

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

P. Pages : 2

Time : Three Hours



GUG/W/23/13349

Max. Marks : 50

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

Either:

1. a) Explain the classification of the photonic devices. 4
- b) Explain the Construction and working of LED. State its advantages. 6

OR

- c) Explain the radiative transition. 5
- d) Explain the construction and working of the laser diode. 5

Either:

2. a) Explain the construction and working of the Photoconductor. 7
- b) Differentiate between photodiode and photoconductor. 3

OR

- c) Explain the working of the solar cell. 3+7
- d) Explain the working of the photomultiplier tube with a suitable diagram.

Either:

3. a) Explain the need for semiconductor power devices. 4
- b) Explain the working and construction of SCR. 6

OR

- c) Explain the construction and working of DIAC. 5
- d) Explain the diac as a triggering device for triac with a suitable circuit diagram. 5

Either:

4. a) Explain the single-phase full-wave phase control rectifier with a suitable circuit diagram. 6
- b) Explain the triac as a switch. 4

OR

c) Explain the need for the commutating circuits in the power control circuit. **5**

d) Explain the working of the Series inverter with a suitable diagram. **5**

5. Attempt **any ten** of the following.

a) What is optical absorption? **1x10**

b) Differentiate between LED and LASER diode.

c) State the application of the laser.

d) What is a phototransistor?

e) Define quantum efficiency.

f) Differentiate between LCD and LED.

g) What is a power MOSFET?

h) Draw the symbol of TRIAC.

i) Differentiate between SCR and Triac.

j) What is a control rectifier?

k) Draw the circuit diagram of bridge inverter?

l) State limitation of series inverter?
