

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- Vth SEMESTER-EXAMINATION – MAY/JUNE - 2012****Subject code: 151703****Date: 05/06/2012****Subject Name: Electronics in Industries****Time: 02:30 pm – 05:00 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) The internal resistance for a UJT are $R_{B1} = 7 \text{ K}\Omega$ and $R_{B2} = 3 \text{ K}\Omega$. Calculate the intrinsic stand-off ratio. If externally applied voltage V_{BB} is 30V, Calculate the stand-off voltage. **07**

(b) Explain full-wave bridge rectifier with resistive-inductive load. **07**

Q.2 (a) Explain Schottky diode with cross sectional view, symbol and plot of characteristic. **07**

(b) Describe enhancement type MOSFET. **07**

OR

(b) Explain BENISTOR with its basic structure and characteristic. **07**

Q.3 (a) Explain three layer and five layer DIAC. **07**

(b) Describe silicon controlled switch in detail. **07**

OR

Q.3 (a) Write a note on thyristor with cross sectional view, symbol and plot of characteristic. **07**

(b) Introduce new trends in power semiconductor devices. **07**

Q.4 (a) A voltage, $220 \sin(2\pi 50t)$ is applied to a half-wave rectifier with load resistance of $10 \text{ K}\Omega$. Calculate the maximum current, rms current, average current, ac power input, dc power output and ripple factor. **07**

(b) Discuss operation, circuit symbol and characteristic of programmable unijunction transistor. **07**

OR

Q.4 (a) Write a note on Jones commutation. **07**

(b) With necessary circuit diagram explain overcurrent protection of power semiconductor devices. **07**

Q.5 (a) A three-phase half-wave controlled rectifier is connected to a 230V and 50 Hz input supply with a 200Ω load resistance. If the desired average output voltage is 25 % of the maximum possible average output voltage, calculate the delay angle α . **07**

(b) Explain the operation of a three phase fully-controlled bridge rectifier. **07**

OR

Q.5 (a) Describe dual converter using circuit diagram and waveforms. **07**

(b) Explain mid-point configuration with resistive load for full wave controlled rectifiers. **07**
