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PES University, Bangalore

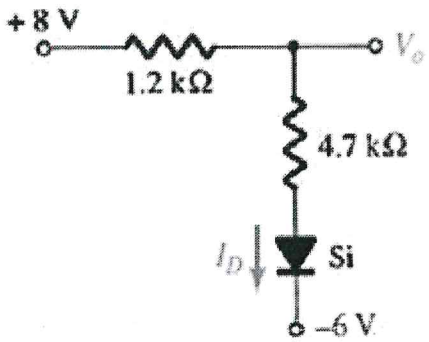
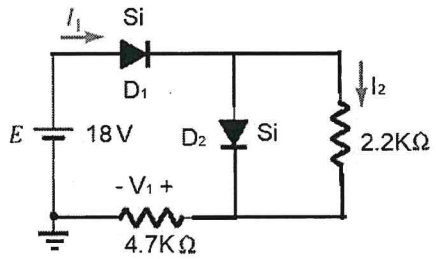
(Established under Karnataka Act No. 16 of 2013)

UE20EC101

DEC 2021: END SEMESTER ASSESSMENT- B.TECH. I/II SEMESTER

UE20EC101 –Electronic Principles and Devices

Time: 180 mins | Answer All Questions | Max Marks: 100

1.	a	Give the Difference between the following. (i) Avalanche Breakdown and Zener Breakdown (ii) Static Resistance and Dynamic Resistance (iii) Ideal diode and Practical diode	6M
	b	Solve the following using second approximation for a diode. (i) Determine Vo and I_D  (ii) Determine I_1, I_2 and V_1 for the circuit shown in the Figure below  	8M
	c	Using Shockley's equation, Find the diode current I_d for a silicon Diode, if the applied voltage V_D=0.71 and Reverse Saturation Current is 4 x 10^{-12} A at a temp of 30^0 C. Consider (η=1).	6M
2.	a	With a neat circuit diagram and waveforms explain Half wave Rectifier	6M
	b	Derive the expression for I_{dc}, I_{rms} and hence find the Efficiency for Full wave Rectifier	8M
	c	Determine the range of values of Vi that will maintain the Zener diode in the "on" state.	6M

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		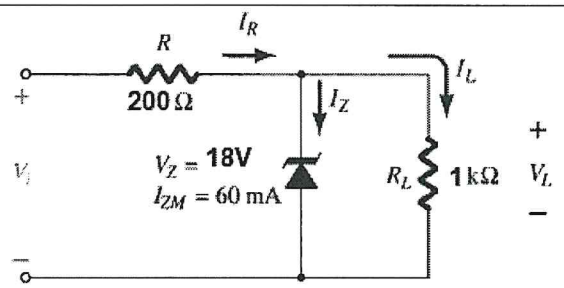	
3.	a	Find the Min-terms for the function F = AB+BC+AC by Converting into canonical SOP. Realize the SOP using Basic Gates.	6 M
	b	Using Truth Table for Full Adder Realize Full Adder using (i) XOR gates (ii) Basic Gates.	8 M
	c	Discuss the following Sequential Circuits using Circuit diagram and Characteristic Table (i) JK Flip Flop (ii) 3 bit Asynchronous up-counter	6 M
4.	a	With a neat diagram explain the Input and output V-I characteristics of NPN BJT Common Emitter Characteristics.	6M
	b	Derive the relation between α and β and Find the value of I_B, α and β if I_E = 1.2mA and I_C = 1.15mA.	8M
	c	Explain Cellular Communication with a neat diagram.	6 M
5	a	What are the Characteristics of Embedded System and discuss the types of embedded systems based on Generation.	6M
	b	Draw the Data Flow Model of ARM Processor and explain the same.	8M
	c	Mention the Differences between Microprocessor and Microcontroller.	6M