



## Elements of Electronic Engineering (Old) (1050)

**P. Pages : 2**

**Time : Three Hours**

**Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Assume suitable data if required & illustrate your answer with suitable diagrams if necessary.
5. All questions are compulsory & figures to right indicates maximum marks.
6. Use of non - programmable calculator is allowed.

**1. Attempt any two.**

- a) Explain the effect of temperature of junction voltage of diode. **10**  
Determine the forward bias voltage applied to silicon diode to cause forward current of 10 mA and reverse saturation current of  $25 \times 10^{-7}$  A at 27°C.
- b) Give the classification of semiconductor and compare P-type and N-type semiconductors. what do you mean by Ideal diode and Real diode with their V-I characteristics ? **10**
- c) i) Compare Zener Breakdown and Avalanche Breakdown. **5**  
ii) Define the terms – Drift current, cut-in-voltage, valance electron, Depletion Layer, Reverse saturation current. **5**

**2. Attempt any two.**

- a) i) Compare D-MOSFET and E-MOSFET. **5**  
ii) Explain static and Drain characteristics of JFET. **5**
- b) What do you mean by biasing a transistor ? Explain Active, cutoff and saturation region of BJT with the help of characteristics. **10**
- c) Draw the circuit of common collector configuration. Give practical application of this circuit. What is thermal runaway ? How it can be avoided ? **10**

**3. Attempt any two.**

- a) i) Write a short note on UJT relaxation oscillator. **5**  
ii) Draw and explain spectral response of human eye. **5**

b) With neat diagram explain two transistor equivalent circuit of SCR. 10  
What is SCS ? How it differs from SCR ?

c) i) Explain LED & materials used in LEDs. 5

ii) Explain operation of photo diode. 5

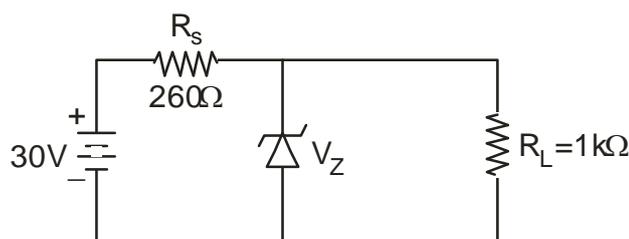
4. Attempt **any two**.

a) Draw and explain transistorised series voltage regulator circuit. 10

b) Draw the circuit diagram of a voltage follower ? Derive the equation for the output voltage for a summing amplifier having three inputs and operated in a inverting configuration. 10

c) i) Compare Inverting and non inverting amplifier. 3

ii) Figure 1 shows the circuit of a Zener diode shunt regulator find i) the load voltage ii) voltage drop across  $R_s$  iii) current through zener diode by assuming  $V_Z=10V$ . 7



(Figure - 1)

5. Attempt **any two**.

a) i) Define universal Gate. Draw NOR gate and AND gate using NAND gate. 6

ii) Define EX-OR gate. Draw symbol and write truth table for three input EXOR gate. 4

b) i) With neat block diagram, explain in brief CRO. 5

ii) Convert  $(EAB8)_4$  in to decimal and binary number system. 5

c) Write a short note on :

i) Electronic voltmeter. 5

ii) Electronics multimeter. 5

\*\*\*\*\*