

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE, NOVEMBER - 2022**

**APPLIED PHYSICS - I**

[Maximum marks: 75]

(Time: 3 Hours)

**PART A**

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

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

		Module outcome	Cognitive level
1	Candela is the unit of .....	M1.01	R
2	..... is the resistance of a body to any change in its state of rest or uniform motion along a straight line.	M1.04	R
3	The analogous physical quantity of force in circular motion is.....	M2.01	R
4	Define angular velocity.	M2.01	R
5	Write one example of work done by gravitational force.	M3.01	U
6	The slowest mode of heat transfer is .....	M3.04	U
7	Pick out odd one from the following: Surface tension, Capillarity, Viscosity, Rigid body.	M4.02 M4.03	U
8	What is elastic limit?	M4.01	R
9	The viscous force $F = 6\pi \dots\dots r v$	M4.03	R

**PART B**

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

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

		Module outcome	Cognitive level
1	Some quantities are obtained from fundamental quantities. (a) Name these quantities (b) By what name the units of these quantities are known? (c) Name a quantity of this kind and its unit.	M1.01	U
2	Write a brief note on the banking of railway track.	M2.01	R
3	Two substances A and B supplied with same amount of heat for the same time. The temperature of B shows more than that of A. Which substance have greater specific heat? Give reason.	M3.04	U
4	Correct the following statements (a) Pyrometer is a contact thermometer (b) Mercury thermometer is a gas thermometer (c) Degree celcius temperature can be converted to Kelvin scale by subtracting 273	M3.04	U

5	Briefly explain two practical application of thermal conductivity.	M3.04	U														
6	Briefly explain potential energy? Give an example.	M3.02	R														
7	Discuss two methods to reduce friction.	M3.01	U														
8	Match the following <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Column A</th> <th>Column B</th> </tr> </thead> <tbody> <tr> <td>Volume per unit time</td> <td>No unit</td> </tr> <tr> <td>Stress</td> <td>N/m</td> </tr> <tr> <td>Strain</td> <td>Nsm<sup>-2</sup></td> </tr> <tr> <td>Surface tension</td> <td>1 x 10<sup>5</sup> pa</td> </tr> <tr> <td>Viscosity</td> <td>Av</td> </tr> <tr> <td>1 Atmospheric pressure</td> <td>N/m<sup>2</sup> N-m/s Kg-m<sup>2</sup></td> </tr> </tbody> </table>	Column A	Column B	Volume per unit time	No unit	Stress	N/m	Strain	Nsm <sup>-2</sup>	Surface tension	1 x 10 <sup>5</sup> pa	Viscosity	Av	1 Atmospheric pressure	N/m <sup>2</sup> N-m/s Kg-m <sup>2</sup>	M4.01, M4.02, M4.03, M4.04	U
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9	Give molecular theory of surface tension	M4.02	R														
10	Write equation of continuity	M4.04	R														

### PART C

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

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

		Module outcome	Cognitive level
III	In Physics laboratory, a student measures mass of a body. He repeat the experiment and the mass the body is obtained as 45.5 gm, 45.1 gm, 46 gm and 45.8 gm. Find the percentage of error in his experiment.	M1.02	A
	<b>OR</b>		
IV	Explain the principle of rocket propulsion and recoil of gun	M1.04	U
V	(a)Make a comparative study of linear and analogous angular physical quantities you studied. (b)Deduce the relationship between linear acceleration and angular acceleration.	M2.01	U
	<b>OR</b>		
VI	(a)Briefly explain the term ‘moment of inertia’. (b)State and explain the theorems of moment of inertia	M2.02	R
VII	(a)What is the meaning errors in measurement? (b)Discuss about the possible errors in measurements	M1.02	U
	<b>OR</b>		
VIII	Determine the angular acceleration of a wheel that starts from rest and attains a speed of 300 rotation per minute in 60 s	M2.01	A
IX	An engine develops 20kW of power. How much time will it take to lift a mass of 100 kg to height of 50 m.	M3.03	A
	<b>OR</b>		

X	Discuss different modes of heat transfer	M3.04	U
XI	(a) Explain the property elasticity with examples (b) Explain young's modulus of elasticity <b>OR</b>	M4.01	R
XII	(a) Differentiate between streamline flow and turbulent flow (b) What do you mean by equation of continuity in fluid dynamics?	M4.04	U
XIII	Convert the temperature zero degree Fahrenheit into (i) Degree celcius and (ii) Kelvin scale <b>OR</b>	M3.04	A
XIV	Explain the applications of Bernoulli's theorem.	M4.04	R

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