Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

(A Constituent Institute of MAHE – Deemed University)
Manipal – 576 104

THIRD SEMESTER B.E. DEGREE MAKEUP EXAMINATIONS – JANUARY 2007

SUBJECT: ELECTRONIC DEVICES & CIRCUITS (BME 201)

(REVISED CREDIT SYSTEM)

Friday, January 05, 2007: 9.00 a.m.- 12.00 noon

TIME: 3 HOURS **MAX. MARKS: 100**

Instructions to Candidates:

1. **Answer any FIVE full questions.**
2. **Draw labeled diagram wherever necessary**

1.	(a)	With a neat diagram explain junction behavior of diode	08
	(b)	Explain various current components of diode	06
	(c)	Explain working principle of Zener diode and list its applications.	06
2.	(a)	Write short notes on: (i) UJT , (ii) LED	5x2=10
	(b)	Draw a neat diagram of n-channel type JFET. Explain its operation with drain and transfer characteristics.	10
3.	(a)	Explain how phototransistor is different than BJT. List its two applications	06
	(b)	What is photolithography? Explain various steps in the fabrication of Integrated Circuits.	08
	(c)	Write an ac equivalent model of JFET in fixed biased configuration. Calculate Zi, Zo and Av(with and without effect of rd)	06
4.	(a)	Draw the circuit of a common base npn-transistor. Plot the input and output characteristics and explain	08
	(b)	For the circuit shown in the fig Q.4b, transistors Q1 and Q2 operate in the active region with $V_{BE1}=V_{BE2}=0.7V$,$\beta1=100$, $\beta2=50$,$I_{CO}=0$. Find I_{B2},I_1,I_2,I_{C2},I_{B1},I_{C1},I_{E1},vo_1,vo_2.	08
	(c)	Discuss on cutoff region of a transistor	04
5.	(a)	Discuss on fixed bias and thermal stabilization of transistor	07

(b) A Ge transistor is used in the self biasing arrangement with V_{CC}=16V,R_C=1.5K and $V_{BE\ active}$=0.2V.The quiescent point is chosen to be V_{CE}=8V and I_C=4mA.A stability factor S= 12 is desired .If β = 50,find R_1,R_2 and R_E — 07

(c) Draw the hybrid-π model of a npn transistor in the CE configuration. Discuss on the circuit components — 06

6. (a) For the amplifier shown in the fig Q.6a, compute A_I =Io/Ii, Av, Avs, Ri, and Ri^1 .Given hfe=50,hie=1.1K,hre=hoe=0. — 08

(b) Discuss on :

(i) High input impedance buffer amplifier — 6+6=12

(ii) Bias compensation circuits

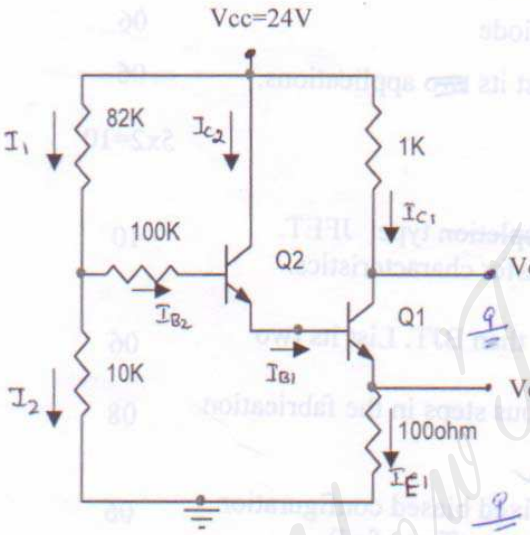

Fig Q.4b

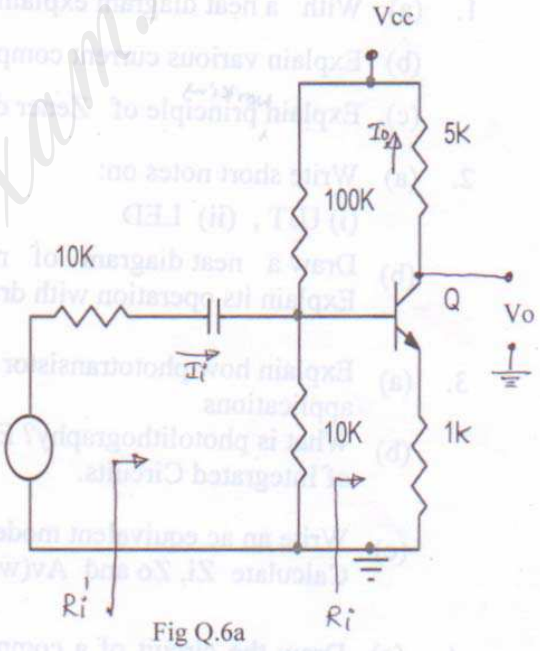

Fig Q.6a