Reg. No. : ...............................

Name : ...............................

# Combined First and Second Semester B.Tech. Degree Examination, April 2014
## (2013 Scheme)
### 13.109 : BASIC ELECTRONICS ENGINEERING (BCEHMNPSU)

Time : 3 Hours

Max. Marks : 100

## PART – A

Answer **all** questions. **Each** question carries **2** marks.

1. With respect to JFET, define the parameters $r_d$ and $g_m$.

2. What do you mean by doping ?

3. Realize the logic function $Y = \overline{A}B + A\overline{B} + AC$ using basic gates.

4. State Barkhausen criteria for oscillation.

5. Define the terms :

   i) PIV                    ii) Ripple factor

6. What is the principle used in a thermistor ?

7. List the factors affecting radar range.

8. Mention the advantages of satellite communication.

9. What is the principle of WLL ?

10. Define numerical aperture of an optical fiber.

## PART – B

Answer **any one full** question from **each** Module. **Each** question carries **20** marks.

### Module – I

11. a) With schematic diagram explain the construction and working of an *n*-channel JFET.

    b) Explain the formation of barrier potential in a PN junction diode.

OR

12. a) With logic diagram and truth table explain a half adder circuit.

b) Define $\alpha_{dc}$ and $\beta_{dc}$ of a transistor. Write down the relation between them.

c) Write a note on LED.

### Module – II

13. a) Explain the functional building blocks of an operational amplifier with the help of a diagram.

b) With block schematic explain the working of a center tapped full wave rectifier with capacitor filter.

OR

14. a) Draw the circuit diagram of an RC phase shift oscillator. Explain how the circuit functions as an oscillator.

b) With schematic explain the working of LVDT.

### Module – III

15. a) Compare AM and FM.

b) Explain the principle of GPS.

c) With block schematic explain the working of pulsed radar.

OR

16. a) With block diagram describe the operation of super heterodyne receiver.

b) Draw the block diagram of an earth station receiver. Explain the function of each block.

### Module – IV

17. a) With schematic diagram explain the working of semiconductor laser.

b) Explain the principle of cellular communication. What do you mean by frequency reuse ?

OR

18. a) With block schematic describe Cable TV system.

b) What are the advantages of optical communication ? With the help of block diagram explain the principle of an optical communication system.