

**Gurudas College**  
**Semester V**  
**Physics General Practical, 2020**  
**Paper: DSE Practical**

**Full Marks: 15**

**Time: 1 hr.**

Answer any one Question from the following

1. (a) What is a zener diode? What are the characteristics of a zener diode?  
(b) What is meant by reverse current?  
(c) What is meant by reverse breakdown?  
(d) Draw the circuit diagram to determine the reverse characteristics of a zener diode.  
(e) Draw the schematic diagram of reverse characteristics of a zener diode and indicate the knee voltage and reverse breakdown region.  

(1+2)+2+2+2+2+(2+1+1)
  
2. (a) What are the characteristics of a zener diode?  
(b) What is load regulation? What is the physical significance of load regulation?  
(c) Draw the circuit diagram to determine the load regulation characteristics using zener diode.  
(d) Draw the schematic diagram of load regulation curve using a zener diode.  
(e) What is the significance of % regulation? What is its value for a perfect regulator?  
Calculate % regulation for  $V_{NL} = 5.6V$  and  $V_L = 5.2V$  at 20 mA.  

2+(2+2)+3+2+(1+1+2)
  
3. (a) State Thevenin's theorem. Draw a schematic Thevenin's equivalent circuit indicating each term.  
(b) State Norton's theorem. Draw a schematic Norton's equivalent circuit indicating each term.  
(c) Draw the schematic diagram of graphical verification of Thevenin's and Norton's theorem of a linear circuit.  
(d) What is maximum power transfer theorem? What is the physical significance of this theorem.  

(2+2)+ (2+2)+(2+2)+(1+2)