

St. Lawrence High School A Jesuit Christian Minority Institution <u>Term :</u> 1st Solution of Work Sheet – 22 Subject – Physics

Class – XI

Chapter - Work, Power & Energy

Topic – Conservative and non-

conservative system

Date - 10.07.20

Choose the correct option for the following questions.

- 1. According to work-energy theorem , change in kinetic energy is equal to work done by
 - a. Conservative force
 - b. Non-Conservative force
 - c. External Conservative force
 - d. All of above
- 2. Work energy theorem is applicable for
 - a. Only gravitational force
 - b. Only frictional force
 - c. Any central force
 - d. All of the above
- 3. The work done by a conservative force is
 - a. Path dependent
 - b. Path independent
 - c. Zero
 - d. None of these
- 4. The work done by a non conservative force over a close path is
 - a. Positive always
 - b. Negative always
 - c. Zero
 - d. Can be +ve or –ve, but can never be zero
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 - a. Positive always
 - b. Negative always
 - c. Zero always
 - d. Can be +ve or –ve , but can never be zero
- 6. A person pulls a bucket of water from a well of depth h. If the mass of the uniform rope is m and that of the bucket full of water is M, then the work done by the person is –

a.
$$\left(m + \frac{M}{2}\right)gh$$

- b. $\frac{1}{2}(m+M)gh$
- c. (m+M)gh
- d. $\left(\frac{m}{2} + M\right)gh$
- 7. A projectile is fired from the origin with a velocity v at an angle θ with x axis. The speed of the projectile at an altitude h is
 - a. $v \cos \theta$

b.
$$\sqrt{v^2 - 2gh}$$

- c. $\sqrt{v^2 \sin^2 \theta 2gh}$
- d. None of these



 $1 \times 15 = 15$

- 8. A particle of mass m moves from rest under the action of a constant force F which acts for two seconds. The maximum power attained is
 - a. 2Fm
 - b. F^2/m
 - c. 2F/m
 - d. $2F^2/m$
- 9. A block of mass 5kg is raised from the bottom of a lake to a height of 3m with out any change in kinetic energy. if the density of the block is 3000kg/m^3 , then the work done is equal to
 - a. 100J
 - b. 150J
 - c. 50J
 - d. 75J
- 10. A force $\vec{F} = 3t\hat{\imath} + 5\hat{\jmath}$ N acts on a body due to which its displacement varies as $\vec{S} = 2t^2\hat{\imath} 5\hat{\jmath}$ m. work done by this force in 2sec is
 - a. 32J
 - <mark>b. 24J</mark>
 - c. 46J
 - d. 20J
- 11. An open knife of mass m is dropped from a height h on a wooden floor. If the blade penetrates up to the depth d into the wood, the average resistance offered by the wood is
 - a. $mg\left(1+\frac{h}{d}\right)$
 - b. $mg\left(1+\frac{h}{d}\right)^2$ c. $mg\left(1-\frac{h}{d}\right)$
 - d. $mg\left(1+\frac{d}{h}\right)$
- 12. A bullet moving with speed 100m/s can just penetrate into two planks of equal thickness. Then the number of such planks it can penetrate if the speed doubled is
 - a. 6
 - b. 10
 - c. 4
 - <mark>d. 8</mark>
- 13. A ball is dropped onto a floor from height of 10m. if 20% of its initial energy is lost, then the height of bounce is
 - a. 2m
 - b. 4m
 - <mark>c. 8m</mark>
 - d. 6.4m
- 14. A spring of spring constant $5 \times 10^3 N/m$ is stretched initially by 5cm from the unstitched position. The work required to further stretch the spring by another 5cm is
 - a. 6.25 N-m
 - b. 12.50 N-m
 - c. 18.75 N-m
 - d. 25 N-m
- 15. A pump is required to lift 800kg of water per minute from a 10m deep well and eject it with speed of 20m/s. the required power in watt is
 - a. 6000
 - <mark>b. 4000</mark>
 - c. 5000
 - d. 8000