

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-V • EXAMINATION – WINTER 2013

Subject Code: 151703**Date: 02-12-2013****Subject Name: Electronics in Industries****Time: 10.30 am - 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.

- Q.1** (a) Classify power diodes and explain fast recovery diode in detail. **07**
(b) Write a note on three-phase double star uncontrolled rectifier. **07**

- Q.2** (a) Explain half wave controlled rectifier with resistive-inductive load. **07**
(b) Explain full wave controlled rectifier with transformer leakage reactance and load reactance. **07**

OR

- (b) Describe six phase full wave controlled bridge rectifier. **07**

- Q.3** (a) Explain three phase center-tapped full wave uncontrolled rectifier. **07**
(b) With the load resistance of $10\text{ K}\Omega$ in a full-wave uncontrolled rectifier, the input voltage to each diode is $400 \sin 2\pi 50t$. Calculate the maximum value of current, the average current, the RMS current, form factor, ripple factor, DC power output and input power output. **07**

OR

- Q.3** (a) Explain three phase half wave uncontrolled rectifier. **07**
(b) With equations and waveform explain half-wave uncontrolled rectifier with resistive load. **07**

- Q.4** (a) Determine V_p , $R_{\max}$ and $R_{\min}$ for a PUT oscillator. Assume $V_{BB}=12\text{ V}$, $R=20\text{ K}\Omega$, $C=1\text{ pF}$, $R_{B1}=10\text{ K}\Omega$, $R_{B2}=5\text{ K}\Omega$, $I_p=100\text{ }\mu\text{A}$, $V_v=1\text{ V}$ and $I_v=5.5\text{ mA}$. **07**
(b) Explain unijunction transistor, its biasing and application. **07**

OR

- Q.4** (a) Mention Gate characteristic of thyristor with neat sketch. **07**
(b) Write about Diode-Resistance-Capacitance firing circuit. **07**

- Q.5** (a) Explain steady state characteristics and switching characteristics of power BJT. **07**
(b) Describe Shockley diode with neat sketch of its V-I characteristic, diode analog, sectional view and symbol. **07**

OR

- Q.5** (a) Write a note on transistor analogue of a thyristor. **07**
(b) Explain metal oxide controlled thyristor in detail. **07**
