Roll No .....

EC-112

B.E. (All Branches), First Semester Examination, December 2016

Choice Based Credit System (CBCS)

Electronics - I

Time : Three Hours

Maximum Marks : 60

Note : i) Attempt any five questions out of eight.
ii) All questions carry equal marks.
iii) Assume suitable data if required.

1. a) What do you mean by signal? Give a brief classification of signals.
   b) Explain with the suitable graphs the amplitude scaling operation of signal.
2. a) Write short note on Energy and Power signals. Give the comparison between the power signal and energy signal.
   b) Explain the important property of ramp function.
3. a) Define and explain valence band, conduction band and forbidden energy gap with the help of a energy band diagram.
   b) Define an intrinsic semiconductor. Why it is not suitable for practical use?
4. a) Explain the behaviour of a pn junction under the unbiased condition.
   b) Derive the expression for the d.c. load current, average d.c. load voltage and r.m.s. value of load current for the full wave rectifier.
5. a) Derive the expression for the efficiency of half wave rectifier. And show that the maximum theoretical efficiency of a half wave rectifier is 40.6%.
   b) Draw and explain the VI characteristics of Zener Diode. Also give its applications.
6. a) Convert
      i) $(36.125)_8 = (\quad)_{10}$
      ii) $(100)_8 = (\quad)_{10}$
      iii) $(3AB)_{16} = (\quad)_{10}$
   b) i) Convert 1101101110.1001101 to hexadecimal equivalent
      ii) Convert $(615025)_8$ to its hexadecimal equivalent
      iii) Convert $(8A9.B4)_{16}$ to binary
7. a) Explain the principle of duality. Find the dual of following expression $vwx + vwyz + wxy + vxyz$
   b) What do you mean by BCD? Perform each of the following decimal additions in 8-4-2-1 BCD
      i) 24 + 18
      ii) 48 + 58
8. a) State the basic laws of Boolean algebra.
   b) Give the logic symbol and truth table for the following logic gates.
      i) NAND ii) NOR
      iii) NOT iv) EX-OR
      v) EX NOR

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