

Class - XI

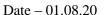
St. Lawrence High School

A Jesuit Christian Minority Institution



Solution of Work Sheet – 28

Subject – Physics



Chapter – Gravitation

Topic – Artificial satellite

Choose the correct option for the following questions.

 $1 \times 15 = 15$

- 1. The period of revolution of a certain planet in an orbit of radius R is T. Its period of revolution in an orbit of radius 4R will be
 - a. 2T
 - b. T
 - c. 4T
 - d. 8T
- 2. The escape velocity from earth is 11.2km/s. the escape velocity from a planet having twice the radius and the same mean density is
 - a. 11.2km/s
 - b. 5.6km/s
 - c. 22.4km/s
 - d. 15.8km/s
- 3. If v_0 be the orbital velocity of a satellite in a circular orbit close to the earth's surface and v_e is the escape velocity from the earth, then the relation between two will be
 - a. $v_o = v_e$
 - b. $v_e = \sqrt{2}v_0$
 - c. $v_e = \sqrt{3}v_o$
 - d. $v_o = 2v_e$
- 4. The orbital velocity for an earth satellite near the surface of earth is 7km/s. if the radius of the orbit is 4 times the radius of earth, its orbital velocity would be
 - a. 7km/s
 - b. 3.5km/s
 - c. $7\sqrt{2}km/s$
 - d. 14km/s
- 5. A satellite is moving around earth with a speed v in a circular orbit of radius r. if the orbital radius is decreased by 1%, its speed will
 - a. Increase by 1%
 - b. Increase by 0.5 %
 - c. Decrease by 1 %
 - d. Decrease by 0.5 %
- 6. If the distance between earth and sun were half of its present value, the number of days in a year would have been
 - a. 64.5
 - b. 182.5
 - c. 730
 - d. 129

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| 7. | What will be the duration of day and night (in hrs) if the diameter of the earth is suddenly reduced to half of its |
| | original value, the mass remaining constant? |
| | <u>a.</u> 3 |
| | b. 6 |
| | c. 2 |
| | d. 12 |
| 8. | The escape velocity of a body on the surface of earth is 11.2km/s. if earth's mass increases to twice its present |
| | value and radius of earth is becomes half, the escape velocity becomes – |
| | a. 5.6 km/s |
| | b. 11.2 km/s |
| | c. 22.4 km/s |
| | d. 44.8 km/s |
| 9. | Chose the correct option – |
| | a. g is same at all places on the surface of earth |
| | b. g has its maximum value at the equator |
| | c. g is less at the earth's surface than at a height or depth |
| | d. g is greater at pole than equator |
| 10. | If the radius of earth is contracted by 2% and it mass remain same, then the weight of the body at the earth's |
| | surface – |
| | a. Will increase |
| | b. Will decrease |
| | c. Will remain same |
| | d. None of the above |
| 11. | The escape velocity of the earth is v. If the mass of the certain planet is 3 times and radius is also 3 times that of |
| | earth, then escape velocity for that planet will be – |
| | a. 3v |
| | b. 6v |
| | c. $\sqrt{3}v$ |
| | d. v |
| 12 | If the distance between earth and sun is doubled, then the new time period of revolution will be – |
| | a. ½ year |
| | b. $2\sqrt{2}$ years |
| | c. 4 years |
| | d. 8 years |
| 13 | A small satellite is revolving near the earth's surface. Its orbital velocity will be nearly – |
| 15. | a. 6 km/s |
| | b. 4 km/s |
| | c. 11.2 km/s |
| | d. 8 km/s |
| 14 | The period of revolution of a planet A around sun is 8 times that of planet B. the distance of A is how many |
| 17. | times greater than that of B from sun? |
| | a. 2 |
| | b. 3 |
| | c. 4 |
| | d. 5 |
| 15 | The weight of a body is maximum on the earth's surface at – |
| 13. | a. Poles |
| | b. Equator |
| | c. An angular position of 45° with |
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Name of the teacher – Soumitra Maity

d. Its is same everywhere