College of Sciences
Department of Physics & Astronomy

كلية العلوم
قسم الفيزياء والفلك

First Midterm Exam
Academic Year 1441 Hijri- First Semester

Exam Information معلومات الامتحان			
Course name	**General Physics-2**		**اسم المقرر**
Course Code	**PHYS 111**		**رمز المقرر**
Exam Date	**2019/10/17**	**18/02/1441**	**تاريخ الامتحان**
Exam Time	**11: 00 AM**		**وقت الامتحان**
Exam Duration	**1.5 hours**	**ساعة ونصف**	**مدة الامتحان**
Classroom No.			**رقم قاعة الاختبار**
Instructor Name			**اسم استاذ المقرر**

Student Information معلومات الطالب		
Student's Name		**اسم الطالب**
ID number		**الرقم الجامعي**
Section No.		**رقم الشعبة**
Serial Number		**الرقم التسلسلي**

General Instructions: **تعليمات عامة:**

Keep your mobile and smart watch out of the classroom.

يجب إبقاء الهواتف والساعات الذكية خارج قاعة الامتحان.

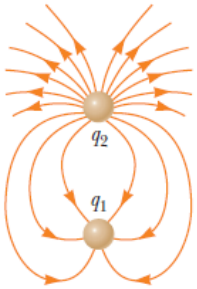
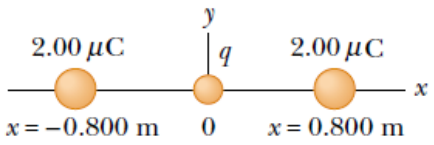
هذا الجزء خاص بأستاذ المادة

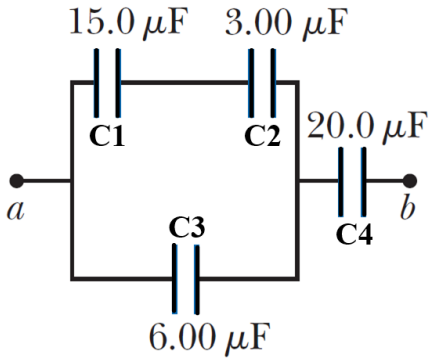
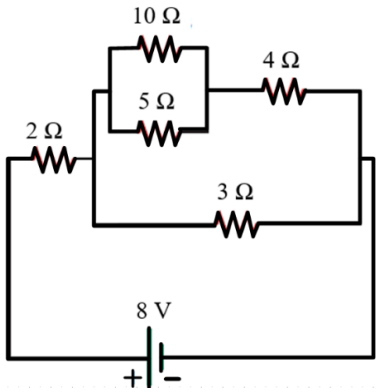
This section is ONLY for instructor

#	Course Learning Outcomes (CLOs)	Related Question (s)	Points (15)	Final Score
1	CLO 1.1: **basic concepts of electricity and methods of Electric field and Electric Potential.**	Q1-8	8	
3	CLO 1.2: **concepts of Capacitors.**	Q9-11	3	
4	CLO 1.3: **basic concepts and methods of direct Electric Current**	Q12-15	4	15

If needed, assume that:

$e = 1.6\times10^{-19}$ C	$m_e = 9.1\times10^{-31}$ kg	$k = \frac{1}{4\pi\varepsilon_0} = 9\times10^{9}$ N.m^2/C^2	$\varepsilon_0 = 8.85\text{x}10^{-12}$ C^2.N^{-1}.m^{-2}
		$N_A = 6.02\times10^{23}$ atoms/ mol	

#	Question					Answer
1	The number of electrons in 10 μC is:					B
	A) $1.6 \times 10^{+19}$	B) 6.25×10^{13}	C) 1.6×10^{-19}	D) 10	E) 10×10^{-6}	
2	All of the following are true for electrical force except. A) The force is attractive (تجاذب) if the charges are of opposite (متعاكسة) sign and it is repulsive (تنافر) if the charges are of like (متشابهة) sign. B) The force is a conservative force (قوة محافظة). C) The force is proportional (تتناسب) to the square (مربع) of the separation r between the charges. D) force is a vector quantity (كمية متجهة). E) Electrical forces obey Newton's Third Law.					C
3	A 7.50-nC point charge is located (تتموضع) 30 cm from a 4.20-nC point charge. The magnitude of the electric force that one particle exerts on (تبذل على) the other in unit of (N) is:					A
	A) 3.15×10^{-6}	B) 1.6×10^{-7}	C) 31.5×10^{-3}	D) 1.6×10^{-3}	E) $31.5 \times 10^{+7}$	
4	Figure shows the electric field lines for two charged particles separated by a small distance. Determine the the signs (إشارات) of q_1 and q_2? Note N=negative, P= positive					A
	A) $q_1\,(N),\ q_2\,(P)$	B) $q_1\,(P),\ q_2\,(N)$	C) $q_1\,(N), q_2\,(N)$	D) $q_1\,(P).q_2\,(P)$	E) $q_1\,(N).q_2\,(N)$	
5	Two point charges are on the y axis. A 2.00 μC charge is located at y = 9 cm, and a 4.00 μC charge is located at y = - 18 cm. The total electric potential at the origin (نقطة الأصل) (in unit J/C) is:					E
	A) 4.00×10^{-3}	B) -4.00×10^{3}	C) 4.00×10^{9}	D) Zero	E) 4.00×10^{5}	
6	The SI unit of electric field (E) can be expressed in all the following units except:					C
	A) $N.C^{-1}$	B) V/m	C) J/C	D) J/(C.m)	E) N/C	
7	From figure the net force(F) on the point charge q at the origin, electric field (E) and electric potential (V) respectively in the origin are:					C
	A) F=E=V=0	B) F=E=V≠ 0	C) F=E=0 and V=45KV	D) F=V=0 and E= 45 N/C	E) F≠E≠0 and V=45KV	
8	From question 7, the change in electric potential energy of the system as a third charge (شحنة ثالثة) of (-3.00) μC is brought from infinitely (اللانهاية) far away to a position on the origin.					B
	A) 0	B) – 0.135 J	C) 2 J	D) 0.135 mJ	E) 120 J	

9	Four capacitors (مكثفات) are connected (ربطت) as shown in the following figure. The equivalent capacitance (السعة المكافئة) between points *a* and *b* is: 					E
	A) 2.2 μF	B) 9.56 μF	C) 6.59 μF	D) 6.95 μF	E) 5.96 μF	
10	In the previous question (السؤال السابق), consider V_{ab}= 15.0 volts, then the charge on capacitor **C4** is:					C
	A) 9.5 μC	B) 56.9 μC	C) 89.4 μC	D) 900 μC	E) Zero	
11	A 12.0 volt battery (بطارية) is connected to a capacitor, resulting in 54.0 μC of charge stored (المخزنة) on the capacitor. How much energy is stored (الطاقة المخزنة) in the capacitor?					B
	A) 424 μJ	B) 324 μJ	C) Zero	D) 171 μJ	E) 10 μJ	
12	An electric heater carries (سخان كهربائي) a current of 13.5 A when operating at a voltage of 120 V. What is the resistance (مقاومة) of the heater?					A
	A) 8.89 Ω	B) 889 Ω	C) 989 Ω	D) 999 Ω	E) 90 Ω	
13	A 20 m length wire (سلك) has a cross sectional area (مساحة المقطع العرضي) of 1 mm^2 and a resistance of 5 ohms. The wire conductivity (التوصلية) in the units of $(\Omega.m)^{-1}$ is:					E
	A) $0.25 \times 10^{+6}$	B) $40 \times 10^{+6}$	C) 0.25×10^{-6}	D) 4×10^{-6}	E) $4 \times 10^{+6}$	
14	Consider the circuit (دائرة) shown in the following figure. The voltage across the 3.00 Ω resistor is: 					A
	A) 4.12 V	B) 12.4 V	C) 2 V	D) 23V	E) 1.3 V	
15	In the previous question, the current in the 3.00 Ω resistor.					E
	A) 4.13 A	B) 2.91 A	C) 4.67 A	D) Zero	E) 1.38 A	

The End

Student Information معلومات الطالب		
Student's Name		**اسم الطالب**