

Roll No .....

**EC-111**

**B.E. (All Branches), First Semester**

Examination, December 2016

**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.

1. a) Classify different types of signals and explain them.  
 b) With the help of energy band diagram classify different types of materials.
2. a) Draw the piece wise linear equivalent circuit of diode and explain. Also explain transition and diffusion capacitance.  
 b) Discuss the working of full wave bridge rectifier circuit.
3. a) Determine the  $v_o$  for each network shown in figure 1 (a), (b), (c).

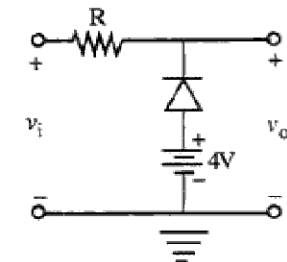
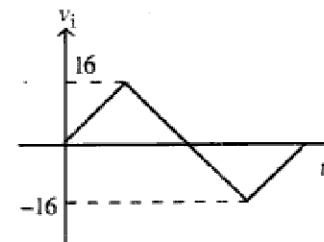


Figure 1 (a)

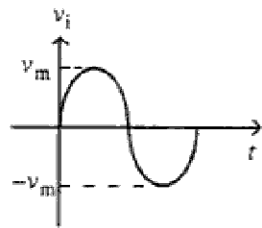


Figure 1 (b)

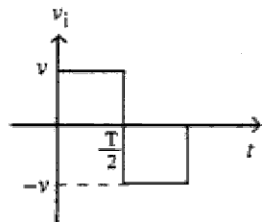
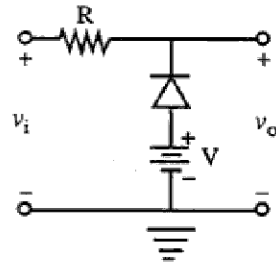
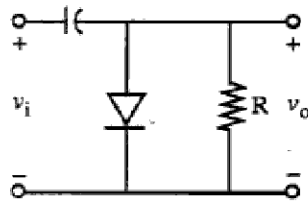


Figure 1 (c)



b) Explain the V-I characteristic of Zener diode and discuss its applications.

4. a) Convert the following:  
 $(11010110.1101)_2 = ( )_8$

$(759.24)_{10} = ( )_{16}$

$(A2C)_{16} = ( )_8$

$(73A)_{16} = ( )_{10}$

b) Subtract the following by 2's complement method

$(1111)_2 - (1010)_2$

$(1000)_2 - (1010)_2$

5. Draw the symbol and write the truth table and logical expression of following gates

i) NOR

ii) NAND

iii) X OR

iv) X NOR

v) NOT

vi) OR

- 6. a) What is the need of modulation in communication system?
- b) Explain briefly amplitude modulation.

7. Explain the following elementary signals :

- i) Unit step function
- ii) Unit ramp function
- iii) Unit parabolic function
- iv) Sinc function
- v) Gaussian function

8. Write short notes on any two of the following :

- a) Codes
- b) IEEE frequency spectrum used in communication
- c) Frequency modulation

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