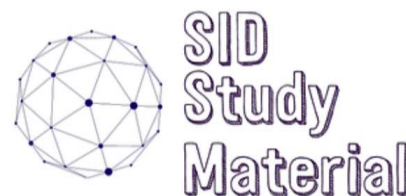


SID Study Material



Subject: Science 1

Marks: 25

Chapter: Gravitation

DPP-1

Q.1} Answer

(5)

1. Define Centripetal Force.
2. Higher the weight, higher the inertia. [True or False]
3. The value of g with depth.
4. State the formula for calculating Gravitational potential energy.
5. The escape velocity of earth is

Q.2} Answer any three

(6)

1. State difference between mass and weight.
2. A ball falls off a table and reaches the ground in 1 s. Assuming $g = 10 \text{ m/s}^2$, calculate its speed on reaching the ground and the height of the table.
3. Explain formation of tide.
4. If a person weighs 750 N on earth, how much would be his weight on the Moon given that moon's mass is $1/81$ of that of the earth and its radius is $1/3.7$ of that of the earth?

Q.3} Answer any three

(9)

1. An iron ball of mass 3 kg is released from a height of 125 m and falls freely to the ground. Assuming that the value of g is 10 m/s^2 , calculate (i) time taken by the ball to reach the ground (ii) velocity

of the ball on reaching the ground (iii) the height of the ball at half the time it takes to reach the ground.

2. A stone thrown vertically upwards with initial velocity u reaches a height 'h' before coming down. Show that the time taken to go up is same as the time taken to come down.
3. What are (i) free fall, (ii) acceleration due to gravity (iii) escape velocity?
4. Explain variation in value of g .

Q.4} Answer any one

(5)

1. Write the three laws given by Kepler. How did they help Newton to arrive at the inverse square law of gravity?
2. (a) Let the period of revolution of a planet at a distance R from a star be T . Prove that if it was at a distance of $2R$ from the star, its period of revolution will be $\sqrt{8} T$.
(b) The masses of the earth and moon are 6×10^{24} kg and 7.4×10^{22} kg, respectively. The distance between them is 3.84×10^5 km. Calculate the gravitational force of attraction between the two? Use $G = 6.7 \times 10^{-11} \text{ N m}^2 \text{ kg}^{-2}$

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