



SE-6169

B. E. II (Sem. III) (CO) Examination

April / May – 2011

Linear Electronics - I

Time : Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवडी पर अवश्य लभवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination : B. E. 2 (Sem. 3) (CO)	<input type="text"/>
Name of the Subject : LINEAR ELECTRONICS - 1	<input type="text"/>
Subject Code No. : <input type="text" value="6"/> <input type="text" value="1"/> <input type="text" value="6"/> <input type="text" value="9"/> Section No. (1, 2,.....): <input type="text" value="Nil"/>	<input type="text"/>
	Student's Signature

- (2) Attempt all the questions.
- (3) Figures to the right indicate full marks.
- (4) Use of scientific calculator (82/83-fx, 82/83-Ms, 100-fx and 100-Ms or equivalent) of other companies is allowed.
- (5) Assume suitable data whenever necessary.

- 1 (a) Answer the following questions :
 - (1) Draw piece wise equivalent circuit for the diode. 1
 - (2) Give the difference between AC and DC load line. 1
 - (3) What will happen if zener diode is operated in forward bias ? 1
 - (4) Define avalanche breakdown. 1
 - (5) Define following :
 - (a) Semiconductor
 - (b) Conductor and
 - (c) Insulator
 - (6) Draw the circuit symbol of NPN and PNP bipolar junction transistor. 3
 - (7) State ripple factor of full wave bridge rectifier. 1
 - (8) Define ripple factor. 1
- (b) Explain the working of full wave center tap rectifier. 10
Also derive the equation of
 - (a) DC voltage, current and power,
 - (b) RMS voltage, current and power
 - (c) Rectification efficiency and
 - (d) Ripple factor for the same

- 2 (a) Explain the function of emitter bypass capacitor. 8
 Draw DC and AC load lines for CE amplifier with bypass capacitor.
- (b) Calculate the value of resistors R_2 and R_C to place 7
 the Q point at $I_E = 2\text{mA}$, $V_{CE} = 6\text{V}$ in figure 1.
 Take $V_{BE} = 0.2\text{V}$, $\alpha = 0.985$, $I_{CBO} = 4\mu\text{A}$.

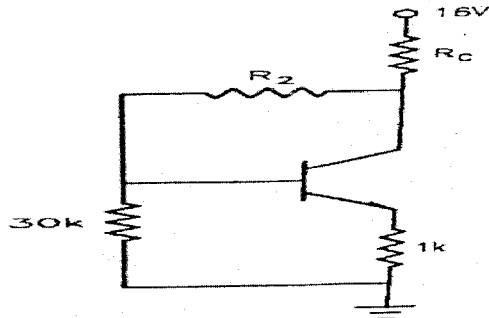


Fig.1

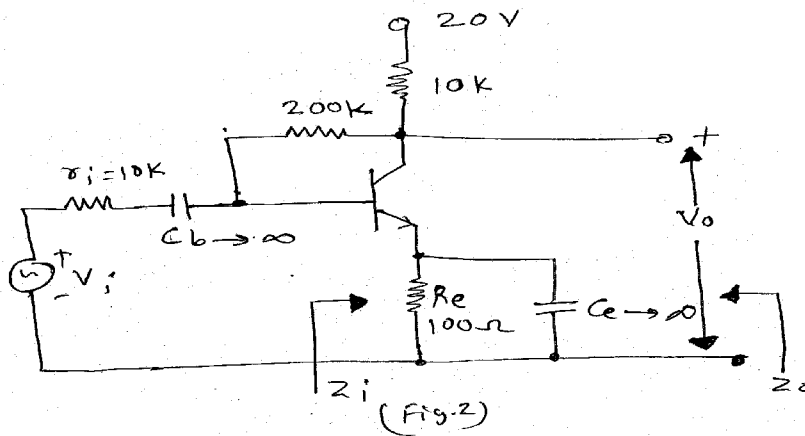
OR

- 2 (a) Explain the working zener diode as voltage regulator. 8
 (b) Explain input output characteristics of CE 7
 configuration of BJT.
- 3 Attempt any **three** questions : (**five** Marks each) 15
 (1) Write short notes on zener diode.
 (2) Explain the working of C filter for full wave rectifier.
 (3) Explain two diode compensation techniques.
 (4) Fixed explain the working of transistor as a switch.
 (5) Explain the working of half wave voltage doubler.
- 4 (a) Answer the following questions : 12
 (i) Classify integrated circuits.
 (ii) What is the advantage of multistage transistor ?
 (iii) Define stability factor SI and SV.
 (iv) Explain bootstrapping.
 (v) Which amplifier works as super β transistor ? Why ?
 (vi) What are the function of an amplifier ?
- (b) Calculate the total change in I_{CQ} when small 8
 change occurs in I_{CBO} , V_{BE} , β and V_{CC} .

5 Attempt any two :

16

- (a) Explain photomasking and photolithography in IC fabrications.
- (b) Why cascading is required ? Explain darlington amplifier with derivations of its current gain and input impedance.
- (c) For the given ckt. Find AV and Zi, Zo. Consider $h_{fe} = 100$, $h_{re} = h_{oe} = 0$ (fig. 2).



6 Attempt any two :

14

- (a) Phase splitter.
- (b) Compare and contrast ion implantation and diffusion. Also state their advantage and drawbacks.
- (c) Explain in brief different types of biasing methods.