

This question paper contains 2 printed pages]

NEPRT—86—2024

FACULTY OF SCIENCE

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

APRIL/MAY, 2024

PHYSICS

(SPHYE-401)

(Electronic Devices)

(Tuesday, 30-04-2024)

Time : 10.00 a.m. to 12.30 p.m.

Time—2½ Hours

Maximum Marks—60

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

(ii) Question No. 1 is compulsory.

(iii) Solve any three of the remaining five questions (Q. Nos. 2 to 6).

(iv) Figures to the right indicate full marks.

1. Solve the following questions (each question 5 marks) : 15
 - (a) Explain p and n -type semiconductor.
 - (b) Explain working of LED.
 - (c) State characteristics of ideal Op-Amp.
2.
 - (a) Explain input and output characteristics of NPN transistor. 8
 - (b) Explain principle and working of JFET. 7
3.
 - (a) Explain working and applications of photodiodes. 8
 - (b) What are direct and indirect band gap semiconductor ? Explain in brief. 7

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4. (a) Explain, how Op-amp can be used as non-inverting amplifier and give the equation of voltage gain. 8
- (b) Draw the circuit diagram for Op-amp used as adder. Explain its working and derive equation for output voltage. 7
5. (a) Explain binary addition and subtraction with suitable example. 8
- (b) Draw the symbols and truth tables for AND, OR and NOT gates. 7
6. Write short notes on (each question 5 marks) : 15
- (a) UJT (Uni-junction transistors)
- (b) Differential amplifier.
- (c) Exclusive OR gate (Ex-OR)