

TED (21) -1003
(Revision- 2021)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE –NOVEMBER -2021.

APPLIED PHYSICS - I

(Maximum Marks : 75)

[Time : 3 hours]

PART-A

Marks

I. Answer **all** the following questions in one word or sentence

(9x1 = 9 Marks)

		Module Outcome	Cognitive level
1	The standard used for the specification of a physical quantity is called	M1.01	R
2	If two vectors A and B are in the same direction, then the magnitude of their resultant, $R= \dots\dots\dots$	M1.03	U
3	In the case of Earth revolving around the Sun, the centripetal force for circular motion is provided by	M2.01	U
4	Moment of inertia of a thin uniform rod of length l and mass M , about an axis passing through its centre and perpendicular to its length, is	M2.02	R
5	Name a solid lubricant which is used in very heavy machinery	M3.01	R
6	Which is the prominent mode of heat transfer in solids?	M3.04	R
7	The deformation of the shape of an object without changing its volume is called	M4.01	R
8	The extra energy possessed by the surface layer of a liquid is called	M4.02	R
9	SI unit of coefficient of viscosity is	M4.03	R

PART - B

II Answer **any Eight** of the following questions . Each question carries 3 marks.

(8x3=24 Marks)

		Module Outcome	Cognitive level
1	State parallelogram law of vector addition. Draw a diagram to illustrate the parallelogram law.	M1.03	R
2	Calculate the angular velocity of the second hand of a watch	M2.01	A
3	Calculate the power of a drilling machine if it uses 3000 J of energy in 10 seconds.	M3.03	A
4	Write one example each for the following energy transformations: (a) Conversion of kinetic energy into potential energy (b) Conversion of light energy into electrical energy (c) Conversion of electrical energy into sound energy	M3.02	U
5	Explain the causes of friction	M3.01	U
6	Define power. Write the SI unit of power and how it is related to horse power.	M3.03	R
7	Differentiate between heat and temperature	M3.04	U
8	State Hooke's law. Write the SI unit of elastic modulus.	M4.01	R
9	What is capillarity and how it is related to angle of contact?	M4.02	U
10	The radius of a pipe decreases from 6 cm to 4 cm. If the velocity at the wider portion is 5 m/s, calculate the velocity in the narrow portion.	M4.03	A

PART - C

III. Answer **all** questions. Each question carries 7 marks.

(6 x 7 = 42 Marks)

		Module Outcome	Cognitive level
1	Write a note on various types of errors associated with the measurement of physical quantities. OR	M1.02	R
2	Explain the recoil of a gun. A bullet of mass 30 g is fired from a 6 kg gun with a velocity of 300 m/s. Find the recoil velocity of the gun.	M1.02	A
3	a) Derive the relation between linear velocity and angular velocity. b) Define angular acceleration. Derive the relation between linear acceleration and angular acceleration. OR	M2.01	U
4	Write a note on the moment of inertia and radius of gyration of a rotating rigid body.	M2.02	R
5	Explain the resolution of a vector with a diagram. Discuss one real-life example of the resolution of vectors. OR	M1.03	U
6	Explain why the outer edge of the road is raised above the inner edge of the road at curves. Derive the expression for angle of banking.	M2.01	U
7	State law of conservation of energy and prove it in the case of a freely falling body. OR	M3.02	U
8	Write a note on heat transfer by convection and radiation.	M3.04	R
9	Discuss the elastic modulus related to length elasticity. A metal wire of length 4 m and radius 1 mm is stretched by a load of 8 kg at one end and keeping the other end fixed to a ceiling. Find the extension produced if Young's modulus of the material of the wire is $9 \times 10^{10} \text{ N/m}^2$. OR	M4.01	A
10	Explain the idea of surface tension and discuss an application of surface tension.	M4.02	U
11	Discuss the working of (a) mercury thermometer and (b) pyrometer. OR	M3.04	U
12	Derive the equation of continuity for a fluid flowing through a pipe of varying cross section. Explain the principle of continuity with an example.	M4.04	U
