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9:11
الأحد 27/6/2021
أ.د. محمد العسيلى

Faculty of Computers & Information, Assiut University
1st Level
Final Exam
Duration: 2 hours

1

* الإسم الرباعي (بالعربي فقط)

نرمين محب خير عوض الله

2

* رقم الجلوس

162020677

3

المستوي *

- الاول
- الثاني
- الثالث
- رابعة 2013
- رابعة 2014
- رابعة 2015
- رابعة 2016
- رابعة 2017

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البرنامج *

- عام
- بايو
- هندسة

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رقم المعمل *

- ج.
- د.

- اب
- اد
- اهـ
- أ٢
- ب٢
- ج٢
- د٢
- هـ٢
- أ٣
- ب٣
- ج٣
- د٣
- هـ٣
- أ٤
- ب٤

6

* رقم الكمبيوتر

19

7

* الكود (قد تمت مراجعة بيانات الطالب ورقم الجلوس)

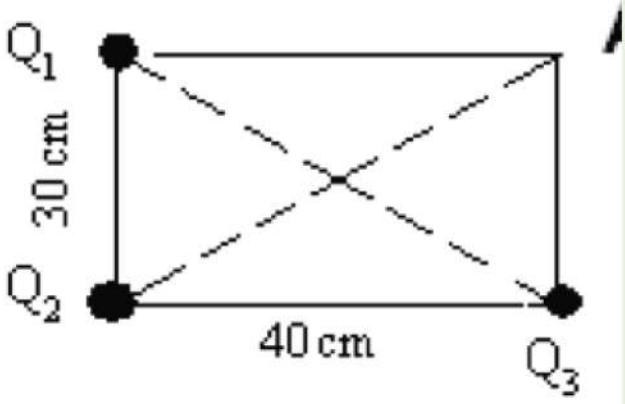
vYLD

8

Question
(2 Points)

Three point charges are located on the heads of a rectangular following figure, $Q_1 = 10^{-9}C$, $Q_2 = 5 \times 10^{-9}C$ and $Q_3 = 3 \times 10^{-9}C$ (Using $Nm2/C^2$)
Calculate the magnitude of the electric field at point A

a- 56.25 N/C
b- 300 N/c
c- 454,5 N/c
d- 556.25 N/c



a
b
c
d

9

(2 Points)

Using Q_8 calculate **the** direction of the electric field at p

a- θ**=26.14**^{0}
b- θ**=63.86**^{0}
c- θ**=153.86**^{0}
d- θ**=116.14**^{0}

- a
- b
- c
- d

10

(2 Points)

Using Q_8 calculate the electric force exerted on a test charge of $q_0 = 3$:
located at point A

a- 1.69×10^{-7} N
b- 6.2×10^{-4} N
c- 13.64×10^{-6} N
d- 13.64×10^{-7} N

- a
- b
- c
- d

11

(2 Points)

Using Q_8 calculate the electric Potential at point A.

a- 202.5 V

b- 202.5×10^{-9} V

a- 300 V

b- 300×10^{-9} V

- a
- b
- c
- d

12

(2 Points)

A parallel-plate air capacitor of capacitance of 100 pF has a charge of ma
0.1 μC on each plate. The plates are 0.5 mm apart.

(using $\varepsilon_0 = 8.85 \times 10^{-12}$ $C^2/N.m^2$).What is the potential difference between the

a- V=10 v

b- V=100 v

c- V=1000 v

d- V=0.0001 v

- a

- b
- c
- d

13

(2 Points)

Using Q_{12}, what is the area of each plate?

a- $A=1.77\ mm^2$

b- $A=1.77\ cm^2$

c- $A=5.65\ x10^{-3}m^2$

d- $A=5.56\ cm^2$

- a
- b
- c
- d

14

(2 Points)

Using Q_{12}, what is the electric field magnitude between the plates?

a- $E = 2x10^6$ N/c

b- $E = 2x10^3$ N/c

c- E= 500 N/c

d- $E = 0.5x10^{-6}$ N/c

- (●) a
- ( ) b
- ( ) c
- ( ) d

15

(2 Points)

Using Q_{12}, what is the surface charge density on each plate?

a- 17.7 $\mu C/m^2$

b- 17.7 nC/m^2

c- 1.77 $\mu C/m^2$

d- 1.77 $\mu C/m$

- (●) a
- ( ) b
- ( ) c
- ( ) d

16

The net of the electric field lined of the dipole is zero
(2 Points)

- (●) True
- ( ) False

17

The electric potentials inside and outside the sphere are the same
(2 Points)

- ( ) True
- (●) False

18

(2 Points)

Two charges of ***10μC*** and the distance between them is ***0.25m*** . wha
electric force between them.

a. 9 N
b. 14.4 N
c. 1.44
d. 0.9 N

- ( ) a
- (●) b
- ( ) c
- ( ) d

19

The net electric flux depends on shape of the surface.
(2 Points)

- True
- False

20

The Potential at infinity is considered to be zero
(2 Points)

- True
- False

21

The internal field inside the conductor has the same direction of the external field.
(2 Points)

- True
- False

22

The electric field E just outside a charged conductor is parallel to the surface
(2 Points)

- True

- [x] False

23

The capacitance of an isolated sphere is inversely proportional to its radius
(2 Points)

- [ ] True
- [x] False

24

You charge a p-p capacitor, remove it from the battery, and prevent the wires connected to the plates from touching each other. When you pull the plates apart, what happens to the following quantities: ?
a. C increases, Q increases
b- C decreases, Q increases
c- C is the same, Q increases
d- C decreases, Q is the same
(2 Points)

- [ ] a
- [ ] b
- [ ] c
- [x] d

25

The equivalent capacitance for a series combination is always less than any individual capacitance in the combination
(2 Points)

- [x] True

False

26

(2 Points)

A force of 10 N acts on a charge of 5.0 μC when it is placed in a ui
electric field. What is the magnitude of this electric field?

a. 50 MN/C
b. 2.0 MN/C
c. 0.50 MN/C
d. 1000 MN/C

a

b

c

d

27

The capacitance of a parallel plate capacitor is directly proportional to the area of its planes.
(2 Points)

True

False

28

The potential energy is a scalar quantity
(2 Points)

- True
- False

29

If the net flux through a Gaussian surface is zero, which of the following statements are100% true?

a. There are no charges inside the surface.
b. The net charge inside the surface is zero
c. The electric field is zero every where on the surface
d. None of these.

(2 Points)

- a
- b
- c
- d

30

A 1.0-C charge is 15 m from a second charge, and the force between them is 1.0 N. What is the magnitude of the second charge?

a. 25 C
b. 1.0 C
c. 0.025 C
d. 25 nC

(2 Points)

- b
- d
- c
- a

31

One coulomb per volt is a
a. joule.
b. electron-volt.
c. farad.
d. watt.
(2 Points)

- a
- b
- c
- d

32

(2 Points)

If a 10-μF capacitor is charged so that it stores 2.0×10^{-3} J of energy, what voltage across it?
a. 5.0 V
b. 10 V
c. 15 V
d. 20 V

- a
- b
- c
- d

33

Consider two point charges (q1 and q2) that are separated by a distance r and the force between them is F1. If the distance between them is increased to 5r, then the force between them F2 is given as:

a. F2 = 1/25 F1
b. F2 = 4/25 F1
c. F2 = 2/5 F1
d. F2 = 25 F1

(2 Points)

- [ ] a
- [x] b
- [ ] c
- [ ] d

34

The electric field lines can cross or touch each other.
(2 Points)

- [ ] True
- [x] False

35

Charges of the opposite sign are repulsive.
(2 Points)

- [ ] True
- [x] False

36

The electric potential is defined as the electric force per unit charge
(2 Points)

- True
- False

37

(2 Points)

A particle with a charge of 4.0 μC has a mass of 5.0×10^{-3} kg. What electric fi directed upward will exactly balance the weight of the particle?

a. 4.1×10^{2} N/C
b. 8.2×10^{2} N/C
c. 1.23×10^{4} N/C
d. 5.1×10^{6} N/C

- a
- b
- c
- d

38

The volume charge density equals the charge per unit area
(2 Points)

- True
- False

39

The net electric flux through a closed spherical surface is proportional to the charge inside it

(2 Points)

- (●) True
- ( ) False

40

(2 Points)

What charge appears on the plates of a 2.0-μF capacitor when it is ch 100V?

a. 50 μC
b. 100 μC
c. 150 μC
d. 200 μC

- ( ) a
- ( ) b
- ( ) c
- (●) d

41

The linear charge density equals the charge per unit length

(2 Points)

- (●) True
- ( ) False

42

(2 Points)

What is the maximum electric flux (ϕ) that can be produced by a uniform field of magnitude ***E= 10 N/C*** through as circular surface of ***radius 0.1***

a. π /100 $N.m^2/C$
b. π /10 $N.m^2/C$
c. 1 $N.m^2/C$
d. 10 $N.m^2/C$

- a
- b
- c
- d

43

In a parallel- plate capacitor the energy density is proportional to the square of the electric field
per unit volume
(2 Points)

- True
- False

44

When a dielectric material is inserted between the plates of a capacitor, the Operating voltage of a capacitor increases.
(2 Points)

- True
- False

45

(2 Points)

Two 1 C charges have a force between them of 1 N. How far apart a

a. 94.87 km
b. 94.87 m
c. $9x10^9$ m
d. $9x10^6$ m

- a
- b
- c
- d

46

All points in a plane parallel to a uniform electric field are at the same potential
(2 Points)

- True
- False

47

What are the magnitude and direction of the electric field at a distance of 1.5 m from a 5 nC charge.

a. 20 N/C away from the charge
b. 20 N/C toward the charge
c. 200 N/C away from the charge
d. 200 N/C toward the charge

(2 Points)

- (●) a
- ( ) b
- ( ) c
- ( ) d

48

If the volume of the surface surrounds a point charge q is doubled, the flux is also double

(2 Points)

- ( ) True
- (●) False

49

(2 Points)

The electric field between two charged, parallel metal plates is 6500 N/C. Th
are 12 cm apart. What is the electric potential difference between them?

a. 7.8×10^{-2} V
b. 7.8×10^{2} V
c. 7.8×10^{4} V
d. 7.8×10^{5} V

- a
- b
- c
- d

50

(2 Points)

A metal sphere of radius 10 cm carries a charge of +2.0 μC. Wh
magnitude of the electric field 5.0 cm from the sphere's su

a. 4.0×10^{5} N/C
b. 8.0×10^{5} N/C
c. 4.0×10^{7} N/C
d. 1.8×10^{6} N/C

- a
- b
- c
- d

51

The electric force is directly proportional to the electric field.
(2 Points)

- True
- False

52

The electric field E at a point in space independent on the positive test charge placed at that points
(2 Points)

- True
- False

53

Question
(2 Points)

A conducting sphere of radius 2 cm has a charge of 1.0×10^{-9} C inside it magnitude of the electric field in N/C just outside the surface of the

a- 0
b- 22500
c- 225
d- 450

- a
- b
- c

d

54

The net electric flux through a closed spherical surface depends
On the radius of the spherical
(2 Points)

True

False

55

Coulomb's constant (k) depends on the measuring units
(2 Points)

True

False

56

A charge is distributed uniformly along a straight wire. The electric field 2cm from the wire is 20 N/C. The electric field 4 cm from the wire is:
a- 80 N/C
b- 10 N/C
c- 40 N/C
d- 5 N/C
(2 Points)

a

b

c

d

57

If the charge inside the surface is tripled, The flux is also tripled
(2 Points)

True

False

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