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NEPWT—339—2024

FACULTY OF SCIENCE

M.Sc. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(NEP 2020 Pattern)

PHYSICS

Paper SPHYE401

(Electronic Devices)

(Thursday, 19-12-2024)

Time : 10.00 a.m. to 1.00 p.m.

Time—3 Hours

Maximum Marks—60

N.B. :— (1) *All questions carry equal marks.*

(2) *Question No. 1 is compulsory.*

(3) *Solve any three of the remaining five questions (Q. No. 2 to Q. No. 6).*

(4) *Figures to the right indicate full marks.*

1. Solve the following questions (Each question carries 5 marks) : 15

(a) Explain p and n -type semiconductor.

(b) Explain in brief IV characteristics of solar cell.

(c) Draw block diagram of 4 : 1 multiplexer and explain in brief.

P.T.O.

2. (a) What is SCR ? Explain its structure and characteristics. 8
- (b) Explain principle and working of MOSFET. 7
3. (a) What are photoconductive cell ? Explain in brief its working. 8
- (b) Explain working and applications of photodiode. 7
4. (a) Explain how op-amp can be used as inverting amplifier and give the equation of voltage gain. 8
- (b) With neat circuit diagram explain op-amp as integrator. 7
5. (a) Define counters. Explain in brief 2-bit synchronous counter. 8
- (b) Draw the symbols and truth tables for AND, OR and NOT gates. 7
6. Write short notes on (Each question carries 5 marks) : 15
- (a) Gunn diode
- (b) Op-amp as high pass filter
- (c) LED.