Total No. of Questions :7] *[Total No. of Printed Pages :2*

Roll No

EC-111

B.E. (All Branches) I Year I Semester

Examination, December 2015

Choice Based Credit System (CBCS)

Fundamentals of Electronics Engineering

Time : Three Hours

Maximum Marks : 60

Note: i) Attempt any five questions
ii) All questions carry equal marks
iii) Assume suitable missing data if any

1. a) Plot and give mathematical expression for the following function in continuous and discrete forms 6
   i) Unit step function
   ii) Unit ramp function
   iii) Rectangular pulse function
   b) Discuss the following operations with the help of suitable examples. 6
   i) Time shifting ii) Amplitude scaling
   iii) Time scaling

2. a) Give V-I characteristics of P-N-diode. Show important points and discuss their significance. 6
   b) Give brief description of Zener-diode's specific characteristics and applications. 6

3. a) Do the following conversions: 6
   i) Convert decimal No. $[275.49]_{10}$ to equivalent octal No.
   ii) Convert Hexadecimal No. $[A2\ B5]_{16}$ to equivalent octal No.
   iii) Convert Binary No. [1101100]

   b) Discuss the following in brief 6
   i) One's and Two's compliments
   ii) Binary addition and subtraction

4. a) Draw symbol and give truth table for the following: 6
   i) Two input NAND
   ii) Three input XOR
   iii) Two input AND (Using NOR-gates)
   b) Simplify the following function. 6
   $F = xy\bar{z} + \bar{x}yz + xyz + xy + \bar{x}\,\bar{y}z$
   Implement the resultant function using NAND-gates.

5. a) Give block diagram of a communication system and explain function of each block in brief. 6
   b) What are modulation, amplitude modulation and frequency modulation? Explain in brief. 6

6. a) Draw circuit diagram of a full wave rectifier, explain its working giving input and output waveforms and give its limitations. 6
   b) Implement AND, OR, NOT, NOR gates with two inputs using two input NAND gates. 6

7. Write short notes (Any Four) 12
   a) Even and odd signals
   b) Energy and power signals
   c) Clamper circuits
   d) Hexadecimal number systems
   e) Noise in communication systems
   f) Need of modulation
   g) Sampling