

Total No. of Questions : 6]

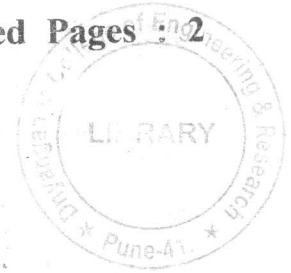
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F. E. Examination - 2011

BASIC ELECTRONICS ENGINEERING

(2008 Pattern)



Time : 2 Hours]

[Max. Marks : 50

Instructions :

- (1) Answer Q. 1 or Q. 2, Q. 3 or Q. 4 and Q. 5 or Q. 6
- (2) Figures to the right indicate full marks.
- (3) Neat diagrams must be drawn wherever required.
- (4) Use of electronic pocket calculator is allowed.
- (5) Assume suitable data, if necessary.

Q.1) (A) In a center tapped FWR; rms half secondary voltage is 10V.
Assume ideal diodes. $R_L = 2\Omega$.

Find :

- (a) Peak Current
 - (b) DC Load Voltage
 - (c) Rectifier Efficiency [06]
- (B) Draw constructional details and explain operations and characteristics of n-channel MOSFET (enhancement type). [08]
- (C) Write short note on : Seven Segment Display. [04]

OR

Q.2) (A) For Zener Voltage Regulator, if $I_z \text{ min} = 2 \text{ mA}$,
 $I_z \text{ max} = 20 \text{ mA}$, $V_z = 4.7\text{V}$. Determine the range of input
voltage over which output voltage remains constant.

$R_s = 1\text{k}\Omega$, $R_L = 1\text{k}\Omega$, $Z_z = 0\Omega$. [08]

- (B) What is DC Load Line ? Derive the equation of CE amplifier
and explain criteria for selection of operating point. [06]
- (C) Explain BJT as a Switch. [04]

- Q.3)** (A) Draw diagram of 8 : 1 MUX. What is relation between numbers of select lines and inputs ? [04]
- (B) Draw and explain the functional block diagram of OP-AMP. [04]
- (C) Draw neat circuit diagram of Ideal Integrator and explain its operation with input and output waveform. Give drawbacks of this circuit. How they are overcome in Practical Integrator ? [08]

OR

- Q.4)** (A) Draw and explain operation of CMOS NAND Gate with truth table. [04]
- (B) Draw neat circuit diagram and explain closed loop non-inverting adder (Summing Amplifier) using OP-AMP. Derive the expression for V_o . [06]
- (C) Draw and explain block diagram of Micro-controller. [06]
- Q.5)** (A) Write short notes : (Any Two) [06]
- (a) Two Wire Transmitter
- (b) PID Controller
- (c) Data Logger
- (d) PLC System
- (B) Give comparison between AM with FM. [04]
- (C) Draw constructional details of LVDT (Displacement Transducer). Explain its operation. State its advantages and disadvantages. [06]

OR

- Q.6)** (A) What is need of Modulation ? Explain. [04]
- (B) Draw and explain block diagram of Mobile Communication System. Explain Concept of Cellular. [06]
- (C) Draw block diagram of Electronic Weighing Machine and explain its operation. [06]