

FIRST SEMESTER DIPLOMA EXAMINATION IN  
ENGINEERING AND TECHNOLOGY  
(Common to all Diploma Programmes)

**APPLIED PHYSICS I**  
**MODEL QUESTION PAPER**

Time: 3 hours

Maximum Marks: 75

**PART A**

**I. Answer all questions in one word or one sentence. Each question carries one mark.**

**(9 x 1 = 9 Marks)**

1	What is the SI unit of luminous intensity?	M1.01	R
2	What is the momentum of a car of mass 800 kg moving with a velocity 2 m/s?	M1.04	A
3	A cyclist bends inward while riding at the curves in order to provide necessary ----- force.	M2.01	U
4	The moment of inertia of a ring of mass M and radius R about a perpendicular axis through its center is -----.	M2.01	R
5	Define the term power.	M3.03	R
6	Fastest mode of heat transfer is -----.	M3.04	R
7	State Hooke's law.	M4.01	R
8	Mention an application of surface tension.	M4.02	R
9	The tangential force acting between the layers of a flowing fluid is called -----.	M4.03	R

**PART B**

**II. Answer any eight questions from the following. Each question carries 3 marks**

**(8 x 3 = 24 Marks)**

1	Explain the term resolution of a vector with an example.	M1.03	U
2	Distinguish between torque and angular momentum.	M2.03	U
3	Convert 37°C into Kelvin scale and Fahrenheit scale.	M3.04	A
4	A work 600 J is done when a force of 20 N is applied to a body. Calculate the distance through which the body moves.	M3.01	A

5	List three methods to reduce friction.	M3.01	R
6	Distinguish between kinetic energy and potential energy.	M3.02	U
7	Why does hot milk cool faster than hot water?	M3.04	U
8	Distinguish between gauge pressure and absolute pressure.	M4.02	U
9	Define the terms stress and strain.	M4.01	R
10	Explain the principle of continuity in the case of flowing fluid.	M4.04	U

### PART C

**Answer all questions. Each question carries seven marks**

**(6 x 7 = 42 Marks)**

III	Explain the recoil of a gun. Calculate the recoil velocity of a gun of mass 5 kg, firing bullets of mass 25 g with velocity 400 m/s.	M1.04	A
	OR		
IV	Discuss the various types of errors in measurements with examples	M1.02	U
V	Explain why the outer edge of the road is raised above the inner edge of the road. To what angle must a circular track of radius of curvature 250m be banked to be suitable for a maximum speed of 25m/s.	M2.01	A
	OR		
VI	Define the term moment of inertia. State parallel axes theorem and perpendicular axes theorem.	M2.02	R

VII	Prove the law of conservation of mechanical energy in the case of a falling body. Give two examples in which potential energy is converted into kinetic energy	M3.02	U
	OR		
VIII	Define the term temperature. Explain the working of a Pyrometer.	M3.04	R

IX	Explain Young's Modulus, Rigidity modulus, and Bulk modulus. Derive the equations for each of them.	M4.01	U
	OR		
X	State Bernoulli's theorem. Explain the working of an atomiser with the help of a schematic diagram.		
XI	State law of conservation of momentum and prove it in the case of collision of two masses.	M1.04	U
	OR		
XII	Define angular displacement and angular velocity. Write the equation and unit of both quantities. Derive the relation between linear velocity and angular velocity.	M2.01	R
XIII	Distinguish between static friction and kinetic friction. Explain the laws of friction.	M3.01	U
	OR		
XIV	Define the terms viscosity and coefficient of viscosity. Explain Stoke's law and the terminal velocity of a small sphere falling through a highly viscous medium.	M4.03	U