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VA—53—2024

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2024

(New Pattern)

PHYSICS

Paper—IX

(Basic Electronics)

(Monday, 9-12-2024)

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

Time—2 Hours

Maximum Marks—40

N.B. :- All questions are compulsory and carry equal marks.

1. What do you mean by intrinsic and extrinsic semiconductor ? Explain the working of varactor diode. 15

Or

- (a) Obtain an expression for collector current of CB connection. 8
- (b) Determine hybrid (h) parameter equation for a transistor. 7
2. What are ideal characteristics of OP-AMP ? Draw and explain the circuit diagram of Inverting and Non-Inverting Amplifier. 15

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Or

- (a) State and explain Barkhausen's criterion in detail. 8
- (b) Draw the circuit diagram and explain operation of Colpitt's oscillator. 7
3. Write short notes on any *two* (each of 5 marks) : 10
- (a) P-N Junction diode
- (b) Output characteristics of CE transistor
- (c) Common mode and differential mode signals
- (d) R-C Network.