THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"

GRADE - XI	**MT- 2 [2023-2024]** **PHYSICS MS**	**Max Marks - 20** **TIME – 50 Min**

	Section A	
1	(d)Decreased to a quarter.	**1**
2	(a) 1	**1**
3	(c) decrease and increase	**1**
4	A) If both assertion and reason are true and the reason is the correct explanation of the assertion.	**1**
	Section B	
5	Orbital speed, $v=\sqrt{GMR}=\sqrt{6.67\times10-11\times6\times10246400\times1000}=7907.67$ m/s $=7.9$ km/s	**2**
6	$Y=FL/A\Delta l$	**2**

	Section C	
7	Pascal.s Law : Pressure in a fluid at rest is same at all points which are at the same height . A change in pressure applied to an enclosed fluid is transmitted undiminished to every point of the fluid and the walls of the containing vessel . Hydraulic lift is based on this principle. As shown in figure the cylinders of cross section areas are A_1 and A_2 ($A_1 << A_2$) . In both cylinder air tight pistons are lifted. A piston of small cross section A_1 is used to exert a force F_1 directly on the liquid . The pressure $P_1 = \frac{F_1}{A_1}$ is transmitted throughout the liquid to the large cylinder attached with a liner piston of area A_2 . The force F_2 is exerted on piston in upward direction Due to this force, pressure on piston is $P_2 = \frac{F_2}{A_2}$. From pascal law $P_1 = P_2$ $\therefore \frac{F_1}{A_1} = \frac{F_2}{A_2}$ $\therefore F_2 = \left(\frac{A_2}{A_1}\right) F_1$ $A_1 << A_2, \therefore F_2 >> F_1$ Hence by small force F_1, F_2 will be obtained . By this device car or truck placed on a platforms can be lifted easily.	3
	Section D	
8	1. the lowest velocity which a body must have in order to escape the gravitational attraction of a particular planet or other object.	5

	(ii) Derive $\sqrt{2GM/R}$ (iii) There is no relation of escape velocity with the location from where it is projected. Hence it does not depend on the location from where it is projected. There is no relation between the angle of projection on the escape velocity. Hence it does not depend on it.	
	Section E	
9	(b) up to *OB* (b) *OB* only (b) greater than original length (b) elastic fatigue	**1X4=4**