Exam. Code: 0933
Sub. Code: 33743

2124

B.E. (Electrical and Electronics Engineering)
Third Semester
PC-EE-303: Analog Electronics

Time allowed: 3 Hours Max. Marks: 50

***NOTE**: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) Why common collector is called as emitter follower. Give reasons.
b) Design a positive clipper circuit.
c) In CB, current amplification is 0.9. If emitter current is 1mA, calculate base current.
d) Plot the transfer characteristics of a depletion type JFET.
e) If two inputs to a differential amplifier is 150 and 140μV, calculate output voltage if gain is 2000.

(5x2)

UNIT - I

II. a) Find the transistor currents if it has ß=100, R_c =3KΩ, R_B=200KΩ, V_{BE}= 5V and V_{CB}= 10V, I_B=2uA

b) Draw and explain the circuit to minimize thermal run away in transistors. (2x5)

III. Determine the Q-point in a fixed bias circuit when a dc supply of 12V is applied to the transistor of gain 200. If the base resistance and collector resistance is 200KΩ and 200Ω respectively, justify the location of operating point in the characteristic. (10)

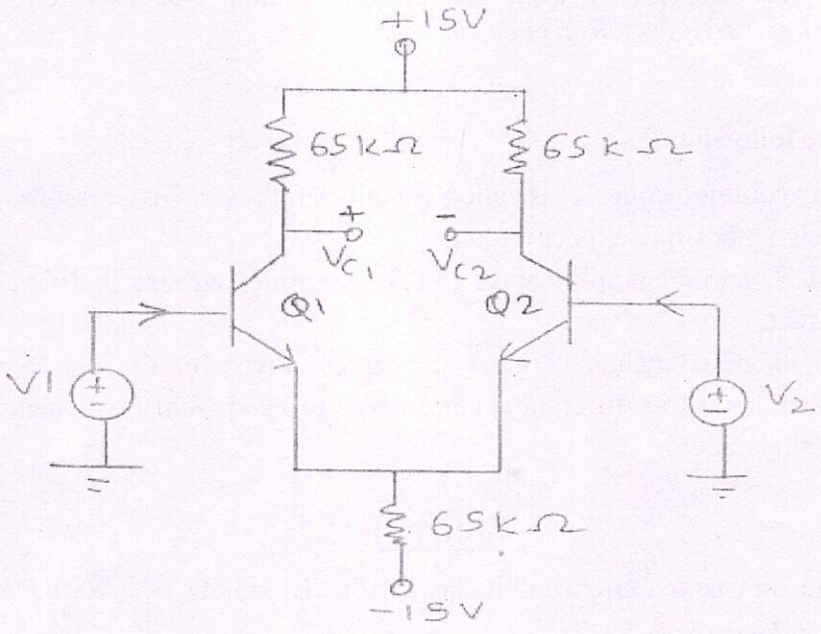
IV. Plot and explain the drain and transfer characteristics of P type MOSFET for both depletion and enhancement mode. (10)

UNIT - II

V. If the input to a circuit is a sine waveform and its output is a square waveform, then determine the circuit used to realise this using operational amplifier. Explain the working of circuit using suitable mathematical relation. (10)

P.T.O.

VI. In the differential amplifier circuit shown below, the transistors have identical characteristics and their $\beta = 99$. Determine the (i) Quiescent point (ii) configuration used. Assume V_{be}=0.7V.



(10)

VII. Describe any two of the following Op-Amp based circuit:

a) Precision Rectifier

b) Zero crossing Detector

c) Any A/D converter (2x5)

x-x-x