Roll No. ..... Total Pages : 04

BT-2/M-17 8206

ELEMENTS OF ELECTRONICS ENGINEERING

EL-101-e (Opt. i)

Time : Three Hours] [Maximum Marks : 75

Note : Q. No. **1** is compulsory. Attempt *Five* questions in all, with at least *one* question from each Unit. All questions carry equal marks.

1. Attempt all the questions :

(i) Why the base terminal of BJT is made thinner than emitter and collector ?

(ii) What is the relation between α and β of BJT ?

(iii) Why CE is mostly used for making amplifiers than CC and CB ?

(iv) What are the *four* regions of operation of BJT in which it can operate ?

(v) What are the advantages of using Negative feedback over Positive feedback ?

(vi) What is Q-point ? What is its significance ?

(vii) What are the various operations that can be performed by Op-Amp. ?

(viii) What is significance of Slew Rate in Op-Amp. ? What is its value of Op-Amp 741 ?

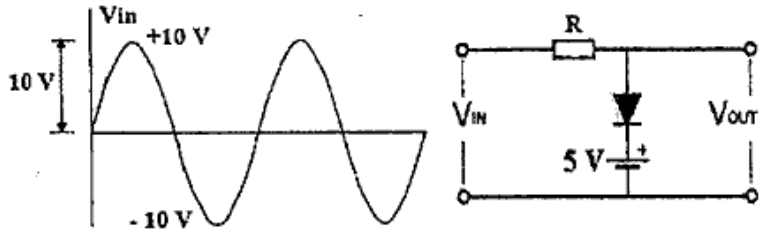
(ix) What is Common Mode Rejection Ratio ? For Noise reduction what is its ideal value ?

(x) What is the value of threshold voltage for Si and Ge diodes.

Unit I

2. What is the use of rectifiers ? Explain the working of Full wave bridge rectifier and calculate its ripple factor.

3. What is the difference between clippers and clampers ? Find the output of the following clipper circuits ?



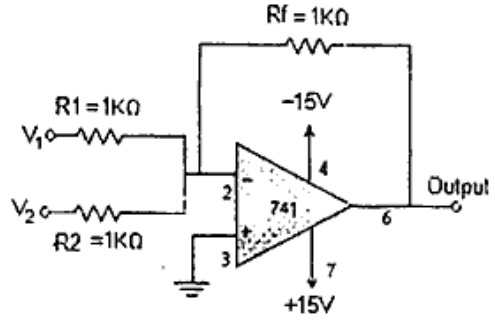
Unit II

4. Explain the input and output VI characteristics of common base BJT configuration showing four regions of operations ?

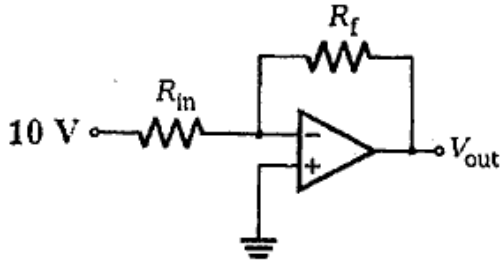
5. What is Barkhausen criterion of Oscillators? Explain the Wien Bridge Oscillator circuit and what is its frequency of oscillations ?

Unit III

6. How Op-Amp can be used as adder or summer ? Calculate the output of the following Op-Amp circuit ?



7. How Op-Amp. can be used as inverter ? In the following circuit what should be the values of R_f and R_{in} into get output voltage of –100 V ?



Unit IV

8. What is TRIAC ? Explain the working and operation of TRIAC ? What is its advantage over SCR ? **15**

9. How JFET is different from MOSFET ? Explain the working and operation of JFET ? Explain the significance of Pinch-off voltage in the operation of n-channel JFET ? **15**