

Anjuman Islam Janjira Degree College of Science Murud-Janjira, Raigad-402401 Affiliated to University of Mumbai	
Class: -F.Y.B.Sc. G.S	Subject: - Physics Major
Semester: - I Additional Exam	Course code: -USPH101
Exam Event: - (FH) Summer 2026	Marks: - 30
Date: - 21/02/2026	Duration: - 1 Hours

N.B.

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat labelled diagrams wherever necessary.



Q: 1 A) Attempt any TWO of the following.

(10)

- 1) State and Explain Newton's First Law of Motion.
- 2) What is frame of reference? Write difference between inertial and non-inertial frame of reference.
- 3) Explain the concept of kinetic friction.
- 4) Describe the concept of Work in physics.

Q: 1 B) Attempt any ONE of the following.

(05)

- 1) A body of mass 5 kg is moving at a velocity of 50 m/s. A force start acting on it and the velocity becomes 20 m/s in a time of 5s. find the force applied to the body.
- 2) The coefficient of static friction between the block of mass 1 kg is 0.4. calculate the applied force so that the block does not slide on the plane. (given $g = 9.8 \text{ m/s}^2$).

Q: 2 A) Attempt any ONE of the following.

(10)

- 1) State and Explain Law of conservation of Linear Momentum.
- 2) Explain the concept of forced oscillation and Resonance.
- 3) What is Simple Pendulum? Derive its differential equation.
- 4) Derive Differential equation of Simple Harmonic Oscillator.

Q: 2 B) Attempt any ONE of the following.

(05)

- 1) A 2 kg object moving with a velocity of 4 m/s and collide with 3 kg object at stationary. After the collision both objects stick together. Then calculate the final velocity.
- 2) pendulum of length 80 cm. finds its time period when It is suspended in a stationary lift and Moving upward with an acceleration of 4 m/s^2 .