



Part I: Only select the correct answer for the following statements and kindly fill the table at the end of this part with your selections: (18 Marks)

1. The equation for the change of position of a train starting at $x = 0$ m is given by $x = \frac{1}{2}at^2 + bt^3$, where t is the time in seconds. The dimensions of a and b are respectively:

A) $L.T^2; L.T^3$ B) $T^3/L; T^4/L$ C) $L/T^3; L/T^4$ D) $L.T^{-2}; L.T^{-3}$

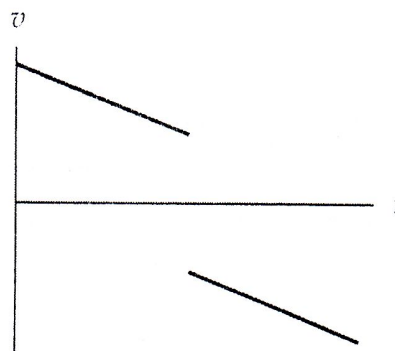
2. Which of the following quantities has the same dimensions as a force times distance, $F.x$?

Note: $[F] = MLT^{-2}$; $[a] = [g] = LT^{-2}$; $[x] = [h] = L$ and $[v] = LT^{-1}$.

A) $\frac{1}{2}mv^2$ B) ma C) mvx D) mgt

3. The graph below shows the velocity versus time graph for a ball. Which explanation best fits the motion of the ball as shown by the graph?

- A) The ball is falling, is caught, and is thrown down with greater velocity.
B) The ball is rolling, stops, and then continues rolling.
C) The ball is falling, hits the floor, and bounces up.
D) The ball is rising, hits the ceiling, and falls down.



4. An object has a constant acceleration of 3 m/s^2 . The position versus time graph for this object has a slope:

A) that decreases with time B) that is constant
C) that increases with time D) of 3 m/s

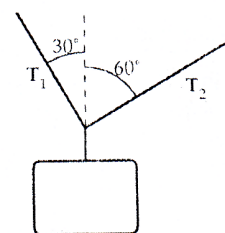
5. The angle between $\vec{A} = (25 \text{ m})\hat{i} + (-45 \text{ m})\hat{j}$ and the positive x axis is:

A) 299° B) 61° C) 119° D) 29°

6. Two bullets; one is shot horizontally from a gun and the other is dropped vertically from the same point at the same instant, neglecting the air resistance:

A) the dropped one strikes the ground first. B) both bullets strike the ground at the same time.
C) the shot one strikes the ground first D) we can not decide which one strikes first.

7. A heavy weight is supported by two cables that exert tensions of magnitude T_1 and T_2 , as shown in the figure. Which statement is correct?



- A) $T_1 = T_2$.
B) $T_1 > T_2$.
C) $T_{1y} = T_{2y}$.
D) $T_1 < T_2$.

8. The total force needed to drag a box at constant speed across a surface with coefficient of kinetic friction μ_k is least when the force is applied at an angle θ such that

- A) $\tan \theta = \mu_k$
B) $\cos \theta = \mu_k$
C) $\sin \theta = \mu_k$
D) $\cot \theta = \mu_k$

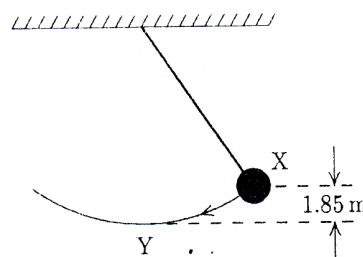
9. An object moves in a circle at constant speed. The work done by the centripetal force is zero because:

- A) the displacement for each revolution is zero
B) the centripetal force is perpendicular to the velocity.
C) there is no friction.
D) the average force for each revolution is zero.

10. An object is constrained by a cord to move in a circular path of radius 0.5 m on a horizontal frictionless surface. The cord will break if its tension exceeds 16 N. The maximum kinetic energy the object can have is:

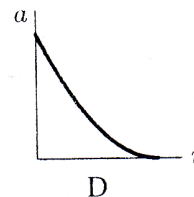
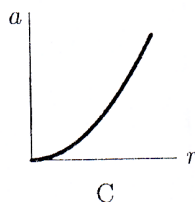
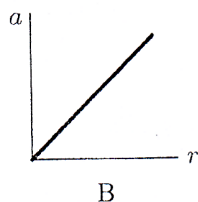
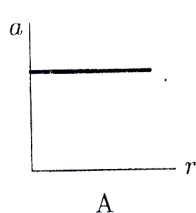
- A) 4 J
B) 8 J
C) 16 J
D) 32 J

11. A simple pendulum consists of a 2.0-kg mass attached to a string. It is released from rest at X as shown. Its kinetic energy at the lowest point Y, that is 1.85 m below X, is about:



- A) zero
B) 0.90 J
C) 36.26 J
D) 6.02 J

12. Which of the following five graphs is correct for a particle moving in a circle of radius r at a constant speed of 10 m/s?



Q. No.	1	2	3	4	5	6	7	8	9	10	11	12
Your Ans.												

Part II: Solve the following problems then circle the correct answer:

(20 Marks)

1. Suppose $A = B^n C^m$, where A has dimensions LT , B has dimensions $L^2 T^{-1}$, and C has dimensions LT^2 . Then the exponents n and m have the values:

A. $\frac{2}{3}; \frac{1}{3}$	B. 2; 3	C. $\frac{4}{5}; \frac{-1}{5}$	D. $\frac{1}{5}; \frac{3}{5}$
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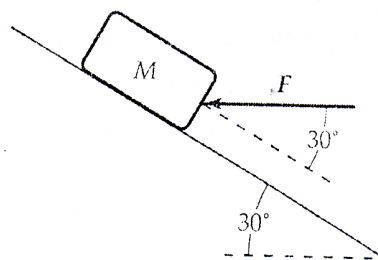
2. A stone is released from rest from the edge of a building roof 190 m above the ground. Neglecting air resistance, the speed of the stone, just before striking the ground, is:

A. 43 m/s	B. 61 m/s	C. 120 m/s	D. 190 m/s
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3. A 5.0-kg cart is moving horizontally at 6.0 m/s. In order to change its speed to 10.0 m/s, the net work done on the cart must be:

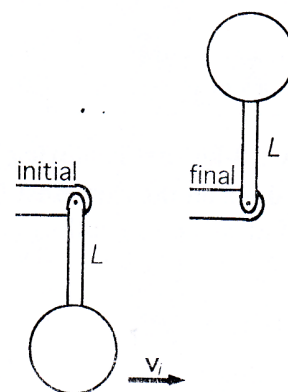
A. 40 J	B. 90 J	C. 400 J	D. 160 J
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4. A block is pushed up a frictionless 30° incline by an applied force as shown. If $F = 25 \text{ N}$ and $M = 3.0 \text{ kg}$, what is the magnitude of the resulting acceleration of the block?



A. 2.3 m/s^2	B. 4.6 m/s^2	C. 3.5 m/s^2	D. 5.1 m/s^2
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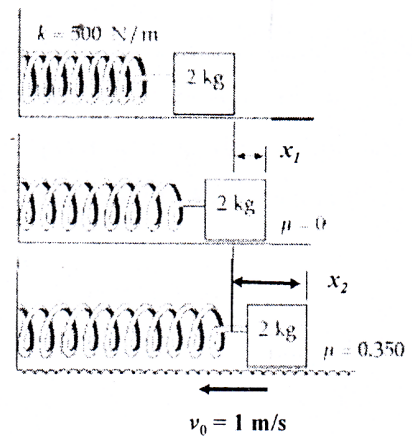
5. A light rigid rod is 77.0 cm long. The rod hangs straight down as shown (without friction) at rest with a small ball of mass m attached to its bottom end. What minimum horizontal velocity should be given to the ball so that it can swing around in a full circle?



A. 5.49 m/s	B. 30.20 m/s	C. 3.88 m/s	D. 0.77 m/s
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3. A 2.00-kg block is attached to a spring of force constant 500 N/m as in the figure. The block is pulled to the right of equilibrium and released from rest. Find the required elongation in the spring to result in a speed of the block of 1 m/s as it passes through equilibrium if:

- a) the horizontal surface is frictionless,
- b) the coefficient of friction between block and surface is 0.350.



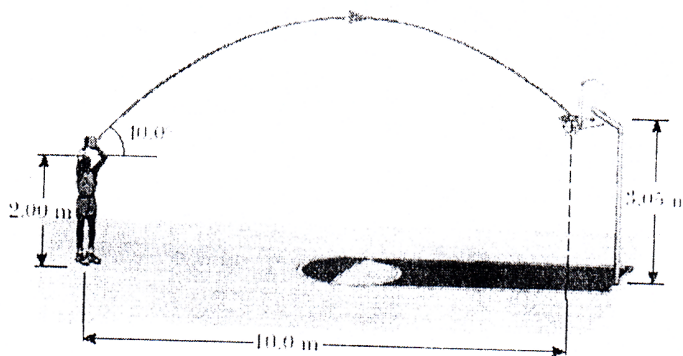
Best regards,

Teaching Staff: Dr. Ahmed Tamer, Dr. Alaa Abd-Elnaiem, Dr. Amara Zain, Dr. Mohamed Abdelkareem

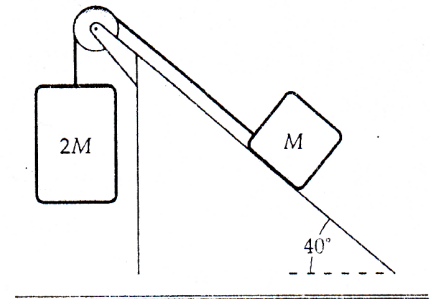
Part III: Solve only two of the following three problems: -

(12 Marks)

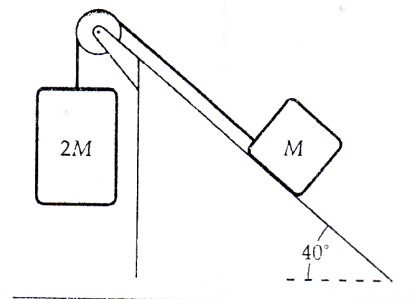
1. A 2.00 m tall basketball player is standing on the floor 10.0 m from the basket, as shown in figure. If he shoots the ball at a 40.0° angle with the horizontal, at what initial speed must he throw the basketball so that it goes through the hoop without striking the backboard? The height of the basket is 3.05 m. (consider the ball at the height of 2.00 m)



2. In the figure shown, the coefficient of kinetic friction between the block and the incline is 0.40. Disregarding any pulley mass or friction in the pulley, what is the magnitude of the acceleration of the suspended block as it falls?



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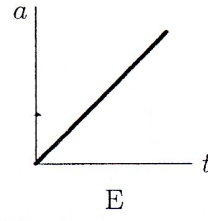
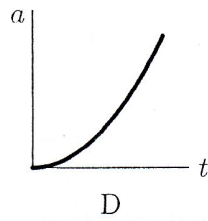
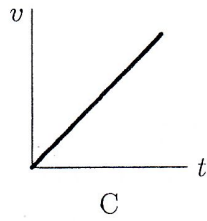
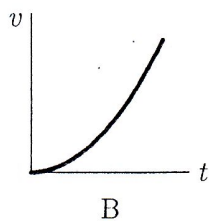
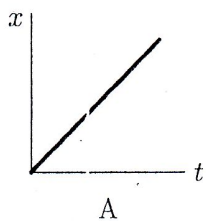


Final Exam – Physics (1) – Course Code: P100 – (50 Marks)

Q1) Circle the correct answer for the following questions:

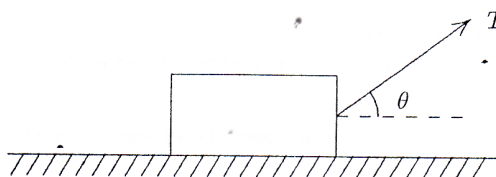
/ 9

- 1) A man pulls a sled along a rough horizontal surface by applying a constant force F at an angle θ above the horizontal. In pulling the sled a horizontal distance d , the work done by the man is:
- A. Fd
B. $Fd\cos\theta$
C. $Fd\sin\theta$
D. $Fd/\cos\theta$
E. $Fd/\sin\theta$
- 2) When a physical quantity is conserved the numeric value of the quantity remains:
- A. equal zero throughout the physical process.
B. equal unity throughout the physical process.
C. the same throughout the physical process.
D. the different throughout the physical process.
E. none of these
- 3) The mass of a body:
- A. is slightly different at different places on Earth
B. is a vector
C. is independent of the free-fall acceleration
D. is the same for all bodies of the same volume
E. can be measured most accurately on a spring scale
- 4) A baseball is thrown vertically into the air. The acceleration of the ball at its highest point is:
- A. zero
B. g , down
C. g , up
D. $2g$, down
E. $2g$, up
- 5) A stone is dropped from a cliff. The graph (carefully note the axes) which best represents its motion while it falls is: Ans C



- 6) block of mass m is pulled at constant velocity along a rough horizontal floor by an applied force T as shown. The magnitude of the frictional force is:

- A. $T \cos \theta$
- B. $T \sin \theta$
- C. zero
- D. mg
- E. $mg \cos \theta$



Q2) Solve the following problems then circle the correct answer:

/ 30

- 1) During a short interval of time the speed v in m/s of an automobile is given by $v = at^2 + bt^3$, where the time t is in seconds. The units of a and b are respectively:
- A. $m \cdot s^2; m \cdot s^4$
 - B. $s^3/m; s^4/m$
 - C. $m/s^2; m/s^3$
 - D. $m/s^3; m/s^4$
 - E. $m/s^4; m/s^5$
- 2) The position y of a particle moving along the y -axis depends on the time t according to the equation $y = at - bt^2$. The dimensions of the quantities a and b are respectively:
- A. $L^2/T, L^3/T^2$
 - B. $L/T^2, L^2/T$
 - C. $L/T, L/T^2$
 - D. $L^3/T, T^2/L$
 - E. none of these
- 3) The coordinate of an object is given as a function of time by $x = 7t + 3t^2$, where x is in meters and t is in seconds. Its average velocity over the interval from $t = 0$ to $t = 4$ s is:
- A. 5 m/s
 - B. -5 m/s
 - C. 11 m/s
 - D. -11 m/s
 - E. -14.5 m/s
- 4) An object starts from rest at the origin and moves along the x axis with a constant acceleration of 4 m/s^2 . Its average velocity as it goes from $x = 2$ m to $x = 8$ m is:
- A. 1 m/s
 - B. 2 m/s
 - C. 3 m/s
 - D. 5 m/s
 - E. 7 m/s
- 5) How far does a car travel in 6 s if its initial velocity is 2 m/s and its acceleration is 2 m/s^2 in the forward direction?

- A. 36 m
- B. 48 m
- C. 24 m
- D. 12 m
- E. 14 m

6) Neglecting the effect of air resistance, a stone dropped off a 175 m high building lands on the ground in:

- A. 3 s
- B. 4 s
- C. 6 s
- D. 18 s
- E. 36 s

7) A projectile is fired from ground level over level ground with an initial velocity that has a vertical component of 20 m/s and a horizontal component of 30 m/s. Using $g = 10 \text{ m/s}^2$, the distance from launching to landing points is:

- A. 40 m
- B. 60 m
- C. 80 m
- D. 120 m
- E. 180 m

8) When a certain force is applied to the standard kilogram its acceleration is 5.0 m/s^2 . When the same force is applied to another object its acceleration is one-fifth as much. The mass of the object is:

- A. 0.2 kg
- B. 0.5 kg
- C. 1.0 kg
- D. 5.0 kg
- E. 10. kg

9) A 9000 N automobile is pushed along a level road by four students who apply a total forward force of 500 N. Neglecting friction, the acceleration of the automobile is:

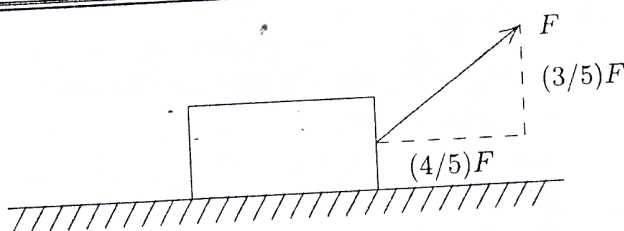
- A. 0.055 m/s^2
- B. 0.55 m/s^2
- C. 1.8 m/s^2
- D. 9.8 m/s^2
- E. 18 m/s^2

10) When a 25 kg crate is pushed across a frictionless horizontal floor with a force of 200 N, directed 20° below the horizontal, the magnitude of the normal force of the floor on the crate is: Take $g = 9.8 \text{ m/s}^2$

- A. 25 N
- B. 68 N
- C. 180 N
- D. 250 N
- E. 313 N

Q3) Answer the Following problems:

- 1) A 400 N block is dragged along a horizontal surface by an applied force F as shown. The coefficient of kinetic friction is $\mu_k = 0.4$ and the block moves at constant velocity. The magnitude of F is: [3 Marks]

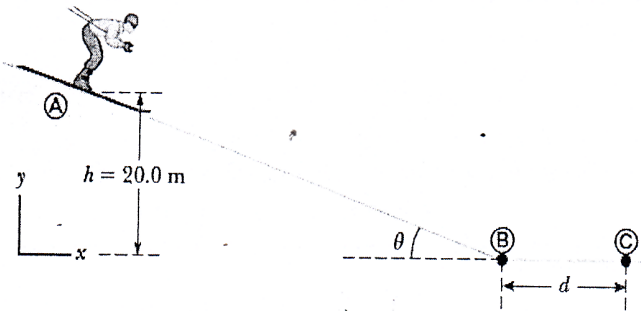


ANS:

- 2) A diver of mass m drops from a board 10.0 m above the water's surface. Neglect air resistance. (a) Use conservation of mechanical energy to find his speed 5.0 m above the water's surface. (b) Find his speed as he hits the water. [4 Marks]

ANS:

- 3) A skier starts from rest at the top of a frictionless incline of height 20.0 m. At the bottom of the incline, the skier encounters a horizontal surface where the coefficient of kinetic friction between skis and snow is 0.210.



- (a) Find the skier's speed at the bottom.
(b) How far does the skier travel on the horizontal surface before coming to rest? Neglect air resistance.

[4 Marks]

ANS:

End of the exam

Good Luck

Dr. Haní Negm



FINAL EXAMINATION

Academic Year	2017/2018 G
Semester	<input checked="" type="checkbox"/> First <input type="checkbox"/> Second <input type="checkbox"/> Summer
Course Title	General Physics 2 - code(P105)
Exam duration	2 hours Time:(9 - 11) Date:26/12/2018

Physical constants:

Electron charge (e)= $1.6 \times 10^{-19} \text{ C}$	$m_e = 9.11 \times 10^{-31} \text{ Kg}$ $m_p = 1.67 \times 10^{-27} \text{ Kg}$
$K_e = 9 \times 10^9 \text{ N.m}^2/\text{C}^2$	$\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2/\text{N.m}^2$

PART I : Circle the correct answer for the following questions: (25 marks)

- Tesla is a unit of:
 - Electric Field
 - Inductance
 - Magnetic Field
 - magnetic Flux
- The acceleration of an electron moving in a uniform Electric Field $E = 5 \times 10^3 \text{ N/C}$ is:
 - $7.8 \times 10^{14} \text{ m/s}^2$
 - $8.8 \times 10^{14} \text{ m/s}^2$
 - $5.6 \times 10^8 \text{ m/s}^2$
 - $6.2 \times 10^8 \text{ m/s}^2$
- The direction of magnetic lines of force is:
 - From south pole to north pole
 - From north pole to south pole
 - From one end of the magnet to another
 - None of the above
- The total charge of a sphere of radius 0.2m having a volume charge density $\rho = 50 \mu\text{C/m}^3$ is: (area of sphere = $4\pi r^2$)
 - $3\mu\text{C}$
 - $1.67\mu\text{C}$
 - $2.5\mu\text{C}$
 - $1.4\mu\text{C}$
- The ratio of charge stored to electric potential difference is called the.....
 - Resistance
 - Capacitor
 - Current
 - Capacitance
- The maximum electric flux (Φ_E) that can be produced by a uniform electric field of magnitude $E = 10 \text{ N/C}$ through a circular surface of radius 1 m is: (area of circle = πr^2)
 - $10 \pi \text{ N.m}^2/\text{C}$
 - $\pi / 10 \text{ N.m}^2/\text{C}$
 - $1 \text{ N.m}^2/\text{C}$
 - $10 \text{ N.m}^2/\text{C}$
- The unit of the current (Ampere) is equivalent:
 - C.S
 - C/S
 - N.C
 - C/N
- The electric field lines for a positive point charge:
 - Form circles
 - Point radically outward
 - Point radically inward
 - No correct answer

Follow next page

In the equation $F = q \vec{v} \times \vec{B}$:

- a- F must be perpendicular to \vec{v} but not necessarily to \vec{B}
- b- F must be perpendicular to \vec{B} but not necessarily to \vec{v}
- c- \vec{v} must be perpendicular to \vec{B} but not necessarily to F
- d- F must be perpendicular to both \vec{v} and \vec{B}

10- The inverse of the conductivity (σ) is called:

- a- Capacitance
- b- Resistivity
- c- Potential
- d- Current

11- In series combination of the capacitors, the equivalent capacitance is:

- a- greater than the individual capacitances
- b- smaller than the individual capacitances
- c- equal the sum of the individual capacitances
- e- equal the total charge of the combination

12- The magnetic force acting on the particle is zero:

- a- When the charged particle moves perpendicular to the magnetic field
- b- When the charged particle moves parallel to the magnetic field
- c- When the charged particle moves with an angle to the magnetic field
- d- None of these

13- The unit of the conductivity σ of a conductor is :

- a- Ω/m
- b- $\Omega^{-1}.m^{-1}$
- c- Ω/m^2
- d- $\Omega.m^2$

14- If a dielectric material is inserted between capacitor plates, then:

- a- The charge on the capacitor increases
- b- The capacitance increases
- c- The charge on the capacitor decreases
- d- The capacitance decreases

15- A $3 \mu F$ capacitor is connected in series with a $6 \mu F$ capacitor and a 12-V battery for a long time. The charge on the $3.0\text{-}\mu F$ capacitor is:

- a- $24 \mu C$
- b- $36 \mu C$
- c- $48 \mu C$
- d- $6 \mu C$

16- A conductor of length 1m has a cross-sectional area of 2cm^2 and its resistance is 10Ω , then its resistivity equal :

- a- $2 \Omega.m$
- b- $2 \times 10^{-3} \Omega.m$
- c- $20 \Omega.m$
- d- $20 \times 10^{-6} \Omega.m$

17- Three resistances $R_1 = R_2 = R_3$ are connected in parallel in circuit, the current I_1, I_2, I_3 pass in the resistances are :

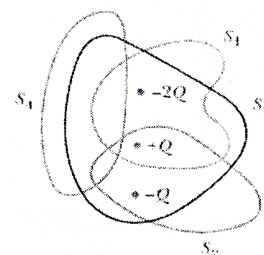
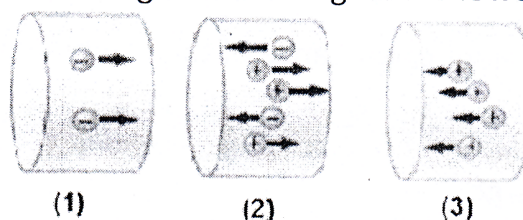
- a- $I_1 \neq I_2 \neq I_3$
- b- $I_1 \neq I_2 = I_3$
- c- $I_1 = I_2 = I_3$
- d- $I_1 = I_2 \neq I_3$

18- A dielectric material is inserted between parallel plates of a capacitor. The potential difference across the capacitor plates (ΔV) and the charge stored (Q) will be:

- a- ΔV increases and Q remains the same
- b- ΔV decreases and Q remains the same
- c- ΔV remains the same and Q increases
- d- ΔV remains the same and Q decreases

Follow next page

- 19- Two capacitors are identical. They can be connected in series or in parallel. If you want the largest equivalent capacitance for the combination, do you connect them in :
 a- In series b- In parallel c- do the combination have the same capacitance
- 20- In series combination of the resistors , the equivalent resistor is:
 a- greater than any individual resistor
 b- smaller than any individual resistor
 c- equal the sum of the individual resistor
 d- equal the total current of the combination
- 21- Farad is equal:
 a- Coulomb/Volt b- Coulomb. Volt c- Volt /Coulomb d- Volt/ ohm
- 22- The electric field between two charged, parallel metal plates is 6500 N/C. The distance between the plates are 12 cm. The electric potential difference between them is:
 a- 7.8×10^{-3} V b- 780 V c- 7.8×10^4 V d- 7.8×10^5 V
- 23- The capacitance of an isolated charged sphere is given by:
 a- $(C = \frac{4\pi\epsilon_0}{r})$ b- $(C = \frac{\epsilon_0 r}{4\pi})$ c- $(C = \frac{r}{4\pi\epsilon_0})$ d- $(C = 4\pi\epsilon_0 r)$
- 24- According to Gauss' law ,the net electric flux (Φ_E) across surface S_3 in the next figure is equal:
 a- $(\Phi_E) = -Q$ b- $(\Phi_E) = -2Q$ c- $(\Phi_E) = -3Q$ d- zero
- 25- Rank the current in these three regions from highest to lowest:



PART II :Put (✓)or (X) in front the following sentences:

(5 marks)

- 1- The net electric flux through an opened surface is called Gaussian's surface
- 2- The electric flux through a surface of a fixed area A has a maximum value when the normal to the surface is parallel to the field.
- 3- The total flux through a cube Gaussian surface is changed when the surface is changed to spherical surface.
- 4- The magnetic force acts on a charged particle only when the particle is in motion.
- 5- The magnitude of F_B exerted on the particle is inversely proportional with q and directly with u

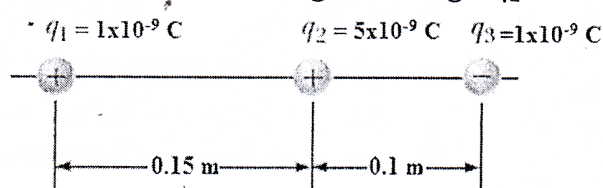
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RT III : Solve the next problems :

(20 marks)

In the corresponding figure, Find the resultant electrostatic force acting on charge q_2 and its direction

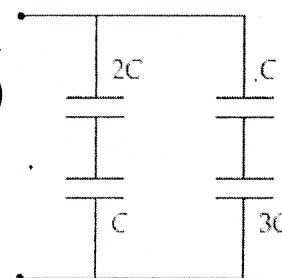
(5 marks)



2- Determine the equivalent capacitance of the combination shown when $C = 12\text{ nF}$ and if a potential difference of about 24 V is applied across its terminal

Find the total charge

(5 marks)



Follow next page.

3- A proton moving at 4×10^6 m/s through a magnetic field of 1.7 T experiences a magnetic force of magnitude 8.2×10^{-13} N. What is the angle between the proton's velocity and the field? (2.5 marks)

4- A parallel -plate capacitor having a plate area of 1.75 cm^2 and plate separation of 0.04 mm filled with a Teflon. (Dielectric constant (K) for Teflon = 2.1), if the dielectric strength (E) for Teflon is 60×10^6 V/m. Determine (a) the capacitance (b) the maximum potential difference (5 marks)

5- The charge per unit length on a long, straight filament is $(- 90 \mu\text{C/m})$. Find the electric field at 20 cm, where distances are measured perpendicular to the length of the filament. (2.5 marks)

Questions Finished

With my best wishes

الخميس ٢١/١٢/٢٠١٧م

٩:١١ صباحاً

الزمن : ساعتان

جامعة أسيوط

كلية الحقوق

امتحان مقرر حقوق الإنسان

لطلاب كلية العلوم (جميع التخصصات) – جامعة أسيوط

ملحوظة : على الطالب الإجابة عن الأسئلة المطلوبة فقط ، ولا يُلتفت إلى الإجابة الزائدة .

أجب عن سؤالين فقط من الأسئلة الآتية : (خمس وعشرون درجة لكل سؤال)

السؤال الأول :

ما المقصود بحقوق الإنسان ؟ مع شرح خصائصها ؟ مبيناً أنواعها ؟

السؤال الثاني :

تكلم عن الإعلان العالمي لحقوق الإنسان من حيث :

أ – القيمة القانونية للإعلان العالمي لحقوق الإنسان .

ب – حقوق الإنسان التي تضمنها الإعلان .

السؤال الثالث :

تناول – بالشرح المناسب – بعضاً من ألد الأذى لحقوق الأجنبي

فى إطار التشريع المصرى ؟

السؤال الرابع :

من الأمور التى فرق الإسلام فيها بين الرجل والمرأة :

الميراث – الشهادة ... وضح ذلك ؟

مع تمنياتنا بالنجاح والتوفيق ،،،

د. بدر أحمد محمد عبدالسلام