UNIT-6

MULTIPLE CHOICE QUESTIONS

BOOK- MCQs

1. The motion of a falling ball towards Earth is due to the ----------.
   a) Weightlessness **b) Gravitational force**
   c) Acceleration due to gravity d) Both 'a' and 'b'
2. Newton's law of gravitation holds between every two objects on the ---------.
   a) on Earth b) on Jupiter
   c) on Moon **d) on Universe**
3. Numerical value of G is ----------.
   a) $G = 6.673 \times 10^{-11} Nm^2 kg^{-2}$
   b) $G = 6.673 \times 10^{11} Nm^2 kg^{-2}$
   c) $G = 6.763 \times 10^{-11} Nm^2 kg^{-2}$
   d) $G = 6.763 \times 10^{11} Nm^2 kg^{-2}$
4. Gravitational field of Earth is directed ----------.
   a) towards the Earth b) towards the Sun
   c) towards the Moon d) away from Earth
5. ---------- was the first scientist who gave the concept of gravitation.
   a) Einstein **b) Newton**
   c) Faraday d) Maxwell
6. According to Newton's law of universal gravitation force α _____.
   a) $m_1\ m_2$ b) $\frac{1}{r^2}$
   c) r^2 **d) Both (a) and (b)**
7. Gravitational force is always ----------.
   a) Repulsive **b) Attractive**
   c) Both d) None of these
8. Numerical value of ---------- remains constant everywhere.
   a) g **b) G**
   c) F d) W
9. Gravitation force is ---------- of the medium between the objects.
   a) Dependent **b) Independent**
   c) Both 'a' and 'b' d) None of these
10. Near Earth's surface g = ----------.
    a) $10 ms^{-2}$ b) $1.6 ms^{-1}$
    c) Both (a) and (b) d) None of these
11. Newton's law of gravitation is consistent with Newton's ---------- law of motion.
    a) 1st b) 2nd

c) 3rd d) All of them

12. Spring balance is used to measure ----------.
    a) Mass **b) Weight**
    c) Elasticity d) Density

13. Your weight as measured on Earth will be ---------on Moon.
    a) Increased **b) Decreased**
    c) Remains same d) None of these

14. Mass of Earth is ----------.
    a) 6.0×10^{23}kg b) 6.0×10^{24}kg
    c) 6.0×10^{25}kg c) 6.0×10^{26}kg

15. ---------- is a natural satellite.
    a) Earth b) Jupiter
    c) Moon d) Mars

16. A communication satellite completes its one revolution around the Earth in ---------- hours.
    a) 6 b) 12
    c) 18 **d) 24**

17. The velocity of a satellite is ---------- of its mass.
    a) Independent b) Dependent
    c) Equal d) Double

18. ---------- are used to put satellites into orbits.
    a) Helicopter b) Aero plane
    c) Rocket d) None of these

19. The critical velocity v = ----------.

    a) gR b) $\frac{g}{R}$

    c) $\sqrt{gR}$ d) $\sqrt{\frac{g}{R}}$

UNIT-6 EXAMS PRACTICE MULTIPLE CHOICE QUESTIONS

1. Newton's law of gravitation states that every object in the universe:

A. Repels every other object

B. Attracts every other object

C. Has no force between them

D. Attracts only objects on Earth

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2. The gravitational force between two objects depends on:

A. Their masses and distance between them

B. Their color and shape

C. Their temperature only

D. Their speed only

3 In the formula $F = \frac{G\, m_1 m_2}{r^2}$ G represents:

A. Acceleration due to gravity

B. Mass of Earth

C. Gravitational force

D. Gravitational constant

4. If the distance between two objects is doubled, the gravitational force becomes:

A. Double

B. Half

C. One-fourth

D. Four times

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6. Two objects have masses 2 kg and 3 kg. They are 1 m apart. Calculate the gravitational force between them. .

A. 4.00×10^{-11} N

B. 6.67×10^{-11} N

C. 4.00×10^{-10} N

D. 6.00×10^{-10} N

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7. If the gravitational force between two objects is 40 N, what will be the force if the distance between them is doubled?

A. 160 N

B. 20 N

C. 40 N

D. 10 N

8. **If the distance between two objects is tripled, the gravitational force becomes:**

A. $\frac{1}{2}$ of the original

B. $\frac{1}{3}$ of the original

C. $\frac{1}{6}$ of the original

D. $\frac{1}{9}$ of the original

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9. **The mass of the Earth can be calculated using:**

A. Hooke's law

B. Newton's law of gravitation

C. Ohm's law

D. Pascal's law

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10. **The approximate mass of the Earth is:**

A. 6.0×10^{20} kg

B. 6.0×10^{24} kg

C. 6.0×10^{28} kg

D. 6.0×10^{30} kg

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11. **An artificial satellite is an object that:**

A. Moves randomly in space

B. Revolves around the Earth or another planet

C. Always falls directly to Earth

D. Produces its own light

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12. **The force that keeps an artificial satellite in orbit around Earth is:**

A. Frictional force

B. Magnetic force

C. Gravitational force

D. Electrostatic force

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13. **A geostationary satellite appears stationary because:**

A. It does not move

B. It has no gravity acting on it

C. Its time period is equal to Earth's rotation period

D. It is very close to Earth

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14. A satellite moves in a circular orbit of radius 7.0×10^6 m. If $GM=4.0\times10^{14}$ m^3/s^2 , find its orbital speed.

A. 3.6×10^3 m/s
B. 5.6×10^3 m/s
C. 7.6×10^3 m/s
D. 9.6×10^3 m/s

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15. A satellite completes one revolution around Earth in 90 minutes. What is its time period in seconds?

A. 900 s
B. 1800 s
C. 3600 s
D. 5400 s

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16. What is the weight of a 10 kg object on Earth? Take $g=10$ m/s^2

A. 10 N
B. 50 N
C. 100 N
D. 1000 N

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17. An object has a mass of 5 kg. What is its weight on Earth? Take $g=9.8$ m/s^2.

A. 4.9 N
B. 9.8 N
C. 49 N
D. 98 N

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18. An object weighs 200 N on Earth. What is its mass? Take $g=10$ m/s^2

A. 10 kg
B. 20 kg
C. 100 kg
D. 2000 kg

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19. A 12 kg object is taken to the Moon, where $g=1.6$ m/s^2. What is its weight on the Moon?

A. 7.5 N
B. 12 N
C. 19.2 N
D. 120 N

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20. An object has a mass of 60 kg. What is its weight on a planet where $g=4$ m/s^2?

A. 15 N
B. 64 N
C. 120 N
D. 240 N