

Roll No. ....

Total Pages : 3

**CMDE/M-24**

**4701**

## **ELECTRONIC DEVICE AND CIRCUITS-II**

Paper-PHY-204

Time Allowed : 3 Hours]

[Maximum Marks : 60

**Note** : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. **1** is compulsory. All questions carry equal marks.

### **Compulsory Question**

1. Write short notes on the following : 4×3=12
- (a) Why the troublesome phenomenon of thermal runaway does not encounter in case of FETs?
  - (b) List some important applications of tunnel and backward diodes.
  - (c) Why, in general, a BJT in its active mode is not used as an on switch?
  - (d) How does a solar cell convert light energy into electrical energy?

### **UNIT-I**

2. (a) Describe the operation of a fixed-biased BJT bistable multivibrator. 6

**4701/K/782/150**

**P. T. O.**

- (b) Discuss the operation and characteristics of a MESFET. Also list its applications. 6

3. (a) Explain under what conditions a MOSFET is used as a resistance. Further discuss a circuit where this property may be utilized. 6
- (b) Describe the operation of an emitter-coupled transistor monostable multivibrator. 6

### **UNIT-II**

4. (a) Explain the operation of a SCR-based pulse generator. 6
- (b) Describe the effect of Negative feedback on the input impedance of an OPAMP. 6
5. (a) Draw and discuss the Operation of an emitter-coupled differential amplifier in its differential and common modes. 6
- (b) Describe the Operation of a pnpn diode saw-tooth wave generator. 6

### **UNIT-III**

6. (a) Draw and discuss the operation of a modified DTL NAND gate. Also assess its fan out capabilities. 6
- (b) What are exclusive-OR gates? Develop the truth table of a three input exclusive-OR gate. Further give its some practical applications. 6

**4701/K/782/150**

**2**

7. (a) Describe the Operation of a positive DCTL NOR gate. Also list its advantages and disadvantages. 6
- (b) Explain the Operation of a CMOS NAND gate. What are the advantages of a CMOS logic gates? 6

#### **UNIT-IV**

8. Discuss in detail the materials, operation, characteristics and applications of a light emitting diode. 12
9. (a) Describe the operation of a diode laser along with its possible applications. 6
- (b) Discuss the construction and working of a p-i-n photo diode detector. In what type of applications it is preferred ? 6