



Term Evaluation (Odd) Semester Examination September 2025

Roll no.....

Name of the Course: - Diploma Engineering

Semester: - I

Name of the Paper: Applied Physics - I

Paper Code: DTPH 102

Time: 1.5 hours

Maximum Marks: 50

Note:

- (i) Answer all the questions by choosing any one of the sub-questions
- (ii) Each question carries 10 marks.

Q1. (10 Marks)
a. What do you understand by 'dimension' and dimensional formula of a physical quantity? Write limitations of dimensional analysis.
[CO1]

OR

b. If the centripetal force is of the form $m^a v^b r^c$, find the values of a, b and c. [CO1]

Q2. (10 Marks)
a. Distinguish between vector and scalar quantities. Categories the scalars and vectors among following physical quantities: Mass, Speed, Displacement, Acceleration, Force, Torque, Energy, Power, volume, Heat and electric field.
[CO1]

OR

b. What is unit vector? Show that the vector product of a given vector with its unit vector is always zero.
[CO1]

Q3. (10 Marks)
a. Explain Newton's second law of motion. A body of mass 500 gram is moving initially at velocity 8 m/s along a straight line. Its velocity increases to 30 m/s in 2 seconds. Find change in linear momentum and acceleration of the body.
[CO2]

OR

b. State the law of conservation of linear momentum. A 10 kg machine gun fires bullets of 30 gram with velocity 400 m/s at the rate of 20 bullets per second. Determine force required to hold the gun stationary.
[CO2]

Q4. (10 Marks)
a. What do you understand by a projectile motion. Define the terms range, maximum height and time of flight in a projectile motion.
[CO2]

OR

b. What is friction and what causes it? Discuss the laws of friction between the solid surfaces. [CO1]

Q5. (10 Marks)
a. Define angular velocity. Earth completes one revolution about its axis in 24 hours. Determine the angular velocity of the Earth and its angular displacement during 4 hours.
[CO2]

OR

b. Explain centripetal force and centripetal acceleration. A particle is rotating on a circular path of radius 'r' and velocity 'v'. Derive the formula for its centripetal acceleration. [CO2]