Introduction to Physics (PHYS 101) **Work sheet chapter2**

Name :		section	

Formulas & Constants

$\rho = \frac{m}{V}$	Average speed: $\bar{v} = \frac{d}{t} = \frac{v_f + v_i}{2}$	$a = \frac{v_f - v_i}{t}$	$v_f = v_i + g.t$ $v = g.t$ $(v_i = 0)$	$d = ½\ a.t^2 + v_i.t$ $d = ½\ g.t^2$ $(v_i = 0)$	ΣE = constant (energy consrv.)
F = m.a	w = m.g	W = F.d	P = W / t	KE = ½ m.v²	PE = m.g.h
w = m.g	W = F.d	P = W / t	KE = ½ m.v²	PE = m.g.h	$V_f = \sqrt{2\ g.h}$
$F_{A\ on\ B} = F_{B\ on\ A}$	$R^2 = X^2 + Y^2$	$\tan\theta = Y / X$	1 m/s = 3.6 km/h	g = 10 m/s²	1 hp = ¾ kW

1) The work requires to lifting a 50-kg sack a vertical distance of 2 m is:

a) 100J b) 500J c) 1000J d) 2000J

2) The work requires to lifting a 25-kg sack a vertical distance of 4 m is:

a) 100J b) 500J c) 1000J d) 2000J

3) Two cars are raised to the same elevation on service- station lifts if second car is twice as massive as the first car, the gains potential energy compared is :

a) $PE_2=2PE_1$ b) $PE_2=PE_1$ c) $PE_2=0.5PE_1$ d) $PE_2=3PE_1$

4) A moving car has kinetic energy, if it is speeds up until it is going 4 times as fast then the kinetic energy compared is:

a) $KE_2=2KE_1$ b) $KE_2=4KE_1$ c) $KE_2=8KE_1$ d) $KE_2=16KE_1$

5) The watts of power expended when a force of l N moves a book 2 m in a time interval of l s?

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

6) A person drops an object of mass (m) from the edge of a bridge of height (h). The object's speed just before hitting the water is :

a) v=2g.h b) $v=2gh^2$ c) $v=(2gh)^{½}$ d) v=0.5gh

7) A 50kg person runs up a 10m stairway (سلم) in 15s.what is the horse-power rating of the person?

a) 444hp b) 44.4hp c) 4.44hp d) 0.444hp

8) What is the kinetic energy of a 30 gram bullet traveling at 300m/s?

a) 13.5 J b) 135 J c) 1350 J d) 2700 J

9) The metric unit of a joule (J) is a unit of :

a) Potential energy b) Work c) Kinetic energy d) Any of the above

10) Two objects have the same mass, but one is moving twice as fast as the other is. How much more work will be needed to stop the faster object?

a) The same amount b) Twice as much c) Four times as much d) Nine times as much

11) In the simple pendulum (bob), if the pop is moved to one side and then released. At the instant of stopping. Which of the following statements is correct?

a) The bob has 100% kinetic energy and no potential energy.
b) The bob has 100% potential energy and no kinetic energy.
c) The bob has 50% kinetic energy and 50% potential energy.
d) The bob has 75% kinetic energy and 25% potential energy.

12) The work done in lifting a 20kg box to a 10m height is:

a) 100 J b) 50 J c) 2 KJ d) 5 KJ

13) A 20kg cart is moving at 4 m/s. its kinetic energy is:

a) 0.2 J b) 5 J c) 80 J d) 160 J

14) The work done in moving an object at given speed is measured in units of:

a) J b) N c) kg d) W

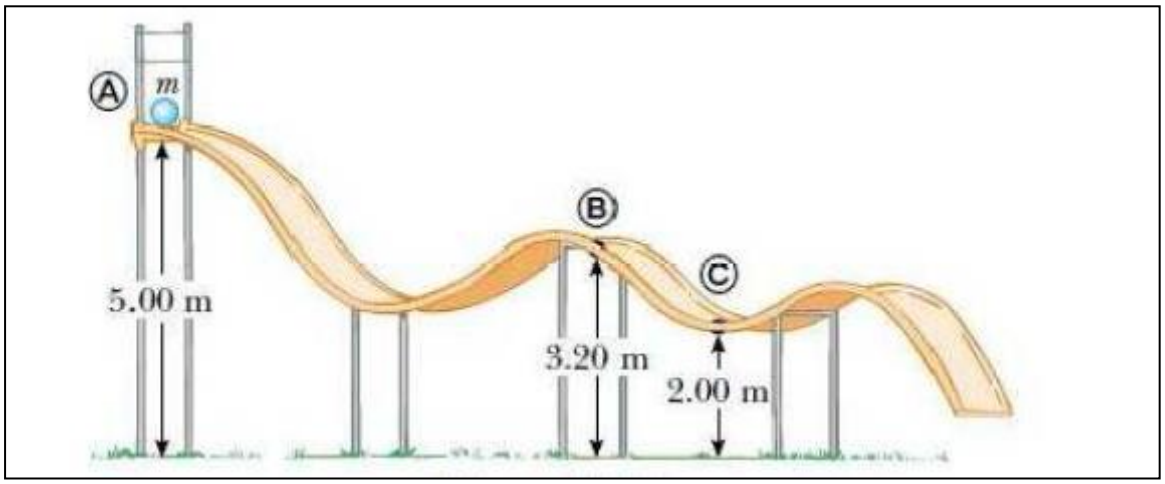
15) The law of conservation of energy states, in a closed system, energy is:

a) sometimes changed to power
b) always created or destroyed
c) never created or destroyed
d) sometimes created or destroyed

16) Worker Mike can push a 100 kg cart a distance of a km in 15 minutes while worker Bob can push it the same distance in 30 minutes. This means that, compared to Bob, Mike has:

a) half the power b) double the power c) half the work d) double the work

17) from the figure bellow if m=5Kg answer 18, 19, 20, 21, 22, 23, and 24:



18) The total mechanical energy of this system in joule is:

a) 250 J b) 160 J c) 100 J d) 50 J

19) The potential energy at **B** in joule is:

a) 250 J b) 160 J c) 100 J d) 50 J

20) The kinetic energy at **B** in joule is:

a) 250 J b) 150 J c) 100 J d) 90 J

21) The speed at B in m\s is:

a) 5 m/s b) 6 m/s c) 7.7 m/s d) 9.3 m/s

22) The potential energy at **C** in joule is:

a) 250 J b) 160 J c) 100 J d) 50 J

23) The kinetic energy at **C** in joule is:

a) 250 J b) 150 J c) 100 J d) 90 J

24) The speed at **C** in m\s is:

a) 5 m/s b) 6 m/s c) 7.7 m/s d) 9.3 m/s