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| College of science Department of physics and Astronomy |  |

**الاختبار الاول للفصلي الصيفي**

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| **العام الدراسي 1439** | **فيز 104** | **السبت 1\1\1439** |
| **الفصل الصيفي** | **فيزياء عامة 2** | **12:30-2.00** |

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|  |  | **إسم الطالب** |
|  |  | **الرقم الجامعي** |
|  |  | **رقم الشعبة** |
|  |  | **القاعة** |
|  |  | **اسم الدكتور** |

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| --- | --- | --- | --- | --- | --- |
| a | Q11 | c | Q6 | c | Q1 |
| c | Q12 | b | Q7 | a | Q2 |
| d | Q13 | b | Q8 | b | Q3 |
| a | Q14 | c | Q9 | a | Q4 |
| e | Q15 | b | Q10 | e | Q5 |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Consider three point charges, q1 = 6.00 x10-9 C (located at the origin), q2 = -2.00x10-9 C, and q3 = 5.00x10-9 C, located at the corners of a right angle triangle as shown in figure. The resultant force on q3 isثلاث شحنات موزعة كما هو مبين بالشكل إحسب محصلة القوة علي الشحنةQ3

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| --- | --- | --- | --- | --- |
| 1. 1.34x10-9N
 | 1. 4.34x10-9N
 | 1. 7.34x10-9N
 | 1. 3.34x10-9N
 | 1. 5.34x10-9 N
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| 2 | In Figure, the point at which the zero electric field is at النقطة التي ينعدم فيها المجال الكهربي؟

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| 1. 1.82 m to the left of the negative charge
 |
| 1. 0.82 m to the right of negative charge
 |
| 1. 1.82 m to the right from positive charge
 |
| 1. 1.82 m to the left from positive charge
 |
| 1. Zero field is not possible anywhere.
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| 3 | Figure shows the electric field lines for two point charges separated by a small distance. The ratio *q*1/*q*2 and.signs of *q*1 and *q*2 are من الشكل المبين نسبة q1/q2 تساوي ؟

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| --- |
| 1. *q*1/*q*2 = 1/3 , q1 = positive and q2 = negative
 |
| 1. *q*1/*q*2 = 1/3 , q1 = negative and q2 = positive
 |
| 1. *q*1/*q*2 =3/1 , q1 = negative and q2 = positive
 |
| 1. *q*1/*q*2 = 2/3 , q1 = negative and q2 = positive
 |
| 1. no sufficient information to give answer
 |

 | Fig 15-p28 |
| 4 | An electron (mass m = 9.1x10-31kg) is accelerated in the uniform field E (E=2.0x104N/C) between two parallel charged plates from rest as shown in the figure. The separation of the plates is 1.5 cm. The velocity of electron coming out from the hole isإلكترون كتلته 9.1x10-31kg تم تعجيله من السكون في مجال كهربي منتظم مقداره 2.0x104N/C بين لوحين متوازيين المسافة بينهما 1.5 cm.إحسب السرعة التي يخرج بها من الفتحه في اللوح المقابل؟1. 1.0 x 107 m/s
2. 1.0 x 1014 m/s
3. 3.5 x 107 m/s
4. 1.0 x 1012 m/s
5. 3.5 x 1015 m/s
 |  |
| 5 | A charge q is at the center of the sphere of radius R. Suppose the radius of the sphere is changed to R/2. What happens to the flux through the sphere and the magnitude of the electric field at the surface of the sphere? وضعت شحنة q في مركز دائرة نصف قطرها R . إذا فرض أن نصف قطر الدائرة أصبح R/2 ماذا يحدث للفيض والمجال الكهربي عند سطح الكرةa. The flux and field both increase.b. The flux and field both decrease. c. The flux increases and the field decreases.d. The flux decreases and the field increases. e. The flux remains the same and the field increases.  |
| 6 | Choose the correct statement about electric flux through different surfaces as shown in the figure here. Here ϕ1, ϕ2 and ϕ3 are the flux passing through surfaces S1, S2 and S3 respectively.إختار الاجابة الصحيحه بالنسبة لمقدار الفيض الكهربي عن الاسطح المبينة بالشكل؟(a) ϕ1>ϕ2 > ϕ3(b) ϕ1= ϕ2 > ϕ3(c) ϕ1 = ϕ2 = ϕ3(d) ϕ1< ϕ2 = ϕ3 (e.) ϕ1< ϕ2 < ϕ3 |  |
| 7 | The following charges are located inside a submarine: 5.00 *μ*C, –9.00 *μ*C, 27.0 *μ*C, and –84.0 *μ*C. The net electric flux through the hull of the submarine is وضعت الشحنات الاتية داخل غواصة (5.00 *μ*C, –9.00 *μ*C, 27.0 *μ*C, and –84.0 *μ*C ) . الفيض الكهربي الخارج من الغواصة هو؟1. +6.89х106 N.m2/C2
2. - 6.89х106 N.m2/C2
3. +6.89х105 N.m2/C2
4. +6.89х107 N.m2/C2
5. -6.89х107 N.m2/C2
 |
| 8 | A conducting spherical shell of radius 15.0 cm carries a net charge of 6.40 μC uniformly distributed on its surface. The electric field at points just outside the shell and inside the shell are تحمل قشرة كروية موصلة نصف قطر 15.0 سم شحنة قدرها 6.40 μC موزعة بشكل موحد على سطحها. المجال الكهربائي خارج سطح الكرة وداخلها يساوي؟1. 2.56x106 N/C and 2.56x105 N/C respectively
2. 2.56 x106 N/C and 0.0 N/C respectively
3. 2.56x103 N/C and 2.56x104 N/C respectively
4. 2.56x106 N/C and 0.0 N/C respectively
5. 2.56x106 N/C and 2.56x105 N/C respectively
 |
| 9 | The SI unit of potential is وحدة SI للجهد الكهربي؟1. J/C2 b. volt/meter c. J/C d. N/C e. N/m
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| 10 | Inside a spherical conductor, the electric field is zero. From this we can conclude that the electric potential in this region is موصل كروي الشكل بداخله المجال الكهربي صفر فإن قيمة الجهد داخله تصبح؟1. Zero. (b) constant. (c) positive. (d) negative. (e) none of them is correct.
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| 11 | A pair of oppositely charged, parallel plates is separated by 5.33 mm. A potential difference of 600 V exists between the plates. The magnitude of the electric field strength between the plates is زوج من الصفائح المتوازية المشحونة المسافة الفاصلة بينهما 5.33 mm . يوجد فرق قدره 600 V بين الصفائح. شدة المجال الكهربائي بين اللوحين يساوي؟1. 112570 N/C b. 3198 N/C c. 1125 N/C d. 3.198 N/C e. not sufficient information
 |
|  12 | Twelve (12) electrons are spaced and fixed *as shown in figure a and b.* The electric potential at the center *C* of the circle due to these electrons areفي كل شكل من الاشكال المقابلة اثني عشر إلكترونًا موزعة كما هو موضح في الشكل (a) و (b) . قيمة الجهد الكهربي في مركز كلا منهما يساوي؟ 1. – (K 12e) /R and –(K4e)/R
2. – (K 12e) /R and zero
3. – (K 12e) /R and –(K12e)/R
4. – (K 4e) /R and –(K4e)/R
5. – (K 12e) /R and –(K6e)/R

Where K is Coulomb’s constant and e is the magnitude of electronic charge. |  |
| 13 | A capacitor stores charge *Q* at a potential difference Δ*V*. If the voltage applied by a battery to the capacitor is doubled to 2Δ*V*, مكثف مشحون بشحنة q إذا كان فرق الجهد بين طرفيه ΔV. إذا تضاعف الجهد علي المكثف بواسطة بطارية فأصبح 2Δ*V* . فماذا يحدث . (a) the capacitance falls to half its initial value and the charge remains the same (b) the capacitance and the charge both fall to half their initial values (c) the capacitance and the charge both double(d) the capacitance remains the same and the charge doubles.(e) all of the above |
| 14 | . Take *C*1 = 5.00 *μ*F, *C*2 = 10.0 *μ*F, and *C*3 = 2.00 *μ*F in the figure. The equivalent capacitance between points *a* and *b* for the group of capacitors connected as shown in the figure isفي الشكل المقابل إذا علمت أن (*C*1 = 5.00 *μ*F, *C*2 = 10.0 *μ*F, and *C*3 = 2.00 *μ*F) . فإن السعة المكافأة بين النقطتين a,b تساوي؟1. 6.05 *μ*F
2. 3.00 *μ*F
3. 4.75 *μ*F
4. 1.83 *μ*F
5. 3.72 *μ*F
 |  |
| 15 | The capacitor shown here is charged to *Q* and then the battery is *disconnected.* Now the plates are pulled further apart so that the final separation is *d*1 which is greater than *d*. In connection to this problem choose the correct statement from the followingمكثف متوازي اللوحين المسافة الفاصله بين لوحيه d تم شحنة بشحنة q من بطارية ثم تم فصل البطارية. إذا سحب أحد لوحية حتي أصبحت المسافة بينهما d1 وهي أكبر من d المبينة بالشكل فماذا يحدث؟1. Q remains the same.
2. C decreases
3. E remains the same
4. V increases
5. All of the above
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