

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - Ist Semester–Examination – May/June- 2012

Subject code: X11101

Subject Name: Basic Electronics

Date: 31/05/2012

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) Define the term rectification & describe the full wave bridge rectifier with the help of neat circuit diagram & waveforms. **07**
- (b) Define the following terms. **07**
- 1) Extrinsic Semiconductor.
 - 2) Intrinsic Semiconductor.
 - 3) Pinch off voltage.
 - 4) Stabilization.
 - 5) Fermi Level.
 - 6) Hall Effect.
 - 7) PIV.
- Q.2** (a) Define current amplification factor for CE configuration & Explain transistor as an amplifier in CE arrangement. **07**
- (b) Explain Emitter follower circuit. **07**
- OR**
- (b) Explain photo voltaic effect in detail. **07**
- Q.3** (a) Explain the generation of holes & electrons in an intrinsic semiconductor. **07**
- (b) Determine the h parameters for the two port network. Also draw the hybrid model for CE, CB & CC configurations. **07**
- OR**
- Q.3** (a) 1) The four diodes used in bridge rectifier circuit have forward resistance which may be considered constant as 1 ohm & infinite reverse resistance. AC Supply is 240 V r.m.s. and load resistance is 480 ohm. Calculate mean load current & power dissipated in each diode. **07**
- 2) For the circuit shown in Fig. (1) Determine the maximum & minimum values of zener diode current.
- (b) Enlist the biasing methods for transistor & Explain the basic load line and Q point for any transistor configuration. **07**
- Q.4** (a) Explain different types of clamping circuit. **07**
- (b) Explain the principle operation of JFET. Also compare FET with BJT. **07**
- OR**
- Q.4** (a) Explain Tunneling phenomenon and the V-I characteristics of a tunnel diode. **07**
- (b) Explain push pull amplifier in brief. **07**
- Q.5** (a) Define the transconductance g_m & amplification factor μ of an FET. Also explain how is an FET used as a voltage variable resistance? **07**
- (b) Calculate the emitter current in the voltage divider circuit shown in Fig. (2) **07**

Also find the V_{CE} & V_C .

OR

- Q.5** (a) Give classification of power amplifier. Draw class B push pull system and show that maximum conversion efficiency is 78.5% for this system. **07**
- (b) The following readings were obtained experimentally from a JFET. **07**

Sr. No.	V_{GC} in V	V_{DS} in V	I_D in mA
1	0	7	10
2	0	15	9.65
3	0.2	15	10.25

Determine i) a c drain resistance ii) transconductance iii) amplification factor.
