

Nov-Dec-2012

[4261] – 112



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| Seat No. | |
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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 -4V . 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

P.T.O.



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

