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[5056]-15

F.E. EXAMINATION, 2016
BASIC ELECTRONICS ENGINEERING
(2015 PATTERN)

Time : Two Hours**Maximum Marks : 50**

- N.B. :—** (i) Figures to the right indicate full marks.
(ii) Neat diagrams must be drawn wherever necessary.
(iii) Use of electronic pocket calculator is allowed.
(iv) Assume suitable data, if necessary.

1. (a) Draw and explain the V-I characteristics of a Zener diode. What are the two breakdown mechanisms in a Zener diode? [6]
(b) What do you understand by a D.C. load line and Q point ? Explain their significance. [6]

Or

2. (a) For a bridge rectifier, the RMS secondary voltage of transformer is 12.7 V. Assume ideal diodes and $R_L = 1 \text{ K}\Omega$. [6]

Find :

- (i) Peak Current
(ii) DC load current
(iii) DC load voltage
(iv) RMS current
(v) Peak Inverse Voltage of diode
(vi) RMS Voltage across load.
- (b) Compare BJT and MOSFET. [6]

P.T.O.

3. (a) Define and give typical values of the following op-amp parameters : [6]
- (i) Voltage Gain
 - (ii) CMRR
 - (iii) Slew Rate.
- (b) What is meant by Universal Gate ? By using any universal gate draw AND, OR, NOT basic gates. [5]
- (c) What do you mean by counter ? State different types of counters. [2]

Or

4. (a) Draw a circuit diagram of an Op-Amp as an integrator and derive the expression for its output voltage. [6]
- (b) What is multiplexer ? Explain one with example. Write its relation between select lines and input lines. [7]
5. (a) Draw block diagram of Electronic Weighing Machine and explain its operation. [6]
- (b) Explain the construction and characteristics of SCR. [6]

Or

6. (a) Explain the construction and working of LVDT with neat diagram. [6]
- (b) Compare the three types of Temperature Transducers. [6]

7. (a) What is need of modulation ? Explain Amplitude Modulation in detail. [7]

(b) Draw and explain block diagram of GSM system. [6]

Or

8. (a) Draw and explain electromagnetic spectrum. [5]

(b) Explain the following things about FM : [8]

(i) Deviation ratio

(ii) Mathematical representation of FM

(iii) Advantages and Disadvantages

(iv) Modulation index.

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