

Total No. of Questions : 12]

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[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 $1k\Omega$. 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 $I_{DSS} = 9\text{mA}$ and $V_{GS(off)} = -8\text{V}$. Using these values, determine the drain current for $V_{GS} = 0\text{V}$, -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 $V_1 = 1\text{V}$, $V_2 = 2\text{V}$ and $V_3 = 3\text{V}$. Input resistor for all three inputs are same equal to $1\text{k}\Omega$, the feedback resistor is $2\text{k}\Omega$. [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]