Chapter: Gravitation

MCQs:

1. Two bodies of mass $20kg$ & $30kg$ are $30m$ apart. Then the gravitational force between the bodies is:
   a. $4.4 \times 10^{-11}N$ b. $4.4 \times 10^{-11}N$ c. $4.4 \times 10^{-11}N$ d. $4.4 \times 10^{-11}N$
2. When earth doesn't rotate about its axis then what effect can be seen in its gravity? (Expect at poles)
   a. Will decrease b. Will Increase c. Remain Same d. None.
3. The gravitational force between two masses, if their distance is doubled keeping mass same is,
   a. Reduced to quarters b. halved c. Doubled d. Quadruples
4. At what depth, the value of $'g'$ is same to that of $'g'$ at a height of $10km$?
   a. $10km$ b. $20km$ c. $40km$ d. $80km$
5. The planet of mass and diameter is three times than the earth. Then find the acceleration due to gravity on planet is:
   a. $3.3ms^{-2}$ b. $3.3ms^{-2}$ c. $3.3ms^{-2}$ d. $3.3ms^{-2}$
6. At what height from earth, g becomes $\frac{g}{2}$, where R is radius of earth,
   a. R b. $0.7R$ c. $0.414R$ d. $\frac{R}{2}$
7. The work done in raising a body of mass $'m'$ from surface of earth to a height equal to radius of earth R is given by,
   a. mgR b. $2mgR$ c. $\frac{mgR}{2}$ d. mgR^2
8. The escape velocity of a planet, double the size of the earth is, (if density of earth and planet is same)
   a. $5.6ms^{-2}$ b. $11.2ms^{-2}$ c. $22.4ms^{-2}$ d. $44.8ms^{-2}$
9. The orbital velocity of satellite depends upon,
   a. Mass of the earth only
   b. Radius of earth only
   c. Mass of earth and radius of orbit
   d. Neither mass nor radius of orbit
10. The escape velocity of the planet is v_e. If the mass of the planet is increased four times keeping the radius same. The escape velocity becomes:
    a. $4v_e$ b. $2v_e$ c. $2\sqrt{2}v_e$ d. $\sqrt{2}v_e$
11. The time period of communication satellite is,
    a. $6\ hrs$ b. $12hrs$ c. $24\ hrs$ d. $1\ year$
12. The escape velocity of moon of mass $7.2 \times 10^{22}kg$ and radius $1.7 \times 10^{7}m$ is,
    a. $1.2\ kms^{-2}$ b. $2.4\ kms^{-2}$ c. $11.62\ kms^{-2}$ d. $10\ kms^{-2}$
13. Two satellites of masses m and $9m$ are orbiting a planet in a circular orbit of radius R. Their time periods of revolution will be in the ratio of
    a. $1:1$ b. $1:3$ c. $3:1$ d. $9:1$
14. A proposed communication satellite would revolve round the earth in a circular orbit in the equatorial plane, at a height of $35880km$ above the earth's surface. Find the period of revolution of the satellite in hours,
    a. $24\ hrs$ b. $365\ hrs$ c. $27\ days$ d. $365\ days$
15. Escape velocity for earth is $11km^{-s}$. If satellite is launched at 45^0 with horizontal, then escape velocity would be,
    a. $11km^{-s}$ b. $11.2\ km^{-s}$ c. $11\sqrt{3}km^{-s}$ d. $11/\sqrt{2}km^{-s}$
    [Escape velocity does not depend on angle of projection]
16. What will be the time period of satellite moving around the earth if the radius of earth increased by 1.5 times,
    a. $\left(\frac{2}{3}\right)^{\frac{2}{3}}$ b. $\left(\frac{3}{2}\right)^{\frac{2}{3}}$ c. $\left(\frac{3}{2}\right)^{\frac{3}{2}}$ d. $\left(\frac{2}{3}\right)^{\frac{1}{3}}$