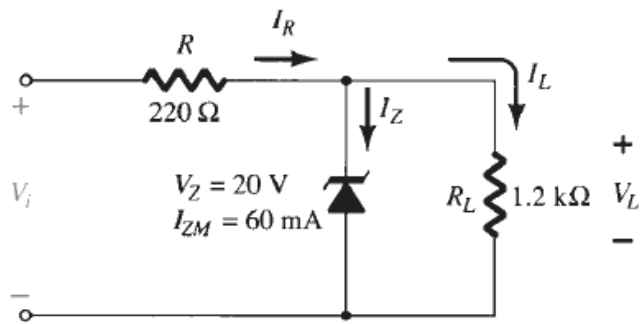


OR

- (b) Determine v_o for network given below. **07**

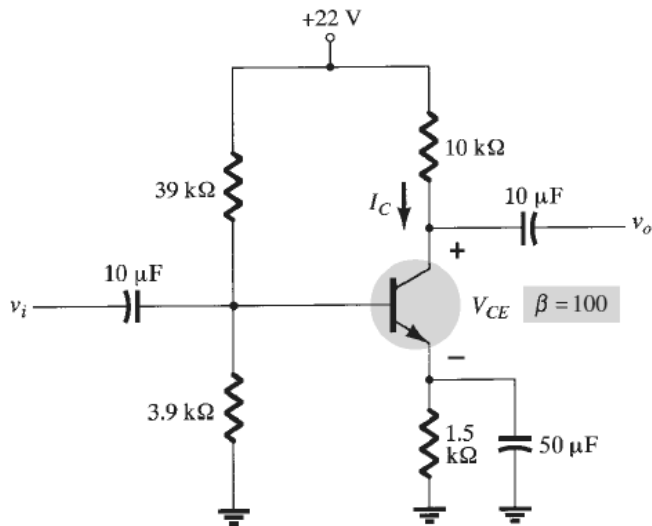


- Q.3** (a) Describe the relationship among the base, emitter and collector currents of a bipolar junction transistor. **07**
- (b) Determine the range of values of V_i that will maintain the Zener diode of figure given below in the “on” state. **07**



OR

- Q.3** (a) Explain the application of JFET as shunt switch and series switch. 07
(b) Determine the dc bias V_{CE} and the current I_C for the voltage-divider configuration of figure given below. 07



- Q.4** (a) Describe the structure of a silicon crystal. List the two types of carriers and name the type of impurity that causes each to be a majority carrier. 07
(b) Define positive and negative feedback. Also derive the expression of transfer gain with negative feedback with the use of block diagram. 07

OR

- Q.4** (a) Explain how the swamped amplifier works and list three of its advantages. 07
(b) Explain the Zener breakdown and avalanche breakdown in pn -junction 07

- Q.5** (a) Explain the importance in analyzing ac operation of transistor's with T-model and π model. 07
(b) Draw a schematic of a typical CMOS digital switching circuit and explain its operation 07

OR

- Q.5** (a) Draw a diagram of an emitter follower and describe its working and advantages. 07
(b) Explain the characteristics and operation of Enhancement-mode MOSFET 07
