| CLASS: XI | **INDIAN SCHOOL MUSCAT**<br>**FIRST PERIODIC TEST**<br>**MARKING SCHEME** | SUBJECT: PHYSICS |
|---|---|---|
| | **SET - C** | |
| Q.NO. | VALUE POINTS | SPLIT UP MARKS |
| 1. | Angular momentum(L) | 1M |
| 2. | Moment of inertia of a stone tied to longer string is more than the moment of inertia of a stone tied to a smaller string. | 1M |
| 3. | The inner layers of the whirl wind in a tornado are closer to the axis of rotation. It means, the moment of inertia of the air molecules of inner layers is small. Hence, according to the law of conservation of angular momentum, the angular speed of the whirl wind In a tornado is very high. | 1M |
| 4. | The moment of inertia of a plane lamina about an axis perpendicular to its plane is equal to the sum of the moments of inertia of the lamina about any two mutually perpendicular axes in its plane and intersecting each other at the point where the perpendicular axis passes though it. | 1M |
| 5. | $w = 4$ rad $s^{-1}$, $v = rw = 4 \times 1 = 4ms^{-1}$, $L = mvr$<br>$L = 0.8Kgm^2s^{-1}$ | 1M |
| 6. | Definition<br>SI Unit is metre.<br>$(M^0L^1T^0)$ | 1M<br>½M<br>½M |
| 7. | Derivation: $\boldsymbol{\tau} = d\,\mathbf{L}/dt$, | 2M |
| 8. | $I=(m_1+m_2+m_3)r^2=(1+2+3)\times(1\sqrt{3})^2=2kgm^2$ | 2M |
| 9. | Derivation: $E_k = ½\ Iw^2$<br>Rotational kinetic energy depends on the factors:<br>(i) Moment of inertia (ii) angular speed of the body. | 2M<br>1M |
| 10. | from the principle of conservation of angular momentum<br>$I'\omega' = I\omega$<br>$T^1 = 6hr$<br>Day will be decreased by (24hr – 6hr) = 18hr | 1M<br>2M |
| 11. | Definition of M.I.<br>SI unit: $Kgm^2$ ( $M^1L^2T^0$)<br>Any two factors | 1M<br>1M<br>1M |