

**U.G. 5<sup>th</sup> Semester Examination -2021**

**PHYSICS**

[Program Course]

Discipline specific elective course (DSE)

Course Code: **PHY-G-DSE-T-01**

**MECHANICS**

**Full Marks: 20**

**Time: 3 Hours**

1. Answer any two questions: 10×2 = 20
- A. What do you mean by moment of inertia of a rigid body? State and explain the theorem of perpendicular axes in case of a plane lamina body. Find the angular moment of inertia of solid sphere of radius R. (2+3+5)
- B. What is Young modulus? What is its dimension in SI system? How can you determine the Young's modulus of a wire with the help of an optical lever? Find the working formula. (1+1+3+4)
- C. What do you mean by rigidity modulus of a body? Show that a shear is equivalent to a compression and an equal amount of extension at right angles to each other. Define and find the expression of torsional rigidity of a solid cylinder or wire. (1+1+3+4)
- D. Define simple harmonic motion. State the laws of simple pendulum. Describe compound pendulum and show that the centre of oscillation and point of suspension for a given compound pendulum are interchangeable. (2+2+6)
- E. Find the vernier constant of a slide calipers. What do you mean by least count of a screw gauge and explain the Backlash error in case of a screw gauge. Define standard error and random error of a set of data. (2+4+4)