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

**Name : .....**

# Combined First and Second Semester B.Tech. Degree Examination, December 2015
## (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 working of a LED.
2. Obtain relation between $\alpha$ and $\beta$ of a transistor.
3. Compare between FET and BJT (At least 2 relevant points).
4. Draw the block diagram of a public address system.
5. Draw the circuit of an inverting amplifier using OPAMP.
6. Explain the working of strain gauge.
7. Define modulation index in AM.
8. Given digital data 1 0 1 0 0 1 1 0. Draw corresponding PSK waveform.
9. Explain GPRS.
10. Name two optical sources and detectors. **(10×2=20 Marks)**

### PART – B

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

#### Module – I

11. a) Compare the VI characteristics of an ordinary diode with that of a zener diode.
    b) Explain the working of a solar cell.
    c) Explain the input characteristics of CB transistor configuration.

OR

12. a) Explain an N channel MOSFET. Also draw the drain and transfer characteristics.
    b) Which are universal gates ? Implement the function $Y = AB + BC + A'C + AB'C$ using basic gates. **(1×20=20 Marks)**

## Module – II

13. a) Define the term ripple factor. Draw the block diagram of a regulated DC power supply using. Draw relevant waveforms.
    b) Describe the conditions for sustained oscillations. With a circuit diagram explain the working of a RC phase shift oscillator.

OR

14. a) What are the characteristics of an ideal operational amplifier ? Draw the circuit of an opamp comparator.
    b) Explain the principle of a condenser microphone.
    c) With block schematic explain the working of a function generator. **(1×20=20 Marks)**

## Module – III

15. a) Describe the operation of a FM transmitter. Also explain the FM demodulation principle.
    b) Give the Radar range equation and explain the factors affecting the range.

OR

16. a) Explain the working of a satellite transponder. Why the uplink and downlink frequencies differ ?
    b) Explain the principle of GPS.
    c) Explain a PCM encoder. **(1×20=20 Marks)**

## Module – IV

17. a) Explain the principle of CDMA.
    b) Differentiate single mode and multimode light propagation in optical fibers.
    c) With a block diagram explain the optical communication system.

OR

18. a) Explain the principle of cable TV with a block diagram.
    b) Write short notes on LCD and LED displays. **(1×20=20 Marks)**