परमाणु ऊर्जा शिक्षण संस्था, मुंबई
Atomic Energy Education Society, Mumbai.

Session : 2023 – 24

Class : IX   Subject: Physics
WORKSHEET

Name of the Chapter:Gravitation.

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SECTION A   **(1x10=10M)**
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1. The weight of an object at the centre of the earth of radius R is

    a) zero   b) R times the weight at the surface of the Earth

    c) infinite   d) 1/R2 times the weight at surface of the Earth.

2. The value of acceleration due to gravity

    a) is same on equator and poles   b)is least on poles

    c) is least on equator   d)increases from pole to equator

3. The value of quantity G in the law of gravitation

    a) depends on the mass of the Earth only

    b) depends on radius of earth only

    c) depends on both mass and radius of the earth

    d) is independent of mass and radius of Earth

4. The weight of an object on the Moon's surface is

    a)1/3 of the weight on Earth   b) 1/5 of the weight on Earth

    c) 1/6 of the weight on Earth   d) 1/7 of the weight on Earth

5. The SI unit of pressure is

    a) Nm^2 b)N/m   c)N/m^2 d)N^2m^2

6. The value of G on the surface of the earth is 6.67 x 10^{-11} $Nm^2 kg^{-2}$. What will be its value on the surface of the moon?

7. Why does a truck or a motor-bus has much wider tyres?

8. Write the factors on which the buoyant force on a body immersed in a liquid depends

9. What is the difference between mass and weight?

10. How is pressure related to thrust?

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SECTION B   **(2x8=16M)**
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11. A body is dropped from a tower of 180m high. How long does it take to reach the ground?

12. Calculate the gravitational force between a 10 kg ball and a 20 kg ball placed at a separation of 5m.

13. Differentiate between Universal gravitation constant and acceleration due to gravity.

14. Give reason for the following

    (i) school bags have broad straps

    (ii) needles have sharp edges

15. A ship made of iron floats on water but an iron needle sinks. Explain why.

16. An object is thrown vertically upwards and rises to a height of 10 m. Calculate the velocity with which the object was thrown upwards? Take $g=9.8$ m/s^2

17. Which will exert more pressure 100 kg mass on 10 m^2 or 50 kg mass on 4 m^2? Give reason.

18. A stone is released from the top of a tower of height 50 m. Calculate its final velocity just before touching the ground.

<div align="center">SECTION C   (3x3=9M)</div>

19. A mass weighs 600N on the earth. What is his mass on earth? If he were taken to the moon, his weight would be 100N.What is his mass on the moon? What is the acceleration due to gravity on the moon?

20. What is meant by free fall? Two objects of masses m1 and m2 are dropped in vacuum from a height above the surface of earth. Will there be any difference in the time in which these respectively reach the ground? Give reason for your

21. The weight of an object on the surface of the moon is 1.67 N and its mass on its surface is 1 kg. Calculate its weight and mass on the surface of earth. (g on earth =10 m/s^2)

22. What happens to the force between objects ,if

    (i)The mass of one object is doubled?

    (ii)The distance between the objects is doubled and tripled?

    (iii)The masses of both objects are doubled?   **(5M)**