

May-June -2012

[4161] – 112



Seat No.	
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F.E. (Semester – II) Examination, 2012
BASIC ELECTRONIC 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 **right** indicate **full** marks
3) Neat diagram 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 10 V. Assume ideal diodes. $R_L = 2 \text{ k}\Omega$. Find : 6
i) Peak current,
ii) DC load voltage,
iii) Rectifier efficiency.
- B) Draw constructional details and explain operation and drain characteristics of enhancement type n-channel MOSFET. 8
- C) Write short note on : Seven Segment Display. 4

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. $R_s = 1 \text{ k}\Omega$, $R_L = 1 \text{ k}\Omega$, $Z_z = 0 \Omega$. 8
- B) Draw construction and drain characteristics of JFET. Explain its operation. 6
- C) Explain BJT as a Switch. 4
- Q.3. A) Draw diagram of 8:1 MUX. What is relation between numbers of select lines and inputs ? 4
- B) Draw and explain the functional block diagram of OP-AMP. 4

P.T.O.



C) Draw neat circuit diagram of integrator and explain its operation with input and output waveform. 4

D) An OP-AMP is used in non-inverting mode with $R_1 = 1 \text{ k}\Omega$, $R_F = 10 \text{ k}\Omega$, $V_{cc} = \pm 15 \text{ V}$. Calculate output voltage for : 4

- i) $V_{in} = 250 \text{ mV}$, ii) $V_{in} = 2.5 \text{ V}$.

OR

Q.4. A) Design Half Adder circuit using NAND Gates only. 4

B) Draw neat circuit diagram and explain closed loop non-inverting adder.

(Summing Amplifier) using OP-AMP. Derive the expression for V_o . 6

C) Draw and explain block diagram of Micro-controller. 6

Q.5. A) Write short notes on (any two) : 6

- i) Two Wire Transmitter
ii) PID Controller
iii) Data Logger
iv) PLC System.

B) Give comparison between AM with FM. 4

C) Draw constructional details of LVDT (Displacement Transducer). Explain its operation. State its advantages, disadvantages. 6

OR

Q.6. A) What is need of modulation ? Explain. 4

B) Draw and explain block diagram of Mobile Communication System. Explain concept of Cellular. 6

C) Draw block diagram of Electronic Weighing Machine and explain its operation. 6