Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) - EXAMINATION – SUMMER 2018

Subject Code:2131006 Date:23/05/2018

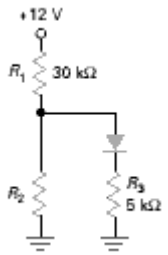
Subject Name:Electronic Devices and Circuits

Time:10:30 AM to 01:00 PM Total Marks: 70

Instructions:

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

			MARKS
Q.1	**(a)**	Explain operation of class B-push pull amplifier with the help of circuit and wave form.	**03**
	(b)	Explain p and n semiconductor formation in detail.	**04**
	(c)	Explain Voltage Divider Bias biasing in detail.	**07**
Q.2	**(a)**	What is bulk resistance? Find the bulk resistance of diode 1N4001whos forward voltage and current is 0.93 V and 1 A respectively.	**03**
	(b)	Differentiate FET and BJT.	**04**
	(c)	Draw and explain series and shunt positive clipper with output waveforms.	**07**
		OR	
	(c)	Give the advantages of Full wave bridge rectifier over center tap rectifier. Explain bridge rectifier with neat diagram. Also draw load voltage, load current, diode voltage waveforms.	**07**
Q.3	**(a)**	Explain the function of LED with neat sketch.	**03**
	(b)	Define following terms. 1. Reverse saturation current 2. Surface leakage current 4. Peak inverse voltage 5. Surge current	**04**
	(c)	Give the importance of voltage multiplier. Explain voltage quadruple in detail.	**07**
		OR	
Q.3	**(a)**	A zener regulator has an input voltage that may vary from 22 to 30 V. If the regulated output voltage is 12 V and the load resistance varies from 140 V to 10 kV, what is the maximum allowable series resistance	**03**
	(b)	Draw V-I characteristics of Zener diode.	**04**
	(c)	What value should R2 be in figure below to set up a diode current of 0.25 mA? Consider V_D=0.7v	**07**



Q.4	**(a)**	Explain transistor construction with size and doping level of each region.	**03**
	(b)	Explain transistor characteristics with clearly indicating saturation, active and cut off region.	**04**
	(c)	Explain Darlington pair in detail. Also derive its current gain.	**07**

OR

Q.4	**(a)**	Derive relation between α_{dc} and β_{dc} of a transistor	**03**
	(b)	Draw and explain the input and output characteristics of common emitter configuration.	**04**
	(c)	Explain the working of emitter follower. Draw the ac equivalent circuit and determine the AC emitter resistance, voltage gain and input impedance.	**07**
Q.5	**(a)**	Compare E MOSFET with D MOSFET.	**03**
	(b)	Explain JFET as an amplifier.	**04**
	(c)	Define positive and negative feedback. Also derive the expression of transfer gain with negative feedback with the use of block diagram.	**07**

OR

Q.5	**(a)**	Compare the power amplifier by its operation cycle.	**03**
	(b)	Define four type of negative feedback amplifier.	**04**
	(c)	Explain the construction and operation of n type JFET.	**07**

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