(16)

Exam.Code:0933
Sub. Code: 33747

2125
B.E. (Electrical and Electronics Engineering)
Third Semester
PC-EE-4303: 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. Answer the following:-

a) A silicon diode with forward drop V_D=0.7 V is connected in series with a 1 kΩ resistor to a 12 V battery. Find the diode current I_D.

b) Why is the full-wave rectifier preferred over the half-wave type?

c) How does temperature affect MOSFET characteristics?

d) State the barkhausen criteria for oscillations?

e) What are the ideal characteristics of op-amp? (5x2)

UNIT - I

II. What is a clipping circuit? Explain its working with waveforms as positive clippers and negative clippers. (10)

III. a) 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.

b) Show that the Q-point in voltage divider biasing circuit is independent of the current gain. (10)

IV. Describe the construction of an p-channel enhancement MOSFET with a neat diagram. For a MOSFET amplifier with load R_D=10 kΩ and gm=2 mS, find voltage gain Av? (10)

UNIT - II

V. Draw the block diagram of op-amp and analyse its performance as a differentiator. (10)

P.T.O.

VI. a) Determine the output voltage for inverting amplifier if (a) V_{in}=20mV dc.

b) (i) V_{in}=-50 μV peak sine wave. Assume op-amp is 741.

(ii) Define the following electrical parameters : input offset voltage, input resistance, CMRR, output voltage swing and slew rate. (10)

VII. Draw the schematic for a hysteric comparator and explain its operation for different reference voltages. Also assume reference to be 0V and then again plot its output waveforms. (10)

x-x-x