Combined First and Second Semester B.Tech. Degree Examination, January 2019
(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. Explain the principle of working of Zener diode.
2. What is static and dynamic resistance of a diode ?
3. Implement the following function using minimum number of logic gates,
   \[ Y = AB + CD + BD + AD. \]
4. Draw the symbolic diagram of 741 IC.
5. What are the various coupling schemes of two stages of amplifier ?
6. What are the factors that affect the Radar range ?
7. Compare AM and FM.
8. Explain the basic principle of cellular communication.
9. Explain the term frequency reuse.
10. What are the features of WLL ?

(10x2=20 Marks)

PART – B

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

Module – I

11. a) Explain the principle and working of
   i) Photo diode
   ii) Solar cell.

b) Draw the structure of N-Channel MOSFET and explain its working.

OR

P.T.O.
12. a) i) Compare BJT and FET.
    ii) With the help of truth tables, explain any two logic gates.

   b) Draw typical drain characteristics of a JFET. Explain the shape of these curves qualitatively.

   **Module – II**

13. a) With neat circuit diagram and wave forms, explain the working of a bridge rectifier.

   b) The input voltage applied to the primary of a 4:1 step down transformer of a full wave center tap rectifier is 230 V, 50 Hz. if the load resistance is 600 Ω and forward resistance is 20 Ω. Determine:
      i) dc power output
      ii) rectification efficiency
      iii) PIV.

   OR

14. a) Draw the block diagram of a digital multimeter and explain its working.

   b) Explain with block diagram, the principle and working of RC phase shift oscillator.

   **Module – III**

15. a) Draw the block diagram of super heterodyne Receiver and explain its working.

   b) Derive the expression for an amplitude modulated signal.

   OR

16. a) Draw the block diagram of an earth station transmitter and explain the functions of each block.

   b) Explain the operation of ASK and FSK.

   **Module – IV**

17. a) Explain with block diagram, the principle of operation of GPRS.

   b) Describe the structure, characteristics and application of PIN DIODE.

   OR

18. a) Describe the principle of communication through optical fiber.

   b) With block diagram, explain the operation of HDTV transmitter.