

B.Sc. Semester - 1 (CBCS) Examination
Oct/Nov. -2019 (NEW COURSE)
PHYSICS (CORE)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1 (A) Answer any two questions. (10)

1. Explain vector triple product.
2. Explain Michelson Morley Experiment.
3. Describe relativistic addition of velocities.

Que-1 (B) Answer any one question. (04)

1. Write a note on Scalar and Vector quantities.
2. Write a note on length contraction.

Que-2 (A) Answer any two questions. (10)

1. Explain energy bands in metals, semiconductors and insulators.
2. Explain the formation of PN-junction with forward bias.
3. Write a note on N-type semiconductor.

Que-2 (B) Answer any one question. (04)

1. Write a note on zener diode.
2. Write a note on ideal diode.

Que-3 (A) Answer any two questions. (10)

1. Explain work-energy theorem.
2. Derive the equation of moment of inertia for solid cylinder.
3. Explain Angular momentum of a rigid body and prove that $\tau = I \alpha$

Que-3 (B) Answer any one question. (04)

1. Explain Centre of mass of large number of particles system.
2. Write a note on moment of inertia.

Que-4 (A) Answer any two questions. (10)

1. What is gravitational potential? Derive an expression for the gravitational potential and gravitational field at a point outside the sphere.
2. What is escape velocity? Derive an expression for escape velocity.
3. State and prove Kepler's first law of planetary motion.

Que-4 (B) Answer any one question. (04)

1. Write a note on geosynchronous orbits.
2. Write a note on GPS.

Que-5 (A) Answer any two questions. (10)

1. Derive the formula for displacement of particle in simple harmonic motion.
2. Explain forced oscillations and define resonance.
3. Explain various types of stresses.

Que-5 (B) Answer any one question. (04)

1. Explain energy conservation in simple harmonic motion.
2. Explain Young modulus and Bulk Modulus.
