Code No. : 6164

# FACULTY OF ENGINEERING
## B.E. 2/4 (Mech./Prod.) II Semester (Suppl.) Examination, December 2009
## BASIC ELECTRONICS

Time: 3 Hours] [Max. Marks: 75

*Note : Answer **all** questions of Part A. Answer **five** questions from Part B.*

PART – A (Marks : 25)

1. What properties of a semi conductor are determined from Hall effect ? 2
2. Define ripple factor, regulation and PIV as refered to rectifier circuits. 3
3. How does a transistor amplifier the input signal ? Explain. 2
4. Why is a BJT called a current controlled device ? 2
5. Differentiate between positive and negative feed back. 2
6. Write the oscillation criteria. 3
7. State the ideal characteristics of an operational amplifier and write mathematical operations an op-amp can perform. 3
8. State and prove De-Morgan's theorem by using truth table. 3
9. With the help of V–I characteristics show the four triggering modes of traic. 3
10. What is the function of a time base circuit in a CRO ? 2

PART – B (Marks : 5×10=50)

11. a) How will you find the dynamic resistance and static resistance of the diode using a graph ? 5

    b) What is an ideal diode ? How can it be represented as a switch ? Draw the equivalent circuit and its characteristics. 5

12. a) Why is a FET known as a unipolar device ? How do you compare this device with BJT ? 5

    b) Draw a simple FET amplifier circuit and explain its working. 5

13. a) Define h-parameters of a transistor. Draw and explain the equivalent circuit of a bipolar junction transistor. 5

    b) How can a zener diode act as a regulator ? Explain. 5

14. a) Derive an expression for the over all gain of a voltage series feed back amplifier. 5

    b) Distinguish between "voltage" feed back and "current" feed back in amplifier circuits. State the merits of each. 5

15. a) Draw a crystal controlled oscillator circuit and state some of its applications. 5

    b) Draw the circuit diagram of R–C phase shift oscillator and obtain an expression for its frequency of oscillation. 5

16. a) Distinguish between a "half adder" and a "full adder". Give the truth table of a half adder and sketch a circuit which may be used to realise a half adder. 5

    b) What are the universal logic gates ? Using NAND gates only, form an OR gate and write its truth table. 5

17. a) Explain the principle and operation of strain gauge. 5

    b) Draw the block diagram of a CRO and explain briefly the function of each block. 5

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