Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC– SEMESTER III– • EXAMINATION –WINTER- 2016

Subject Code: X30901 **Date:30/12/2016**

Subject Name: Basic Electronics

Time:10:30 AM to 1:00 PM **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)** Explain How Zener Diode can be works as a Voltage Regulator. **07**

(b) Explain the Followings: **07**

1) Reverse recovery time of diode
2) Voltage equivalent of temperature
3) Diffusion Current
4) Mean life time of carrier
5) Mobility of electron
6) Electron volt
7) Electric Field

Q.2 **(a)** Explain Current Density and conductivity of Extrinsic semiconductor material. **07**

(b) Explain the formation of barrier potential in open circuited PN junction diode. Also derive the expression for barrier potential. **07**

OR

(b) What is transition capacitance in PN junction diode also what physical significance is for step graded junction? Prove that transition capacitance is same as parallel plate capacitance.

Q.3 **(a)** Explain half wave voltage doubler circuit using diode. **07**

(b) Explain the different types of clipping circuits. **07**

OR

Q.3 **(a)** Explain ideal diode with characteristics also Explain all factors affecting the Load Line and Q-point. **07**

(b) Explain full wave center tap rectifier with waveform and derive the equation of V_{dc} , efficiency and ripple factor. **07**

Q.4 **(a)** Explain CE transistor configuration with input and output characteristics. Also indicate different regions. **07**

(b) State the need of biasing. Discuss voltage divider bias circuit and mention its advantages. **07**

OR

Q.4	**(a)**	Explain h-parameter for CB configurations.	**07**
	(b)	Define thermal runway. Derive necessary condition to avoid thermal runway.	**07**
Q.5	**(a)**	Explain construction of p-channel depletion type MOSFET with characteristics.	**07**
	(b)	Explain with neat circuit diagram, the working of a transformer coupled class A power amplifier.	**07**

OR

Q.5	**(a)**	Explain the principle of operation of JFET. Also compare FET with BJT.	**07**
	(b)	State the role of voltage regulators in power supplies? Discuss working of a series voltage regulator.	**07**

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