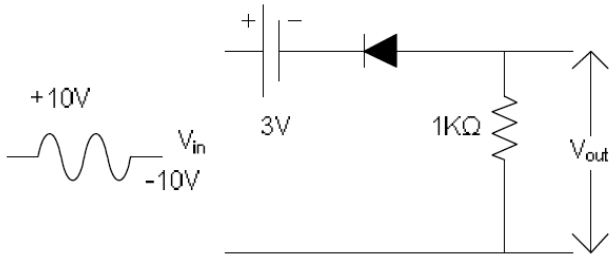
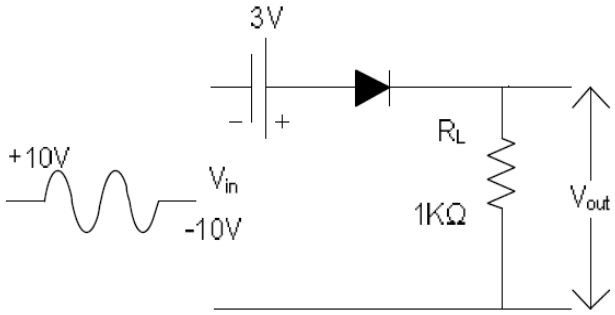
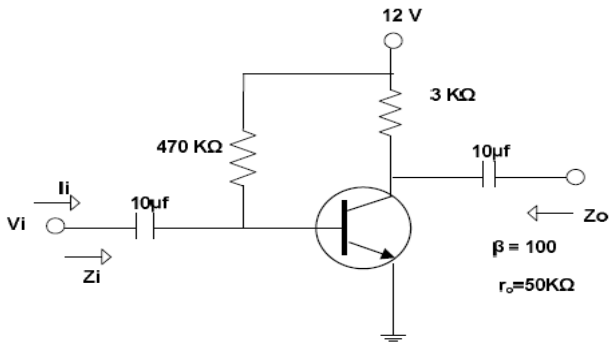
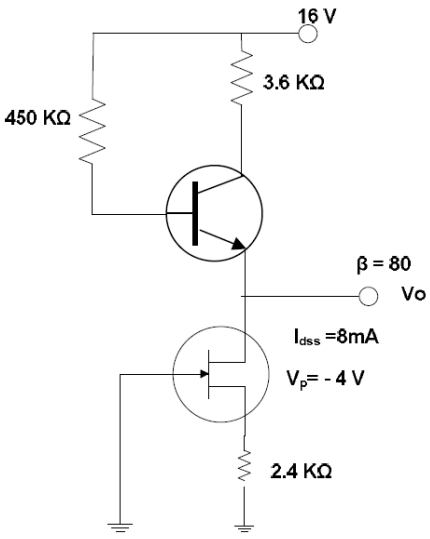
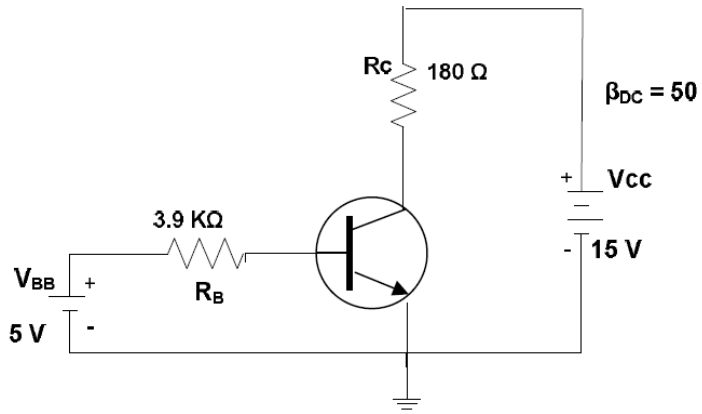
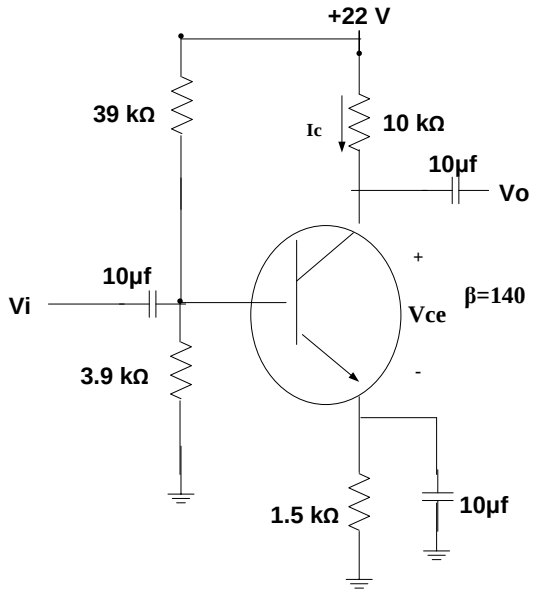
BE Semester – III (INSTRUMENTATION AND CONTROL ENGG.)
Question Bank

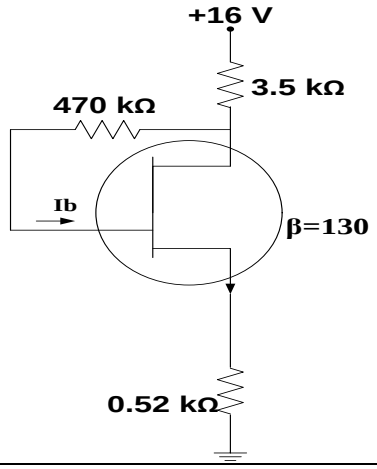
(IC 304 BASIC ELECTRONICS)

All questions carry equal marks(10 marks)

Q-1	What is key characteristic of Tunnel Diode? Write a short note on it.
Q-2	Explain the difference between conductor, insulator and semiconductors with energy diagrams.
Q-3	Draw the symbols: 1) Current regulator diode, 2) Schottky diode, 3) Laser diode, 4)Photo diode, 5) Tunnel Diode, 6) LED, 7) PNP Transistor, 8) NPN Transistor, 9) FET, 10) MOSFET
Q-4	Explain basic transistor amplifier circuit. Derive voltage gain Av. If R_C =1 kΩ and re' = 50 Ω, what is Av?
Q-5	Using the diagram, explain cutoff, saturation and DC load line characteristic curves.
Q-6	Explain voltage divider bias and derive I_C and V_{CE}.
Q-7	Explain Class A, Class B and Class C amplifier basic operations.
Q-8	Explain full-wave rectifier by using center-tap and derive the expression for D.C. voltage, D.C. current, efficiency and ripple factor.
Q-9	Explain voltage doubler circuit in detail.
Q-10	Explain the zener breakdown characterisitics and its application as a voltage regulator in detail.
Q-11	With the help of neat sketch explain the construction of FET. Also discuss the FET static characteristics.
Q-12	Explain the working of Depletion type and Enhancement type MOSFET.
Q-13	Write a short note on Varactor Diode.
Q-14	What is Biasing? What are various biasing methods for BJT? Give circuit diagrams for each of them.
Q-15	Define h-parameters of transistor. Find Av, Ai, Zi, Zo for the CE amplifier in terms of h-parameter.
Q-16	Write a short note on class A power amplifier in detail.
Q-17	Explain transformer-coupled class B push-pull amplifier circuits.
Q-18	Explain V-I Characteristic of Zener diode and explain application of zener diode as a Clipper.
Q-19	Determine the o/p voltage waveform for the figures given below: 

	
Q-20	What is CMOS? Explain CMOS Inverter.
Q-21	Explain A.C. resistance and D.C. resistance with respect to Diodes.
Q-22	Explain V-I Characteristic of photodiode.
Q-23	Explain the Clamper circuits with waveforms.
Q-24	For the network of figure determine r_e. Calculate Zi, Zo, Av. 
Q-25	Give constructional details of JFET and give its characteristics. Why FET is called Voltage controlled device?
Q-26	Determine Vo for the circuit given below: 

Q-27	Find Vce, Vbe & Vcb of the circuit given below: 
Q-28	Explain basic operation and characteristic of n-channel depletion type MOSFET with necessary diagram.
Q-29	Determine V_{CE} and I_C for figure given below: 
Q-30	Explain bohr's postulate in detail.
Q-31	Write a short note on CMOS.
Q-32	Draw and explain the input and output characteristic of CB configuration.
Q-33	For a certain transistor, I_C = 5.255 mA, I_B = 100 μA, and I_{CBO} = 5 μA (i)calculate α, β and I_E (ii)Determine the new level of I_B required to make I_C = 15 mA
Q-34	Write a short note on phototransistor.
Q-35	Explain Hall effect with neat sketch. Discuss how to measure charge density and mobility for a given specimen of semiconductor using Hall Effect?

Q-36	Describe the types of clippers. Explain positive clippers with circuit diagram in detail.
Q-37	Give the difference between BJT and MOSFET.
Q-38	For the collector feedback configuration, given in figure, find out the values of I_B , I_C and V_C . 
Q-39	Draw Emitter follower circuit. Obtain Hybrid equivalent circuit and derive expression for current gain.
Q-40	Explain Testing methods of Transistors in detail.