

B.Sc.- III (CBCS Pattern) Semester-VI
USELT13 -Electronics Paper-I : Photonic Devices and Power Electronics

P. Pages : 2

Time : Three Hours



GUG/S/25/13349

Max. Marks : 50

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- Notes :
1. All questions are compulsory and carry equal marks.
 2. Draw neat and labelled diagrams wherever necessary.
 3. Use of a calculator/log table is allowed.

Either :

1. a) Explain the classification of Photonic Device. **10**
Explain the construction and working of LED. State the application of LED.

OR

- b) Explain **10**
- i) Spontaneous Emission
 - ii) Stimulated Emission

Either :

2. a) Explain the construction and working of the Photoconductor. **10**
- Define
- i) Quantum Efficiency and
 - ii) Responsivity

OR

- b) Explain the construction and workings of solar cells. Explain the working of dynamic scattering LCD. **10**

Either :

3. a) Explain the need for the power semiconductor device. Explain the working and I-V characteristics of SCR. **10**

OR

- b) Explain the construction and working of TRIAC. Differentiate between the SCR and Triac. **10**

Either :

4. a) Explain the working of single-phase half-wave phase control rectifier with a suitable circuit diagram. Explain the triac as a switch with a suitable diagram. **10**

OR

b) Explain the working of the DC link inverter and series inverter with a suitable diagram. **10**

5. Attempt **any ten** of the following: **1x10**
=10

- a) What is the photonic device?
- b) Differentiate between LED and LASER diode.
- c) State the application of the LASER.
- d) Differentiate between a simple diode and a photodiode.
- e) State the application of LCD.
- f) What is a solar cell?
- g) State the application of TRIAC.
- h) What is DIAC?
- i) Draw I V characteristics of DIAC?
- j) What is a control rectifier?
- k) What is natural commutation?
- l) What is inverter?
