



* R N - 6 1 6 9 / 3 0 0 *

RN-6169

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

May / June - 2010

Linear Electronics - I

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृशविले निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी.
 Fillup strictly the details of signs on your answer book.

Name of the Examination :
B. E. 2 (Sem. 3) (CO)

Name of the Subject :
Linear Electronics - 1

Subject Code No. : **6 1 6 9** Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

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

SECTION - I

Q.1 (a) Answer the following questions.

1. Define following : a) Semiconductor, b) Conductor and c) Insulator (03)
2. What is PIV of Half Wave rectifier? (01)
3. State ripple factor of full wave bridge rectifier. (01)
4. Draw the circuit symbol of NPN & PNP bipolar junction transistor. (01)
5. Explain the need for transistor biasing. (02)
6. Give reasoning why the base is made smaller in size than emitter & collector in BJT. (02)

Q.1 (b) Give analysis of DC load line for simple diode circuit using graphical method. (07)

Q.1 (c) Determine V_o , I_{D1} and I_{D2} for the circuit shown in figure 1. Take $V_f = 0.7V$ for both diodes. (03)

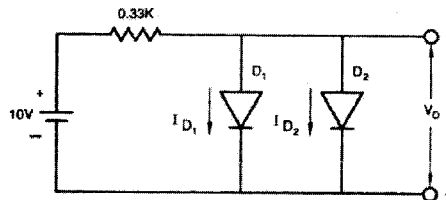


Fig.1

Q.2 (a) Discuss current flow mechanism in PNP transistor. (08)

Q.2 (b) Determine V_C and V_B for figure 2. (07)

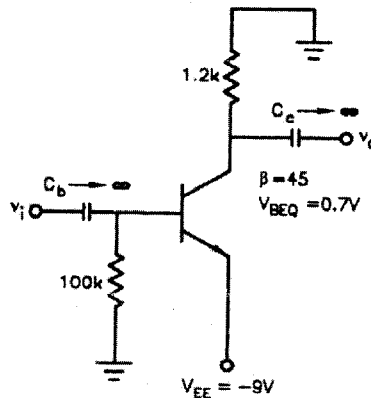


Fig.2

OR

Q.2(a) Explain the function of emitter bypass capacitor. Draw DC and AC load lines for CE amplifier with bypass capacitor. (08)

Q.2(b) Calculate the value of resistors R_2 and R_C to place the Q point at $I_E = 2\text{mA}$, $V_{CE} = 6\text{V}$ in figure 3. Take $V_{BE} = 0.2\text{V}$, $\alpha = 0.985$, $I_{CBO} = 4\mu\text{A}$. (07)

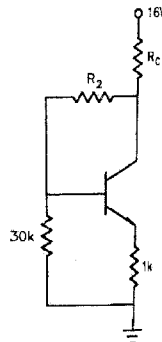


Fig.3

Q.3 Attempt any three questions. (5 Marks each) (15)

1. Write short note on zener diode.
2. Explain the working of C filter for Full Wave rectifier.
3. Explain two diode compensation technique.
4. Fixed explain the working of transistor as a switch.
5. Explain the working of Half Wave voltage doubler.

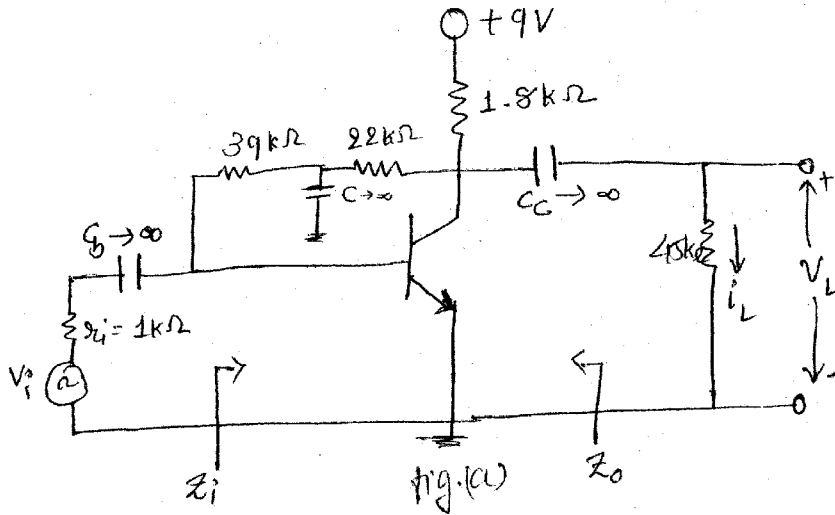
SECTION - II

4 (a) Answer the following questions : 12

- (i) Which amplifier works as super β transistor? Why?
- (ii) What is coupling? Why it is required?
- (iii) Mention advantages and disadvantages of ICs.
- (iv) Define h-parameter for two port network.
- (v) Give the application of an amplifier.
- (vi) Classify IC.

(b) Derive the stability factors S_I , S_V , S_B in transistor ckt. 8

- 5 (a) Explain photomasking and photolithography in IC fabrications. 8
- (b) For the ckt in figure (a), find A_V , Z_i and Z_o . Take $h_{fe} = 80$, $h_{re} = 0$ and $h_{oe} = 0$.



OR

- 5 (a) Explain fabrication steps for monolithic diode. 8
- (b) Explain CB parameters from Ce equivalent ckt. 7
- 6 Attempt any three : 15
- (i) Boot strapped Emitter follower
 - (ii) Cascode amplifier
 - (iii) Single Diode Compensation
 - (iv) Compare and contrast Ion Implantation and diffusion.