Unit III

6. (a) Explain the working of an inverting single input unbalanced output differential amplifier and draw its characteristics. 7

   (b) What do you mean by common mode voltage gain and slew rate in context to OPAMP ? 8

7. (a) Explain working of OPAMP as an integrator. 10

   (b) Write a note on working of Transducers. 5

Unit IV

8. (a) Explain working of P-channel MOSFET with its characteristics. 8

   (b) Write a note on Digital Multimeter. 7

9. (a) Explain working of SCR as a switch and draw its characteristics. 8

   (b) Explain working of FET as an amplifier. 7

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

BT-1/D-13 **8106**

ELEMENTS OF ELECTRONICS ENGINEERING

EL-101-E

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Q. No. **1** is compulsory.

1. (a) Give definitions of Active and Passive components with example. 3

   (b) List the applications of Zener Diode. 3

   (c) List advantages of negative feedback in amplifiers. 3

   (d) Draw transfer characteristics of differential amplifiers. 3

   (e) Compare characteristics of BJT and FET. 3

Unit I

2. (a) What is Rectification ? Draw the circuit diagram of a full wave rectifier and explain its working giving input and output waveforms. Derive expressions for efficiency of full wave rectifier. 7

(b) A 220 V, 50 Hz ac voltage is applied to the primary of 4 : 1 step down transformer, which is used in bridge rectifier having a load resistance of 1KΩ. Assuming the diodes to be ideal determine (i) DC output voltage, (ii) DC power delivered to load, (iii) PIV of each diode and (iv) Output frequency.

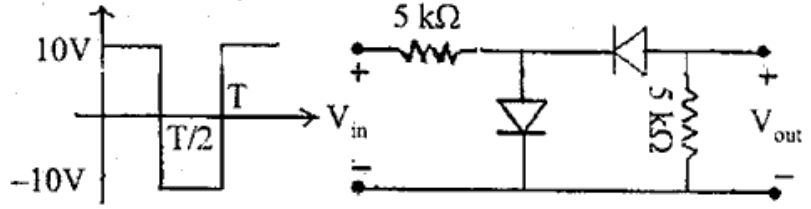
4×2=8

3. (a) An AC voltage of peak value of 25V is connected in series with a Si diode and a load resistance of 600Ω, If the forward resistance of diode is 15Ω, determine :

(i) Peak value of current through the diode ?

(ii) Peak value of Output voltage. **6**

(b) Sketch the output voltage waveform for the circuit shown in figure below by assuming ideal diode : **6**



(c) Explain working of Varactor Diode with its V-I characteristics. **3**

Unit II

4. (a) Discuss the input and output characteristics of Common Collector configuration with circuit diagram. **7**

(b) A transistor with β=100 is used in CE configuration. The collector circuit resistance is R_C = 1KΩ and V_{CC} = 20V. Assuming V_{BE} = 0V, find value of collector to base resistance for collector to base bias circuit such that quiescent collector emitter voltage is 4V. Also determine the stability factor in this case. **8**

5. (a) Explain the working of a transistor as a switch. **6**

(b) An amplifier with a negative feedback provides output voltage of 5V with input voltage of 0.2 V. On removal of feedback it needs only 0.1 V input to give the same output. Determine (i) Gain without feedback (ii) Gain with feedback and (iii) Feedback ratio. **3×3=9**