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**NA—53—2023**

**FACULTY OF SCIENCE**

**B.Sc. (Second Year) (Fourth Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2023**

**(New Pattern)**

**PHYSICS**

**Paper—IX**

**(Basic Electronics)**

**(Tuesday, 12-12-2023)**

**Time : 2.00 p.m. to 4.00 p.m.**

*Time—2 Hours*

*Maximum Marks—40*

*N.B. :— All questions are compulsory.*

1. What is common base connection ? Explain input and output characteristics of it. 15

*Or*

(a) Explain theory and working of LED. 8

(b) What is photodiode ? How does it work ? 7

2. Explain with neat circuit diagram inverting and non-inverting operational amplifier. 15

*Or*

(a) Explain phase-shift oscillator with circuit operation, advantages and disadvantages. 8

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- (b) Explain the operation of oscillatory circuit, with neat diagram of waveform and frequency of oscillation. 7
3. Write short notes on any *two* (each of 5 marks) : 10
- (a) Zener diode
  - (b) Hybrid parameter
  - (c) Common mode and differential mode signals
  - (d) Barkhausen criteria.