Taibah University / جامعة طيبة
Preparatory Year / السنة التحضيرية

INTERIM-2 PRACTICE EXAM

Introduction to Physics (PHYS-101) — الاختبار التدريبي للدوري الثاني

2nd Term 1434-35 — **P**

Maximum Score: 10 (0.5 points / question) — **Test Time:** 60 min

IMPORTANT: Carefully fill-in your name, student ID number, and section number.

الاسم (بالعربية)		**ID #**		**Sec.**	

Simple calculators are allowed but are not crucial for this test. You may need some of the following information.

$\bar{v} = \frac{d}{t}$	$\bar{v} = \frac{v_f + v_i}{2}$	$v_f = a.t + v_i$ $v_f = g.t$ (if $v_i = 0$)	$d = ½\ a.t^2 + v_i.t$ $d = ½\ g.t^2$ (if $v_i = 0$)	2^{nd} Law: $F_{net} = m.a$ 3^{rd} Law: $F_{A\ on\ B} = F_{B\ on\ A}$
$w = m.g$ $g = 10\ m/s^2$	Free fall: $a = g$ Non-free fall: $a = g - R_{air}/m$	$V_f = \sqrt{2\ g.h}$	$R^2 = X^2 + Y^2$ $\tan\theta = Y / X$	$1\ m/s = 3.6\ km/h$ $1\ kWh = 3.6 \times 10^6\ J$
$1\ \mu = 10^{-6}$ $\lvert e\rvert = 1.6 \times 10^{-19}\ C$	$F_{elec} = k\frac{q_1.q_2}{d^2}$; $k = 9 \times 10^9\ N.m^2/C^2$	Elec. field $= \frac{Force}{q}$	$V = \frac{Electric\ PE}{q}$	$V = I.R$; or $I = \frac{V}{R}$
Number of electrons in $q = q / \lvert e\rvert$	power $= \frac{energy}{time}$	Elec. power $= I.V = I^2.R = V^2 / R$	$\frac{1}{R_{parallel}} = \frac{1}{R_1} + \frac{1}{R_2} + \cdots$	$R_{series} = R_1 + R_2 + \cdots$

1. If two equal forces act on a moving cart in opposite directions, we can say about it that:

A	it has acceleration
B	it is in static equilibrium
C	it is in dynamic equilibrium
D	nonzero net force acts on it

2. Two identical barrels (برميل), one filled with oil and one with cotton, should have:

A	same mass and different inertia
B	same inertia and different weight
C	same weight and different density
D	same volume and different mass

3. In the following, check the correct statement:

A	force is a vector, mass is a scalar
B	force is a vector, weight is a scalar
C	mass is a vector, weight is a scalar
D	force is a vector, mass is a vector

4. If air resistance on a falling rock can be neglected, we say that this rock is in:

A	outer space
B	terminal speed
C	slow motion
D	free fall

5. Mass is an object's quantity of:

A	energy
B	matter
C	dimensions
D	momentum

6. If an object's mass decreases while a constant force is applied to it, its acceleration:

A	decreases
B	increases
C	remains constant
D	changes according to volume

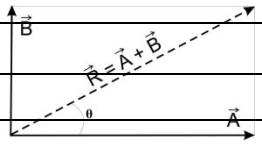
7. If an object is in free fall, the distance it travels every seconds is:

A	the same as the previous (السابق) second
B	less than the previous second
C	more than the previous second
D	undefined

8. When a cannon shoots a cannonball, the cannon's recoil (ارتداد) is much slower than the cannonball because:

A	the force on the cannon is much less
B	there is more air resistance
C	the cannon's mass is more distributed (موزع)
D	the mass of the cannon is much greater

9. Adding two perpendicular vectors ($\vec{A}$) and ($\vec{B}$) gives a resultant ($\vec{R}$) with magnitude:



A	$R = \sqrt{A^2 + B^2}$
B	$R = A^2 + B^2$
C	$R = \sqrt{A + B}$
D	$R = 1 / \sqrt{A^2 + B^2}$

10. Newton's 3rd law states that, for two objects X and Y, whenever X exerts a force on Y, then:

A	Y exerts double that force on X
B	Y exerts an equal but opposite force on X
C	Y exerts half that force on X
D	Y moves in the opposite direction

11. A positively charged object is an object with:

A	extra electrons
B	lack (نقص) of protons
C	lack of electrons
D	extra neutrons

12. Normally, an atom's net charge is:

A	negative
B	positive
C	a vector
D	zero

13. The SI unit for the electric potential energy is the:

A	joule
B	watt
C	volt
D	ampere

14. A capacitor has plate-area A and plate-separation d. If it is connected to a battery of potential difference V, the charge that can be stored on its plates is directly proportional to:

A	A and d
B	A and V
C	V and d
D	A, V, and d

15. Electric energy can be stored in a:

A	resistance
B	capacitor
C	switch
D	light bulb

16. The following quantities are all scalar, except for:

A	electric field
B	electric current
C	electric charge
D	electric potential

17. The electrostatic force equation for two charged objects, q_1 and q_2, gives a negative result if:

A	q_1 repels q_2
B	$q_2 = q_1$
C	q_1 attracts q_2
D	$q_1 = ½\ q_2$

18. One volt is equal to:

A	ampere/coulomb
B	1 joule/second
C	ampere/second
D	1 joule/coulomb

19. If resistances $R_1 = 12\ \Omega$ and $R_2 = 12\ \Omega$ are connected in series, their equivalent resistance is:

A	24 Ω
B	12 Ω
C	6 Ω
D	3 Ω

20. When we connect more appliances (أجهزة منزلية) to the same power strip (توصيلة كهربائية) the following happens:

A	the total voltage in the strip increases
B	the total current in the strip decreases
C	the total current in the strip increases
D	the total voltage in the strip decreases

Answers:

A	3 – 9 – 13 – 16 – 19
B	5 – 6 – 10 – 14 – 15
C	1 – 7 – 11 – 17 – 20
D	2 – 4 – 8 – 12 – 18