

RS2-848

SRI KRISHNA DEVARAYA UNIVERSITY: ANANTHAPURAM

DEGREE EXAMINATIONS: SEMESTER-II

SUBJECT: PHYSICS (Minor Subject)

PAPER-I: MECHANICS AND PROPERTIES OF MATTER

Time: 3 Hrs

Max.Marks:70

Section: A

Answer any **FIVE** of the following questions.

Each question carries **FOUR** marks.

5x4=20M

1. What is gradient of a scalar field? Give its significance.
2. State laws of motion.
3. What is a rigid body? Write any two rotational kinematic relations.
4. What is a central force? Give two examples.
5. What is a frame of reference? Explain absolute frames.
6. Write the concept of impact parameter.
7. Explain precession of a top.
8. Explain time dilation.

Section: B

Answer any **FIVE** of the following questions.

Each question carries **TEN** marks.

5x10=50M

9. State and prove Gauss divergence theorem.
10. Discuss laws of conservation of energy and momentum.
11. Discuss elastic constants of isotopic solids and their relations.
12. What is a conservative force? Show that the negative gradient of potential energy is a conservative force.
13. Derive Lorentz transformations.
14. What is Poisson's ratio? Derive the expression for the Poisson's ratio.
15. What are Kepler's laws of planetary motion? Derive the second law.
16. Derive the mass-energy relation.