DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : PHYSICS**
Date : **DPP No. : 2**

Topic :- GRAVITATION

1. For a satellite moving in an orbit around the earth, the ratio of kinetic energy to potential energy is
   a) 2 b) $\frac{1}{2}$ c) $\frac{1}{\sqrt{2}}$ d) $\sqrt{2}$

2. In some region, the gravitational field is zero. The gravitational potential in this region
   a) Must be variable b) Must be constant c) Cannot be zero d) Must be zero

3. The ratio of the radii of planets A and B is k_1 and ratio of acceleration due to gravity on them is k_2. The ratio of escape velocities from them will be
   a) $k_1 k_2$ b) $\sqrt{k_1 k_2}$ c) $\sqrt{\frac{k_1}{k_2}}$ d) $\sqrt{\frac{k_2}{k_1}}$

4. Two identical satellites are at R and $7R$ away from earth surface, the wrong statement is ($R =$ Radius of earth)
   a) Ratio of total energy will be y
   b) Ratio of kinetic energies will be y
   c) Ratio of potential energies will be y
   d) Ratio of total energy will be y but ratio of potential and kinetic energy will be z

5. The tidal waves in the sea are primarily due to
   a) The gravitational effect of the moon on the earth
   b) The gravitational effect of the sun on the earth
   c) The gravitational effect of venus on the earth
   d) The atmospheric effect of the earth itself

6. A satellite moves in elliptical orbit about a planet. The maximum and minimum velocities of satellites are 3×10^4 ms^{-1} and 1×10^3 ms^{-1} respectively. What is the minimum distance of satellite from planet, if maximum distance is 4×10^4 km?
   a) 4×10^3 km b) 3×10^3 km c) $4/3 \times 10^3$ km d) 1×10^3 km

7. Two small and heavy spheres, each of mass M, are placed a distance r apart on a horizontal surface. The gravitational potential at the mid-point on the line joining the centre of the spheres is

a) Zero b) $-\frac{GM}{r}$ c) $-\frac{2GM}{r}$ d) $-\frac{4GM}{r}$

8. The orbital speed of Jupiter is

a) Greater than the orbital speed of earth b) Less than the orbital speed of earth
c) Equal to the orbital speed of earth d) Zero

9. A satellite is launched into a circular orbit of radius $'R'$ around earth while a second satellite is launched into an orbit of radius 1.02 R. The percentage difference in the time periods of the two satellites is

a) 0.7 b) 1.0 c) 1.5 d) 3

10. Gravitational mass is proportional to gravitational

a) Field b) Force c) Intensity d) All of these

11. A satellite moves round the earth in a circular orbit of radius R making 1 rev/day. A second satellite moving in a circular orbit, moves round the earth ones in 8 days. The radius of the orbit of the second satellite is

a) 8 R b) 4 R c) 2 R d) R

12. The diameters of two planets are in the ratio 4:1 and their mean densities in the ratio 1:2. The acceleration due to gravity on the planets will be in ratio

a) 1 : 2 b) 2 : 3 c) 2 : 1 d) 4 : 1

13. If M is the mass of the earth and R its radius, the ratio of the gravitational acceleration and the gravitational constant is

a) $\frac{R^2}{M}$ b) $\frac{M}{R^2}$ c) MR^2 d) $\frac{M}{R}$

14. Venus looks brighter than other planets because

a) It is heavier than other planets b) It has higher density than other planets
c) It is closer to the earth than other planets d) It has no atmosphere

15. There are two bodies of masses 100,000 kg and 1000 kg separated by a distance of 1 m. At what distance (in metre) from the smaller body, the intensity of gravitational field will be zero?

a) 1/9 b) 1/10 c) 1/11 d) 10/11

16. Force of gravity is least of

a) The equator b) The poles
c) A point in between equator and any pole d) None of these

17. The period of a planet around sun is 27 times that of earth. The ratio of radius of planet's orbit to the radius of earth's orbit is

a) 4　　b) 9　　c) 64　　d) 27

18. An object weighs 72 N on earth. Its weight at a height of $R/2$ from earth is

a) 32 N　　b) 56 N　　c) 72 N　　d) Zero

19. The acceleration due to gravity becomes $\left(\frac{g}{2}\right)$

($g =$ acceleration due to gravity on the surface of the earth) at a height equal to

a) $4R$　　b) $\frac{R}{4}$　　c) $2R$　　d) $\frac{R}{2}$

20. Imagine a light plant revolving around a very massive star in circular orbit of radius r with a period of revolution T. If the gravitational force of attraction between the planet and the star is proportional to $r^{-5/2}$. Then the correct relation is

a) $T^2 \propto r^{5/2}$　　b) $T^2 \propto r^{7/2}$　　c) $T \propto r^{5/2}$　　d) $T^2 \propto r^{7/2}$