

Roll No.

DD-453

M. Sc. (Second Semester)
EXAMINATION, May-June, 2020

PHYSICS
Paper Third

(Electronic and Photonic Devices and Optical Modulators)

Time : Three Hours

Maximum Marks : 80

Note : Attempt all the *five* questions. *One* question from each Unit is compulsory. All questions carry equal marks.

Unit—I

1. (a) What do you mean by bipolar devices ? Explain the construction, working and application of Diac and Tirac. 8
- (b) Explain working and characteristics of four layer diode. 8

Or

- (a) Explain construction, working and application of UJT. 10
- (b) Explain Schottky diode in detail. 6

(B-40)

Unit—II

2. (a) Explain construction, working and application of JFET. 8
- (b) Explain the construction, working and application of MIS diode and distinguish between MIS and MOS diodes. 8

Or

- (a) Explain block diagram of MESFET. Also explain their working and application. 8
- (b) Explain the construction, working of charge coupled devices (CCDs) with their applications. 8

Unit—III

3. (a) Explain IMPATT diodes with their static and dynamic characteristics. 10
- (b) Discuss the construction and working of a backward diode. 6

Or

- (a) What is transfer electron effect ? Explain the construction and working of Gunn diode. 8
- (b) What is tunnel diode ? Explain negative resistivity by help of energy band diagram of Tunnel diode. 8

Unit—IV

4. (a) Describe the visible LED's. Explain their principle, working and applications. 8
- (b) Explain visible and Infrared SC lasers. 8

Or

- (a) Explain construction and working of interface thin film solar cells. 8

- (b) Explain solar radiation. How does it affect efficiency of solar cell ? 8

Unit—V

5. (a) Write a detailed note on Numeric displays. 8
(b) Explain the Liquid Crystal Displays (LCDs) with their applications. 8

Or

- (a) What do you mean by Luminescence ? Explain Electro-luminescence. 8
(b) Explain Magneto-optic and Acoustic-optic effects. 8