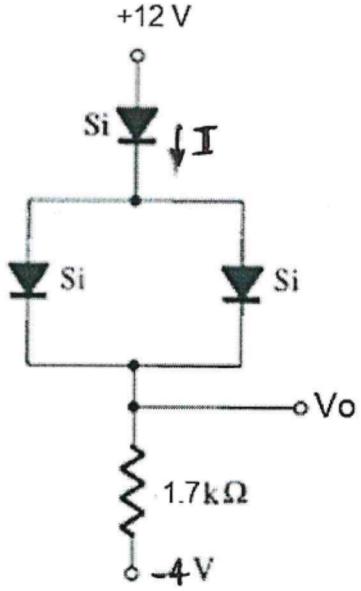
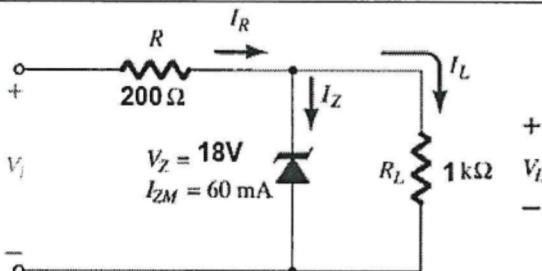


## August 2021: END SEMESTER ASSESSMENT- B.TECH. II SEMESTER

## UE20EC101 –Electronic Principles and Devices

Time: 180 mins		Answer All Questions	Max Marks: 100
1.	a	<p>Solve the following</p> <p>(i) The knee voltage of a Si diode is 0.68V and its reverse saturation current is 15nA at 25°C. Determine knee Voltage at 40°C.  (ii) The knee voltage of a Si diode is 0.69V and its reverse saturation current is 12nA at 28°C. Determine reverse saturation current at 43°C and 48°C.</p>	6M
	b	<p>Use Second approximation for a diode to determine the unknown values for the following.</p> <p>(i) Determine I and V<sub>o</sub> for the circuit shown in the Figure below.      (ii) Determine I<sub>D</sub> and V<sub>o</sub> for the circuit shown in the Figure below</p>	7M
	c		7M
2.	a	<p>With a neat diagram, explain the working principle of Full wave Rectifier with Centre tapped Transformer and derive the expression for V<sub>dc</sub> and V<sub>rms</sub></p>	7M
	b	<p>Calculate the RMS value of the ripple voltage for the FWR if a 100μF Capacitor is connected to a load drawing 50mA of current .What is the dc voltage at the output if the peak rectified output voltage is 30V and frequency is 50Hz? Also find the ripple factor.</p>	6M
	c	<p>Determine the range of values of V<sub>i</sub> that will maintain the Zener diode in the “on” state for the following Circuit.</p>	7M



3.	a	Realize The following Logical gates using NAND Gates only (i) NOR (ii) XOR (iii) AND (iv) NOT	7 M
	b	With Characteristic Table and a neat circuit Diagram using ONLY NAND Gates, explain JK Flip flop.	6 M
	c	Define shift register. Draw the circuit diagram for 4-bit shift register. If the initial values of all the flip-flops are at logic zero and the data input given serially is 00010111 (LSB first), Find the states of the register for seven clock pulses.	7 M
4.	a	With a neat diagram, explain the Input and output V-I characteristics of PNP Common Base BJT. Find the value of $\alpha$ and $I_B$ , if $I_E = 1.32\text{mA}$ and $I_C = 1.11\text{mA}$ .	7M
	b	With a neat block diagram, explain Communication System.	7M
	c	With respect to Cellular Communication, define Cell. What are the Principles of Cellular Communication? Explain	6 M
5	a	Give the Differences between: (i) Second Generation Embedded System and Third Generation Embedded System (ii) General Purpose Computing system and Embedded Systems (iii) RAM and ROM (iv) Microprocessor and Microcontroller	8M
	b	Explain the Data Flow Model of ARM Processor with a neat diagram.	8 M
	c	With examples illustrate the usage of embedded systems for the following Applications. 1. Consumer electronics 2. Health care 3. Home automation 4. Automotive industry	4 M