Enrolment No

GUJARAT TECHNOLOGICAL UNIVERSITY PDDC - SEMESTER-I EXAMINATION – WINTER 2015

Subject Code: X11101Date:			15
Su Tii Inst	Subject Name: Basic ElectronicsTime: 10:30am to 01:00pmTotal MarksInstructions:Total Marks		70
	1. 2. 3.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a)	Describe the hall effect. Which properties of a semiconductor are determined from hall effect experiment?	07
	(b)	Explain the generation of holes and electrons in an intrinsic semiconductor.	07
Q.2	(a)	A diode with an internal resistance of 10 Ω is used as a rectifier to supply power to a 500 Ω load from a 220 V(rms) source of supply. Calculate a) The peak load current b) The dc load current c) The dc load current d) The dc diode voltage e) The total input power to the circuit and f) percentage regulation from no load to the given load.	07
	(b)	Define current amplification factor for CE configuration & Explain transistor as an amplifier in CE arrangement.	07
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	(b)	Explain the operation of a p-n junction diode in forward biased and reverse biased condition. Draw its V-I characteristics.	07
Q.3	(a) (b)	Explain the operation of emitter follower. Why it is known as emitter Follower? Explain the biased positive clipper and biased negative clipper with reverse polarity of battery with necessary diagrams.	07 07
Q.3	(a) (b)	Explain the tunneling phenomena and characteristics of a tunnel diode. Explain the principle of operation of photodiode. List its applications.	07 07
Q.4	(a)	Enlist the biasing methods for transistor & Explain the basic load line and Q point for any transistor configuration.	07
	(b)	For the given circuit (See Fig. 1), silicon transistors having β =100. Find out put voltage, V ₀ if input voltage, V _i = 5 V and V _i = 0V.	07
04	(9)	State and explain miller's theorem and its duality	07
2.1	(b)	Give construction details of JFET and its characteristics.	07 07
Q.5	(a)	Explain the h-parameter model of CE amplifier with bypass resistor R_E and derive the expression for A_i , A_v , R_i , R_o .	07
	(b)	Define the pinch off voltage Vp. Sketch the depletion region before and after the pinch off.	07
		OR	
Q.5	(a)	Explain the cross section of N channel enhancement MOSFET with the help of neat sketch. Draw and explain the symbol of this device.	07

(b) Write a detailed note on complementary push pull amplifier. 07

