

B.Sc. Semester - 2 (NEP-2020) Examination**MARCH/APRIL-2026****PHY: Mechanics and Solid-State Electronics (Multidisciplinary Course)****Time: 2:00 Hours****Marks: 50****Instructions:**

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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- Que. 1 Answer any 2 out of 3 from following questions. (10)
- 1) Derive the formula of gravitational potential energy.
 - 2) Explain motion of planets in circular orbit.
 - 3) Write a note on GPS.
- Que. 2 Answer any 2 out of 3 from following questions. (10)
- 1) Derive an expression for the efficiency of a full wave rectifier.
 - 2) Write a note on capacitor input filter (π filter).
 - 3) Explain use of Zener diode as voltage regulator.
- Que. 3 Answer any 2 out of 3 from following questions. (10)
- 1) Explain action and working of common base N-P-N transistor.
 - 2) Explaining output characteristics of common emitter connection, define its output resistance.
 - 3) Describe voltage (potential) divider bias method for transistor biasing.
- Que. 4 Answer any 5 out of 9 from following questions. (10)
- 1) State and explain Newton's law of gravitation.
 - 2) What is gravitational field? Explain.
 - 3) Explain weightlessness in brief.
 - 4) Write a note on semiconductor diode.
 - 5) Write a note on ripple factor.
 - 6) Explaining filter circuit, write type of filters.
 - 7) Write a note on transistor.
 - 8) Define Stability Factor.
 - 9) Write name of methods of transistor biasing.
- Que. 5 Answer any 2 out of 3 from following questions. (10)
- 1) Derive an expression for escape velocity of a body from the surface of the earth.
 - 2) Drawing circuit diagram of full wave bridge rectifier, explain its working.
 - 3) Explain common emitter transistor connection in detail.
