



[4261] – 112

Seat  
No.

F.E. (Semester – II) Examination, 2012  
BASIC ELECTRONICS ENGINEERING  
(2008 Pattern)

Time : 2 Hours

Max. Marks : 50

- Instructions :**
- 1) **Neat diagrams must be drawn wherever necessary.**
  - 2) **Black figures to the right indicate full marks.**
  - 3) **Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.**
  - 4) **Assume suitable data, if necessary.**

1. A) Compare and contrast full-wave rectifier using two diodes and full-wave rectifier using four diodes. 6
- B) The data sheet of JFET gives  $I_{DSS} = 10\text{mA}$  and  $V_{GS(off)} = -8\text{V}$ . Using these values, determine the drain current for  $V_{GS} = 0\text{V}$ ,  $-1\text{V}$  and  $-4\text{V}$ . 6
- C) Write short notes on Bar Graph and Matrix display. 6

OR

2. A) For Zener voltage regulator, if  $I_{z_{min}} = 2\text{mA}$ ,  $I_{z_{max}} = 20\text{mA}$ ,  $V_z = 4.7\text{V}$ . Determine the range of input voltage over which output voltage remains constant.  $R_s = 1\text{k}\Omega$ ,  $R_L = 1\text{k}\Omega$ ,  $Z_z = 0\Omega$ . 6
- B) Explain operation of BJT as a switch with neat circuit diagram and waveforms. 6
- C) With neat construction diagram explain the working of TRIAC. Also draw its characteristics. 6
3. A) Draw and explain the operation of following gates using CMOS devices :  
1) NAND gate                      2) NOT gate 6
- B) Draw the diagram of 1 : 8 demultiplexer. What is the relation between number of select lines and outputs ? 4
- C) An Op-amp is used in inverting mode with  $R_1 = 1\text{K}\Omega$ ,  $R_F = 10\text{K}\Omega$ ,  $V_{cc} = \pm 15\text{V}$ . Calculate the output voltage for (1) 140mV (2) 2.1V. 6

OR

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4. A) What is full adder ? Explain the working of full adder with the help of truth table and give equation for sum and carry. **6**
- B) What is an operational amplifier ? Draw the neat block diagram and explain its working. **6**
- C) Define oscillator. Find frequency of oscillations of Wien-bridge oscillator with  $R = 50\text{ K}\Omega$  and  $C = 0.001\text{ nF}$ . **4**
5. A) Explain the working of alarm annunciator and PID controller. **6**
- B) Write a short note on two wire transmitter. **4**
- C) Draw the block diagram of basic communication system and explain each block in detail. **6**
- OR
6. A) What is the need of modulation ? Compare AM and FM. **6**
- B) Compare Co-axial cable media with fiber optic cable media. **4**
- C) Draw the block diagram of electronic weighing machine and explain its operation. **6**
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