📗 Lesson 1 – Gravitation : Multiple Choice Questions

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1. The force of gravitation between two objects depends on

A) their masses
B) distance between them
C) gravitational constant
D) all of these
✅ **Answer:** D) all of these

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2. The value of gravitational constant (G) is

A) 9.8 m/s^2
B) 6.67×10^{-11} $N \cdot m^2/kg^2$
C) 1.6×10^{-19} C
D) 3×10^8 m/s
✅ **Answer:** B) 6.67×10^{-11} $N \cdot m^2/kg^2$

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3. The unit of weight is

A) kg
B) N
C) m/s^2
D) J
✅ **Answer:** B) N

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4. The acceleration due to gravity (g) on the Earth's surface is approximately

A) 8.9 m/s^2
B) 9.8 m/s^2
C) 10.8 m/s^2
D) 0.98 m/s^2
✅ **Answer:** B) 9.8 m/s^2

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5. The value of g is zero at

A) poles
B) equator
C) centre of Earth
D) surface of Moon
✓ **Answer:** C) centre of Earth

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6. If the mass of an object is doubled and the distance between them is also doubled, then the gravitational force becomes

A) four times
B) half
C) same
D) one fourth
✓ **Answer:** C) same

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7. Who discovered the laws of planetary motion?

A) Newton
B) Galileo
C) Kepler
D) Einstein
✓ **Answer:** C) Kepler

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8. Kepler's third law states that

A) Planets move in circular orbits
B) The Sun lies at the centre of orbits
C) $T^2 \propto r^3$
D) $T^2 \propto 1/r^2$
✓ **Answer:** C) $T^2 \propto r^3$

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9. The weight of an object is maximum at

A) poles
B) equator

C) centre
D) in space
✓ **Answer:** A) poles

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10. The value of g on the Moon is approximately

A) 9.8 m/s^2
B) 1.63 m/s^2
C) 3.7 m/s^2
D) 4.9 m/s^2
✓ **Answer:** B) 1.63 m/s^2

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11. The acceleration due to gravity on the surface of Earth is given by

A) $g = GM/R$
B) $g = G/R^2$
C) $g = GM/R^2$
D) $g = R^2/GM$
✓ **Answer:** C) $g = GM/R^2$

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12. The escape velocity on the Earth's surface is

A) 7.9 km/s
B) 11.2 km/s
C) 9.8 km/s
D) 2.37 km/s
✓ **Answer:** B) 11.2 km/s

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13. The force that keeps the planets in their orbits is

A) Nuclear force
B) Magnetic force
C) Gravitational force
D) Electric force
✓ **Answer:** C) Gravitational force

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14. If an object is freely falling towards Earth, its weight appears to be

A) Double
B) Zero
C) Half
D) Infinite
✓ **Answer:** B) Zero

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15. Gravitational force is always

A) Attractive
B) Repulsive
C) Zero
D) Variable
✓ **Answer:** A) Attractive

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16. The mass of an object on the Moon compared to Earth is

A) one-sixth
B) same
C) double
D) zero
✓ **Answer:** B) same

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17. The value of G on Earth and Moon is

A) Different
B) Same
C) Zero
D) Half
✓ **Answer:** B) Same

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18. Weight of a body depends on

A) its mass
B) acceleration due to gravity
C) both A and B

D) none of these
✓ **Answer:** C) both A and B

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19. The SI unit of acceleration due to gravity is

A) N
B) N/kg
C) m/s^2
D) J
✓ **Answer:** C) m/s^2

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20. Who first measured the gravitational constant G experimentally?

A) Cavendish
B) Newton
C) Einstein
D) Galileo
✓ **Answer:** A) Cavendish