[3761]-109

F. E. (Semester - II) Examination - 2010
BASIC ELECTRONICS ENGINEERING
(June 2008 Pattern)

Time : 3 Hours]   **[Max. Marks : 100**

Instructions :

(1) Answer **three** questions from section I and **three** questions from section II.

(2) Answers to the **two sections** should be written in **separate books**.

(3) Black figures to the right indicate full marks.

(4) Neat diagrams must be drawn wherever necessary.

(5) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

(6) Assume suitable data, if necessary.

SECTION - I

Q.1) (A) Draw and explain Forward and Reverse Characteristics of Zener Diode. **[06]**

(B) Write short note on Multiplexed Display. **[06]**

(C) A Bridge Rectifier Circuit has Secondary Voltage of $16V_{rms}$. Assume Secondary Resistance and Diode Forward Resistance negligible. Load Resistance is 1kΩ. Calculate Peak Load Current, D.C. Load Current, RMS Load Current and P.I.V. of each Diode. **[06]**

OR

Q.2) (A) For Half Wave Rectifier drive equation of Ripple Factor and Efficiency. **[06]**

(B)   Explain in detail following L.E.D. Configurations :   **[06]**

    (1)   Discrete

    (2)   7-Segment

(C)   What is Voltage Regulator ? Explain the working of Zener Voltage Regulator.   **[06]**

Q.3) (A)   Compare CE, CB and CC BJT Configurations.   **[06]**

(B)   The datasheet of 2N5459 JFET gives I_{DSS} = 9mA and $V_{GS(off)}$ = –8V. Using these values, determine the drain current for V_{GS} = 0V, –1V and –4V.   **[06]**

(C)   List applications of SCR, DIAC and TRIAC.   **[04]**

OR

Q.4) (A)   Draw the construction diagram and explain operation of n-channel EMOSFET.   **[06]**

(B)   Draw the practical frequency response of CE Amplifier and justify its nature.   **[06]**

(C)   Give and explain specifications of JFET.   **[04]**

Q.5) (A)   Draw and explain the block diagram of Op-Amp.   **[08]**

(B)   With the help of neat circuit diagram and waveforms explain Triangular Wave Generator. Also give equation of Output Frequency.   **[08]**

OR

Q.6) (A)   With neat circuit diagram explain Operation of Grounded Load V to I Convertor. Give its application.   **[08]**

(B)   In the Non-inverting Summing Amplifier V_1 = 1V, V_2 = 2V and V_3 = 3V. Input resistor for all three inputs are same equal to 1kΩ, the feedback resister is 2kΩ.   **[08]**

    (1)   Draw neat circuit diagram

    (2)   Find Output Voltage.

SECTION - II

Q.7) (A) What is MUX ? Give the relation between Member of Inputs and Number of Select Lines. Draw the block schematic of 2 : 1, 4 : 1 Multiplexer with Strobe Input. **[08]**

(B) Draw and explain block diagram of Microprocessor and Microcontroller. **[08]**

OR

Q.8) (A) Explain the operation of CMOS AND Gate with the help of neat circuit diagram. **[08]**

(B) What is Full Adder ? Give its truth table and equation for Sum and Carry. Implement it by using Logic Gates. **[08]**

Q.9) (A) Draw the block diagram of Digital Thermometer and explain its operation. **[08]**

(B) Compare Thermocouple, RTD and Thermistor. **[08]**

OR

Q.10) (A) Draw and explain the block diagram of PLC and give its applications. **[08]**

(B) What is Strain Gauge ? What are its different types ? Briefly explain working of Semiconductor Strain Gauge. **[08]**

Q.11)(A) Write short note on IEEE Frequency Spectrum. **[06]**

(B) Write the expression of FM. Define Modulation Index and draw Waveform of FM. **[06]**

(C) Explain in detail working of AM Superheterodyne Receiver with the help of neat block diagram. **[06]**

OR

Q.12)(A) What is need of Modulation ? Explain. Also give comparison between AM and FM. **[06]**

(B) Draw the block diagram of FM Transmitter and explain its working. **[06]**

(C) Compare Coaxial Cable Media with Fiber Optic Cable Media. **[06]**