EXERCISE-I (Conceptual Questions) **Build Up Your Understanding**

NEWTON'S LAW OF GRAVITATION & GRAVITATION FIELD

1. Newton's law of gravitation :

(1) is not applicable out side the solar system
(2) is used to govern the motion of satellites only
(3) control the rotational motion of satellites and planets
(4) control the rotational motion of electrons in atoms

2. Mass particles of 1 kg each are placed along x-axis at x = 1, 2, 4, 8, ...∞. Then gravitational force on a mass of 3kg placed at origin is (G = universal gravitational constant) :-

(1) 4G (2) $\frac{4G}{3}$ (3) 2G (4) ∞

3. Gravitational force between two masses at a distance 'd' apart is 6N. If these masses are taken to moon and kept at same separation, then the force between them will become :

(1) 1 N (2) $\frac{1}{6}$N (3) 36 N (4) 6 N

4. The value of universal gravitational constant G depends upon :

(1) Nature of material of two bodies (2) Heat constant of two bodies
(3) Acceleration of two bodies (4) None of these

5. Three identical bodies (each mass M) are placed at vertices of an equilateral triangle of arm L, keeping the triangle as such by which angular speed the bodies should be rotated in their gravitational fields so that the triangle moves along circumference of circular orbit :

(1) $\sqrt{\frac{3GM}{L^3}}$ (2) $\sqrt{\frac{GM}{L^3}}$ (3) $\sqrt{\frac{GM}{3L^3}}$ (4) $3\sqrt{\frac{GM}{L^3}}$

6. Four particles of masses m, 2m, 3m and 4m are kept in sequence at the corners of a square of side a. The magnitude of gravitational force acting on a particle of mass m placed at the centre of the square will be :

(1) $\frac{24m^2G}{a^2}$ (2) $\frac{6m^2G}{a^2}$ (3) $\frac{4\sqrt{2}Gm^2}{a^2}$ (4) Zero

7. The tidal waves in the seas are primarily due to:

(1) The gravitational effect of the sun on the earth
(2) The gravitational effect of the moon on the earth
(3) The rotation of the earth
(4) The atmospheric effect of the earth it seH

8. During the journey of space ship from earth to moon and back, the maximum fuel is consumed:-

(1) Against the gravitation of earth in return journey
(2) Against the gravitation of earth in onward journey
(3) Against the gravitation of moon while reaching the moon
(4) None of the above

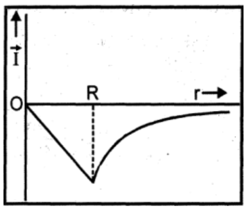
9. If the distance between the centres of earth and moon is D and mass of earth is 81 times that of moon. At what distance from the centre of earth gravitational field will be zero :

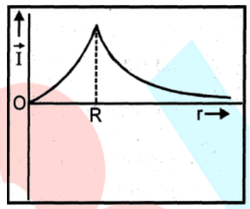
(1) $\frac{D}{2}$ (2) $\frac{2D}{3}$ (3) $\frac{4D}{5}$ (4) $\frac{9D}{10}$

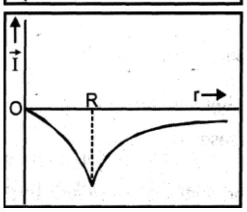
10. An earth's satellite is moving in a circular orbit with a uniform speed v. If the gravitational force of the earth suddenly disappears, the satellite will :-

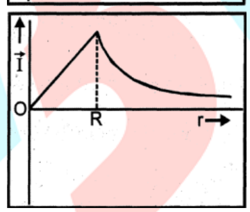
(1) vanish into outer space
(2) continue to move with velocity v in original orbit
(3) fall down with increasing velocity
(4) fly off tangentially from the orbit With velocity v

11. Following curve shows the variation of intensity of gravitational field $(\vec{I})$ with distance from the centre of solid sphere(r) :

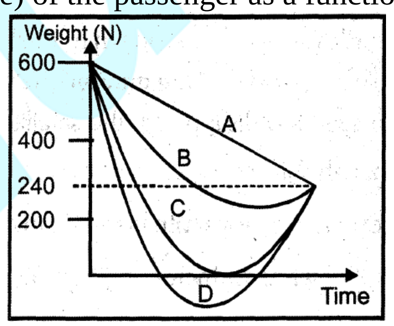
(1) 

(2) 

(3) 

(4) 

12. Suppose the acceleration due to gravity at the earth's surface is 10 m/s^2 and at the surface of mars it is 4.0 m/s^2. A 60 kg passenger goes from the earth to the mars in a spaceship moving with a constant velocity. Neglect all other objects in the sky. Which part of figure best represent the weight (Net gravitational force) of the passenger as a function of time :



(1) A (2) B (3) C (4) D

13. Assume that a tunnel is dug through earth from North pole to south pole and that he earth is a non-rotating, uniform sphere of density ρ. The gravitational force on a particle of mass m dropped into the tunnel when it reaches a distance r from the centre of earth is

(1) $\left(\frac{3}{4\pi}mG\rho\right)r$ (2) $\left(\frac{4\pi}{3}mG\rho\right)r$

(3) $\left(\frac{4\pi}{3}mG\rho\right)r^2$ (4) $\left(\frac{4\pi}{3}m^2G\rho\right)r$

14. Mars has a diameter of approximately 0.5 of that of earth and mass of 0.1 of that of earth. The surface gravitational field strength on mars as compared to that on earth is a factor of -
(1) 0.1 (2) 0.2 (3) 2.0 (4) 0.4

15. Three equal masses of 1 kg each are placed at the vertices of an equilateral triangle PQR and a mass of 2 kg is placed at the centroid O of the triangle which is at a distance of $\sqrt{2}$ m from each of the vertices of the triangle. The force, in newton, acting on the mass of 2 kg is :-
(1) 2 (2) $\sqrt{2}$ (3) 1 (4) zero

16. One can easily "weigh the earth" by calculating the mass of earth using the formula (in usual notation)
(1) $\frac{G}{g}R_E^2$ (2) $\frac{g}{G}R_E^2$ (3) $\frac{g}{G}R_E$ (4) $\frac{G}{g}R_E^3$

ACCELERATION DUE TO GRAVITY

17. Acceleration due to gravity at the centre of the earth is :-
(1) g (2) $\frac{g}{2}$ (3) zero (4) infinite

18. The value of 'g' pm earth surface depends :-
(1) only an earth's structure (2) only an earth's rotational motion
(3) on above both (4) on none these and is same

19. The value of 'g' reduces to half of its value at surface of earth at a height 'h', then :-
(1) h = R (2) h = 2R (3) $h=\left(\sqrt{2}+1\right)R$ (4) $h=\left(\sqrt{2}-1\right)R$

20. At some planet 'g' is 1.96 m/sec^2. If it is safe to jump from a height of 2 m on earth, then what should be corresponding safe height for jumping on that planet
(1) 5 m (2) 2 m (3) 10 m (4) 20 m

21. If the earth stops rotating suddenly, the value of g at a place other than poles would :-
(1) Decrease
(2) Remain constant
(3) Increase
(4) Increase or decrease depending on the position of earth in the orbit round the sun

22. Diameter and mass of a planet is double that earth. Then time period of a pendulum at surface of planet is how much times of time period at earth surface:-
(1) $\frac{1}{\sqrt{2}}$ times (2) $\sqrt{2}$ times (3) Equal (4) None of these

23. Gravitation on moon is 1/6th of that on earth. When a balloon filled with hydrogen is released on moon then, this :-

(1) Will rise with an acceleration less then $\left(\frac{g}{6}\right)$

(2) Will rise with acceleration $\left(\frac{g}{6}\right)$

(3) Will fall down with an acceleration less than $\left(\frac{5g}{6}\right)$

(4) Will fall down with acceleration $\left(\frac{g}{6}\right)$

24. The acceleration due to gravity g and mean density of earth ρ are related by which of the following relations ? [G = gravitational constant and R = radius of earth] :

(1) $\rho = \frac{4\pi gR^2}{3G}$ (2) $\rho = \frac{4\pi gR^2}{3G}$ (3) $\rho = \frac{3g}{4\pi GR}$ (4) $\rho = \frac{3g}{4\pi GR^3}$

25. More amount of sugar is obtained in 1kg weight:

(1) At North pole (2) At equator
(3) Between pole and equator (4) At South pole

26. When you move from equator to pole, the value of acceleration due to gravity (g) :-

(1) increases (2) decreases
(3) remains the same (4) first increases then decreases

27. When the radius of earth is reduced by 1% without changing the mass, then the acceleration due to gravity will

(1) increase by 2% (2) decrease by 1.5%
(2) increase by 1% (4) decrease by 1%

28. Weight of a body of mass m decreases by 1% when it is raised to height h above the earth's surface. If the body is taken to a depth h in a mine, then in its weight will

(1) decrease by 0.5% (2) decrease by 2%
(3) increase by 0.5% (4) increase by 1%

29. Acceleration due to gravity at earth's surface is 'g' m/s^2. Find the effective value of acceleration due to gravity at a height of 32 km from sea level : (R_e = 6400 Km)

(1) 0.5 g m/s^2 (2) 0.99 g m/s^2 (3) 1.01 g m/s^2 (4) 0.90 g m/s^2

30. The mass of the moon is 1% of mass of the earth. The ratio of gravitational pull of earth on moon to that of moon on earth will be :

(1) 1 : 1 (2) 1 : 10 (3) 1 : 100 (4) 2 : 1

31. Imagine a new planet having the same density as that of earth but its radius is 3 times bigger than the earth in size. If the acceleration due to gravity on the surface of earth is g and that on the surface of the new planet is g', then :

(1) g' = 3g (2) g' = g/9 (3) g' = 9g (4) g' = 27 g

32. The change in the value of 'g' at a height 'h' above the surface of the earth is same as at a depth 'd'. If 'd' and 'h' are much smaller than the radius of earth, then which one of the following is correct?

(1) d = h (2) d = 2h (3) $d = \frac{3h}{2}$ (4) d = h/2

33. If the rotational speed of earth is increased then weight of a body at the equator

(1) increases (2) decreases (3) becomes double (4) does not changes

34. A body weighs W newton at the surface of the earth. Its weight at a height equal to half the radius of the earth will be :

(1) $\frac{W}{2}$ (2) $\frac{2W}{3}$ (3) $\frac{4W}{9}$ (4) $\frac{W}{4}$

35. The imaginary angular velocity of the earth for which the effective acceleration due to gravity at the equator shall be zero is equal to

(1) 1.25×10^{-3} rad/s (2) 2.50×10^{-3} rad/s

(3) 3.75×10^{-3} rad/s (4) 5.0×10^{-3} rad/s

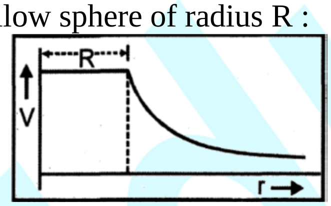
[Take g = 10 m/s^2 for the acceleration due to gravity if the earth were at rest and radius of earth equal to 6400 km.]

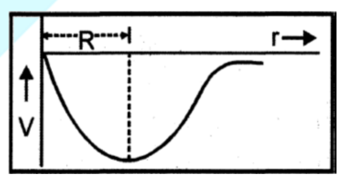
GRAVITATIONAL POTENTIAL ENERGY & POTENTIAL

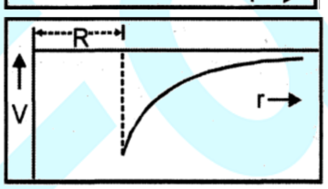
36. Two different masses are droped from same heights. When these just strike the ground, the following is same :

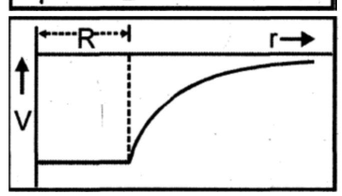
(1) kinetic energy (2) potential energy (3) linear momentum (4) acceleration

37. Which of the following curve expresses the variation of gravitational potential with distance for a hollow sphere of radius R :

(1) 

(2) 

(3) 

(4) 

38. Gravitational potential difference between surface of a planet and a point situated at a height of 20 m above its surface is 2 J/kg. If gravitational field is uniform, then the work done in taking a 5 kg body upto height 4 meter above surface will be :

(1) 2 J (2) 20 J (3) 40 J (4) 10 J

39. If M_e is the mass of earth and M_m is the mass of moon ($M_e = 81\ M_m$). The potential energy of an object of mass m situated at a distance R from the centre of earth and r from the centre of moon, will be :-

(1) $-GmM_m\left(\frac{R}{81}+r\right)\frac{1}{R^2}$
(2) $-GmM_e\left(\frac{81}{r}+\frac{1}{R}\right)$
(3) $-GmM_m\left(\frac{81}{R}+\frac{1}{r}\right)$
(4) $GmM_m\left(\frac{81}{R}-\frac{1}{r}\right)$

40. The gravitation potential energy is maximum at :
(1) Infinity
(2) The earth's surface
(3) The centre of the earth
(4) Twice the radius of the earth

41. A missile is launched with a velocity less than the escape velocity. Sum of its kinetic energy and potential energy is :-
(1) Positive
(2) Negative
(3) May be negative or positive depending upon its initial velocity
(4) Zero

42. A body attains a height equal to the radius of the earth when projected from earth' surface. The velocity of the body with which it was projected is :
(1) $\sqrt{\frac{GM}{R}}$
(2) $-\frac{A}{R}$
(3) $\frac{A}{2R}$
(4) $-\frac{A}{2R}$

ESCAPE VELOCITY

49. Potential energy of a 3 kg body at the surface of a planet is –54 J, then escape velocity will be:
(1) 18 m/s
(2) 162 m/s
(3) 36 m/s
(4) 6 m/s

50. Escape velocity of a 1 kg body on a planet is 100 m/s. Potential energy of body at that planet is:
(1) –5000 J
(2) –1000 J
(3) –2400 J
(4) –10000 J

51. The ratio of radii of two satellites is p and the ratio of their acceleration due to gravity is q. The ratio of their escape velocities will be :
(1) $\left(\frac{q}{p}\right)^{1/2}$
(2) $\left(\frac{p}{q}\right)^{1/2}$
(3) pq
(4) $\sqrt{pq}$

52. Escape velocity of a body from earth is 11.2 km/s. Escape velocity, when thrown at an angle of 45° from horizontal will be :-
(1) 11.2 km/s
(2) 22.4 km/s
(3) $11.2/\sqrt{2}$ km/s
(4) $11.2\sqrt{2}$ km/s

53. The escape velocity from the earth is 11.2 km/s the mass of another planet is 100 times of mass of earth and its radius is 4 times the radius of earth. The escape velocity for the planet is :-
(1) 56.0 km/s
(2) 280 km/s
(3) 112 km/s
(4) 11.2 km/s

54. Body is projected vertically upward from the surface of the earth with a velocity equal to half the escape velocity. If R is radius of the earth, the maximum height attained by the body is :-
(1) $\frac{R}{6}$
(2) $\frac{R}{3}$
(3) $\frac{2}{3}R$
(4) R

PLANETARY MOTION & WEIGHTLESSNESS

55. Binding energy of moon and earth is :-

(1) $\frac{GM_eM_m}{r_{em}}$ (2) $\frac{GM_eM_m}{2r_{em}}$ (3) $-\frac{GM_eM_m}{r_{em}}$ (4) $-\frac{GM_eM_m}{2r_{em}}$

56. Two artificial satellites A and B are at a distance r_A and r_B above the earth's surface. If the radius of earth is R, then the ratio of their speed will be :-

(1) $\left(\frac{r_B+R}{r_A+R}\right)^{1/2}$ (2) $\left(\frac{r_B+R}{r_A+R}\right)^{2}$ (3) $\left(\frac{r_B}{r_A}\right)^{2}$ (4) $\left(\frac{r_B}{r_A}\right)^{1/2}$

57. The average radii of orbits of mercury and earth around the sun are 6×10^7 km and 1.5×10^8 km respectively. The ratio of their orbital speeds will be :-

(1) $\sqrt{5}:\sqrt{2}$ (2) $\sqrt{2}:\sqrt{5}$ (3) 2.5 : 1 (4) 1 : 25

58. A body is dropped by a satellite in its geo-stationary orbit ,
(1) it will burn on entering in to the atmosphere
(2) it will remain in the same place with respect to the earth
(3) it will reach the earth is 24 hours
(4) it will perform uncertain motion

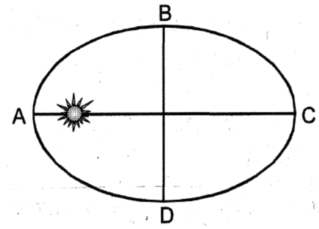
59. Two ordinary satellites are revolving round the earth in same elliptical orbit, then which of the following quantities is conserved :-
(1) Velocity (2) Angular velocity
(3) Angular momentum (4) None of above

60. Kepler's second law is a consequence of :-
(1) conservation of kinetic energy (2) conservation of linear momentum
(3) conservation of angular momentum (4) conservation of speed

61. One projectile after deviating from its path starts moving round the earth in a circular path of radius equal to nine times the radius of earth R. Its time period will be :-

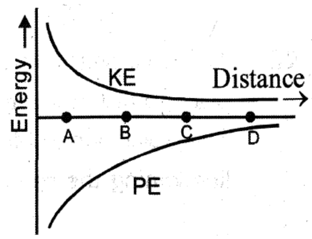
(1) $2\pi\sqrt{\frac{R}{g}}$ (2) $27 \times 2\pi\sqrt{\frac{R}{g}}$ (3) $\pi\sqrt{\frac{R}{g}}$ (4) $0.8 \times 3\pi\sqrt{\frac{R}{g}}$

62. In adjoining figure earth goes around the sun in elliptical orbit on which point the orbital speed is maximum :



(1) On A (2) On B (3) On C (4) On D

63. Potential energy and kinetic energy of a two particle system under imaginary force field are shown by curves KE and PE respectively in figure. This system is bound at :



(1) only point A
(2) only point D
(3) only point A, B and C
(4) All points A, B, C and D

64. A satellite of earth of mass 'm' is taken from orbital radius 2R to 3R, then minimum work done is

(1) $\frac{GMm}{6R}$ (2) $\frac{GMm}{12R}$ (3) $\frac{GMm}{24R}$ (4) $\frac{GMm}{3R}$

65. If a graph is plotted between T^2 and r^3 for a planet then its slope will be :-

(1) $\frac{4\pi^2}{GM}$ (2) $\frac{GM}{4\pi^2}$ (3) 4π GM (4) Zero

66. A planet is revolving round the sun. Its distance from the sun at Apogee is r_A and that at Perigee is r_P. The mass of planet and sun is m and M respectively, v_A and v_P is the velocity of planet at Apogee and Perigee respectively and T is the time period of revolution of planet round the sun.

(a) $T^2 = \frac{\pi^2}{2Gm}(r_A + r_P)^2$
(b) $T^2 = \frac{\pi^2}{2Gm}(r_A + r_P)^3$
(c) $v_A r_A = v_P r_P$
(d) $v_A < v_P$, $r_A > r_P$

(1) a, b, c (2) a, b, d (3) b, c, d (4) all

67. A satellite launching station should be :

(1) near the equatorial region
(2) near the polar region
(3) on the polar axis
(4) all locations are equally good

68. A space shuttle is launched in a circular orbit near the earth's surface. The additional velocity be given to the space - shuttle to get free from the influence of gravitational force, will be :

(1) 1.52 km/s (2) 2.75 km/s (3) 3.28 km/s (4) 5.18 km/s

69. A satellite is moving in a circular orbit around earth with a speed v. If its mass is m, then its total energy will be :

(1) $\frac{3}{4}mv^2$ (2) mv^2 (3) $\frac{1}{2}mv^2$ (4) $-\frac{1}{2}mv^2$

70. If the length of the day is T, the height of that TV satellite above the earth's surface which always appears stationary from earth, will be :

(1) $h = \left[\frac{4\pi^2 GM}{T^2}\right]^{1/3}$
(2) $h = \left[\frac{4\pi^2 GM}{T^2}\right]^{1/2} - R$
(3) $h = \left[\frac{GMT^2}{4\pi^2}\right]^{1/3} - R$
(4) $h = \left[\frac{GMT^2}{4\pi^2}\right]^{1/3} + R$

71. If two bodies of mass M and m are revolving around the centre of mass of the system in circular orbit of radii R and r respectively due to mutual interaction. Which of the following formula is applicable :-

(1) $\frac{GMm}{(R+r)^2} = m\omega^2 r$

(2) $\frac{GMm}{R^2} = m\omega^2 r$

(3) $\frac{GMm}{r^2} = m\omega^2 R$

(4) $\frac{GMm}{R^2 + r^2} = m\omega^2 r$

72. Two satellites of same mass m are revolving round of earth (mass M) in the same orbit of radius r. Rotational directions of the two are opposite therefore, they can collide. Total mechanical energy of the system (both satellites and earths) is (m << M) :-

(1) $-\frac{GMm}{r}$ (2) $-\frac{2GMm}{r}$ (3) $-\frac{GMm}{2r}$ (4) Zero

73. A planet of mass m is moving in an elliptical orbit about the sun (mass of sun = M). The maximum and minimum distances of the planet from the sun are r_1 and r_2 respectively. The period of revolution of the planet will be proportional to :

(1) $r_1^{3/2}$ (2) $r_2^{3/2}$ (3) $(r_1 - r_2)^{3/2}$ (4) $(r_1 + r_2)^{3/2}$

74. The relay satellite transmits the television programme continuously from one part of the world to another because its :

(1) Period is greater than the period of rotation of the earth about its axis
(2) Period is less than the period of rotation of the earth about its axis
(3) Period is equal to the period of rotation of the earth about its axis
(4) Mass is less than the mass of earth

75. If the satellite is stopped suddenly in its orbit which is at a distance radius of earth from earth's surface and allowed to fall freely into the earth. The speed with which it hits the surface of earth will be :

(1) 7.919 m/s (2) 7.919 km/s (3) 11.2 m/s (4) 11.2 km/s

76. A planet is moving in an elliptical orbit. If T, U, E and L are its kinetic energy, potential energy, total energy and magnitude of angular momentum respectively, then which of the following statement is true :-

(l) T is conserved
(2) U is always positive
(3) E is always negative
(4) L is conserved but the direction of vector $\vec{L}$ will continuously change

77. The gravitational force between two bodies is directly proportional to $\frac{1}{R}$ (not $\frac{1}{R^2}$), where 'R' is the distance between the bodies. Then the orbital speed for this force in circular orbit is proportional to :-

(1) $1/R^2$ (2) R° (3) R (4) 1/R

78. What will be velocity of a satellite revolving around the earth at a height h above surface of earth if radius of earth is R :-

(1) $R^2\sqrt{\frac{g}{R+h}}$ (2) $R\frac{g}{(R+h)^2}$ (3) $R\sqrt{\frac{g}{R+h}}$ (4) $R\sqrt{\frac{R+h}{g}}$

79. Two artificial satellites of masses m_1 and m_2 are moving with speeds v_1 and v_2 in orbits of radii r_1 and r_2 respectively. If $r_1 > r_2$ then which of the following statements in true :-
(1) $v_1 = v_2$ (2) $v_1 > v_2$ (3) $v_1 < v_2$ (4) $v_1/r_1 = v_2/r_2$

80. Orbital radius of a satellite S of earth is four times that of a communication satellite C. Period of revolution of S is :-
(1) 4 days (2) 8 days (3) 16 days (4) 32 days

81. If a satellite is revolving very close to the surface of earth, then its orbital velocity does not depend upon :-
(1) Mass of satellite (2) Mass of earth (3) Radius of earth (4) Orbital radius

82. Two identical satellites are at the heights R and 7R from the earth's surface. Then which of the following statement is incorrect :- (R = Radius of the earth)
(1) Ratio of total energy of both is 5 (2) Ratio of kinetic energy of both is 4
(3) Ratio of potential energy of both 4 (4) Ratio of total energy of both is 4

83. The minimum projection velocity of a body from the earth's surface so .that it becomes the satellite of the earth ($R = 6.4 \times 10^6$m).
(1) 11×10^3 m/s (2) 8×10^3 m/s (3) 6.4×10^3 m/s (4) 4×10^3 m/s

84. Geostationary satellite :-
(1) is situated at a great height above the surface of earth
(2) moves in equatorial plane
(3) have time period of 24 hours
(4) have time period of 24 hours and moves in equatorial plane

85. The maximum and minimum distances of a comet from the sun are 8×10^{12} m and 1.6×10^{12} m respecting. If its velocity when it is nearest to the sun is 60 m/s then what will be its velocity in m/s, when it is farthest ?
(1) 12 (2) 60 (3) 112 (4) 6

86. A satellite of mass m goes round the earth along a circular path of radius r. Let m_E be the mass of the earth and R_E its radius then the linear speed of the satellite depends on.
(1) m, m_E and r (2) m, R_E and r (3) m_E only (4) m_E and r

87. Near the earth's surface time period of a satellite is 1.4 hrs. Find its time period if it is at the distance '4R' from the centre of earth :-
(1) 32 hrs. (2) $\left(\frac{1}{8\sqrt{2}}\right)$ hrs. (3) $8\sqrt{2}$ hrs. (4) 16 hrs.

88. A communication satellite of earth which takes 24 hrs. to complete one circular orbit eventually has to be replaced by another satellite of double mass. If the new satellites also has an orbital time period of 24 hrs, then what is the ratio of the radius of the new orbit to the original orbit ?

(1) 1 : 1 (2) 2 : 1 (3) $\sqrt{2}$: 1 (4) 1 : 2

89. Escape velocity for a projectile at earth's surface is V_e. A body is projected form earth's surface with velocity 2 V_e. The velocity of the body when it is at infinite distance from the centre of the earth is :-

(1) V_e (2) $2V_e$ (3) $\sqrt{2}\,V_e$ (4) $\sqrt{3}\,V_e$

90. For a satellite moving in an orbit around the earth, the ratio of kinetic energy to potential energy is:

(1) 2 (2) ½ (3) $\frac{1}{\sqrt{2}}$ (4) $\sqrt{2}$

91. The orbital velocity of an artificial satellite in a circular orbit just above the earth's surface is v_0. The orbital velocity of satellite orbiting at an altitude of half of the radius is :-

(1) $\frac{1}{2}v_0$ (2) $\frac{2}{3}v_0$ (3) $\sqrt{\frac{2}{3}}v_0$ (4) $\sqrt{\frac{3}{2}}v_0$

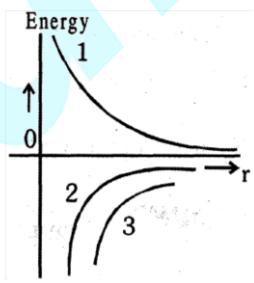
92. The earth revolves around the sun in one year. If distance between them becomes double, the new time period of revolution will be :-

(1) $4\sqrt{2}$ years (2) $2\sqrt{2}$ years
(3) 4 years (4) 8 years

93. A satellite of mass m revolves in a circular orbit of radius R a round a planet of mass M. Its total energy E is :-

(1) $-\frac{GMm}{2R}$ (2) $+\frac{GMm}{3R}$ (3) $-\frac{GMm}{R}$ (4) $+\frac{GMm}{R}$

94. A satellite is orbiting earth at a distance r. Variations of its kinetic energy, potential energy and total energy, is shown in the figure. Of the three curves shown in figure, identify the type of mechanical energy they represent.



(1) 1 Potential, 2 Kinetic, 3 Total (2) 1 Total, 2 Kinetic, 3 Potential
(3) 1 Kinetic, 2 Total, 3 Potential (4) 1 Potential, 2 Total, 3 Kinetic

95. The mean distance of mars from sun is 1.5 times that of earth from sun. What is approximately the number of years required by mars to make one revolution about sun ?

(1) 2.35 years (2) 1.85 years (3) 3.65 years (4) 2.75 years

ANSWER KEY

EXERCISE-I (Conceptual Questions)

1.	(3)	**2.**	(1)	**3.**	(4)	**4.**	(4)	**5.**	(1)	**6.**	(3)	**7.**	(2)
8.	(2)	**9.**	(4)	**10.**	(4)	**11.**	(1)	**12.**	(3)	**13.**	(2)	**14.**	(4)
15.	(4)	**16.**	(2)	**17.**	(3)	**18.**	(3)	**19.**	(4)	**20.**	(3)	**21.**	(3)
22.	(2)	**23.**	(4)	**24.**	(3)	**25.**	(2)	**26.**	(1)	**27.**	(1)	**28.**	(1)
29.	(2)	**30.**	(1)	**31.**	(1)	**32.**	(2)	**33.**	(2)	**34.**	(3)	**35.**	(1)
36.	(4)	**37.**	(3)	**38.**	(1)	**39.**	(3)	**40.**	(1)	**41.**	(2)	**42.**	(1)
43.	(2)	**44.**	(4)	**45.**	(1)	**46.**	(4)	**47.**	(4)	**48.**	(4)	**49.**	(4)
50.	(1)	**51.**	(4)	**52.**	(1)	**53.**	(1)	**54.**	(2)	**55.**	(2)	**56.**	(1)
57.	(1)	**58.**	(2)	**59.**	(3)	**60.**	(3)	**61.**	(2)	**62.**	(1)	**63.**	(3)
64.	(2)	**65.**	(1)	**66.**	(3)	**67.**	(1)	**68.**	(3)	**69.**	(4)	**70.**	(3)
71.	(1)	**72.**	(1)	**73.**	(4)	**74.**	(3)	**75.**	(2)	**76.**	(3)	**77.**	(2)
78.	(3)	**79.**	(3)	**80.**	(2)	**81.**	(1)	**82.**	(1)	**83.**	(2)	**84.**	(4)
85.	(1)	**86.**	(4)	**87.**	(3)	**88.**	(1)	**89.**	(4)	**90.**	(2)	**91.**	(3)
92.	(2)	**93.**	(1)	**94.**	(3)	**95.**	(2)						