- الامتحان فى 8 ورقات تمثل 50 درجة.
- لن ينظر الى اى اجابات خارج جداول الاجابة فى آخر ورقة
- في حالة اختيار أكثر من إجابة للنقطة الواحدة سيتم احتساب الإجابة خاطئة
- لا يمكن تعديل الإجابة بعد تظليل الدائرة ومن حق الطالب/ة ورقة إجابة واحدة فقط

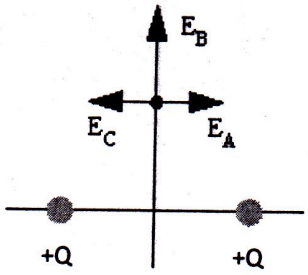
- **General constants:**
  ($e = 1.6 \times 10^{-19}$C is the magnitude of the electronic charge)
  ($k_e = \frac{1}{4\pi\varepsilon_0} = 8.99 \times 10^9$ N.m^2/C^2 is Coulomb's constant)
  ($m_e = 9.11 \times 10^{-31}$ kg is the electron mass)
  ($m_p = 1.67 \times 10^{-27}$ kg is the proton mass)
  ($G = 6.67 \times 10^{-11}$ N.m^2/kg^2 is the universal gravitational constant)

Choose the most accurate answer (a, b, c, or d): (50 marks, 1.25 mark each)

1. Of the following substances, which one contains the highest density of free electrons?
   a) Plastic
   b) Wood
   c) Glass
   d) Copper
2. Which type of material is defined as its electrical conduction can be increased by the addition of controlled amounts of certain impurities and the resistance to the flow of the charge inside it decreases with increasing the temperature?
   a) Conductors
   b) Insulators
   c) Superconductors
   d) Semiconductors
3. An attraction electrostatic force must occur between two charged objects under which conditions?
   a) Charges are like signs.
   b) Charges are of equal magnitude.
   c) Charges are of unequal magnitude.
   d) Charges are unlike signs.
4. A metallic object holds a charge of -1.2×10^{-9}C. What total number of electrons does this represent?
   a) 1.92×10^{28}
   b) 1.92×10^{-28}
   c) 2.13×10^{-29}
   d) 7.5×10^{9}

5. If body M, with a positive charge, is used to charge body N by induction, what will be the nature of the charge left on the latter?
   a) must be equal in magnitude to that of M
   b) must be positive
   c) must be greater in magnitude than that of M
   d) must be negative
6. If body P, with a positive charge, is placed in contact with body Q (initially uncharged), what will be the nature of the charge left on Q?
   a) must be equal in magnitude to that of P
   b) must be negative
   c) must be greater in magnitude than that of P
   d) must be positive
7. Two point-charges are 2 cm apart. They are moved to a new separation of 4 cm. By what factor does the resulting mutual force between them change?
   a) 1/2
   b) 2
   c) 4
   d) 1/4
8. If both two charge values are tripled and maintained at a constant separation, the mutual force between them will be changed by what factor?
   a) 3
   b) 0.33
   c) 1/9
   d) 9
9. Two point charges, separated by 5 m, have charge values of +6.0 and 4.0 C, respectively. What is the value of the mutual force between them?
   a) $86.3\ N$
   b) $3.6 \times 10^{-8} N$
   c) $4.32 \times 10^{10}\ N$
   d) $8.6 \times 10^{9}\ N$
10. Two point charges each have a value of 30 mC and are separated by 4 cm. What is the electric field midway between the two charges?
   a) 40.5×10^{7} N/C
   b) 20.3×10^{7} N/C
   c) 10.1×10^{7} N/C
   d) zero
11. The average distance of the electron from the proton in the hydrogen atom is $0.51 \times 10^{-10}\ m$. What is the electric field from the proton's charge at the location of the electron?
   a) $1.0 \times 10^{6}\ N/C$
   b) 5.5×10^{11} N/C
   c) $3.2 \times 10^{2}\ N/C$
   d) $8.8 \times 10^{-8}\ N/C$

12. Two charges, +Q and +Q, are located two meters apart and there is a point along the line that is equidistant from the two charges as indicated. Which vector best represents the direction of the electric field at that point?



a) Vector E_A
b) Vector E_B
c) Vector E_C
d) The electric field at that point is zero.

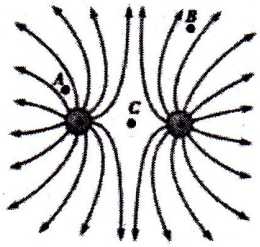
13. The number of electric field lines passing through a unit cross-sectional area is indicative of:
a) field direction.
b) field strength.
c) charge density.
d) charge motion.

14. Two point charges, have charge values of +2 and -4 μC, respectively. Suppose we determine that 10 field lines radiate out from the +2 μC charge. If so, what might be inferred about the -4 μC charge with respect to field lines?
a) 20 radiate out
b) 20 radiate in
c) 5 radiate out
d) 10 radiate in

15. Charge A has 50 electric field lines coming out, charge B has 20 lines coming out, and charge C has 30 lines coming in. Which pair of these charges will have the largest electrostatic force between them if placed one cm apart and what is the type of force?
a) C and A, repulsive
b) C and A, attractive
c) B and C, attractive
d) B and C, repulsive

16. Q1 has 100 electric field lines radiating outward and Q2 has 20 field lines converging inward. What is the ratio Q1/Q2?
a) 5
b) -5
c) 0.2
d) -0.2

17. The maximum magnitude of the electric field is at …



a) Not enough information to compare
b) Point A
c) Point B
d) Point C

18. Which of the following statements is **false** about the electric field lines associated with electric charges?
a) Electric field lines can either be straight or curved.
b) Electric field lines can form closed loops.
c) Electric field lines begin on positive charges and end on negative charges.
d) Electric field lines can never intersect with one another.

19. The number of electric field lines penetrating some surface and perpendicular to that surface is …
a) the electric force
b) the electric flux
c) the electric field
d) the electric potential

20. If the net flux through a Gaussian surface is zero, which of the following statements must be true?
a) There are no charges inside the surface.
b) The net charge inside the surface is zero.
c) The electric field is zero everywhere on the surface.
d) Nothing of the above statements must be true.

21. The net electric flux through a closed surface is independent on …
a) charge location
b) the shape of the surface
c) position of the charge inside the surface
d) All of the above

22. A spherical enclosed surface contains two charges 5 μC and -2 μC inside it, and one charge of 2 μC outside it, the net electrical flux through this surface is …
a) $3 \times 10^{-6}\ Nm^2/C$
b) $5.65 \times 10^{5}\ Nm^2/C$
c) $5 \times 10^{-6}\ Nm^2/C$
d) $3.39 \times 10^{5}\ Nm^2/C$

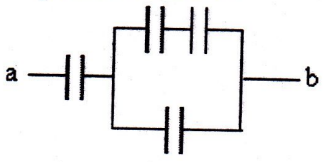
23. The electric field due to a thin charged spherical shell, at a distance r from the center of the shell and larger than the shell radius a, is given by … (assuming the shell is carrying a Q charge).
    a) Zero
    b) $E = k_e \frac{Qr}{a^3}$
    c) $E = k_e \frac{Qr}{a^2}$
    d) $E = k_e \frac{Q}{r^2}$
24. The electric field due to a thin charged spherical shell, at a distance r from the center of the shell and smaller than the shell radius a, is given by … (assuming the shell is carrying a Q charge).
    a) $E = k_e \frac{Q}{r^2}$
    b) $E = k_e \frac{Qr}{a^3}$
    c) $E = k_e \frac{Qr}{a^2}$
    d) Zero
25. The electric field due to a spherically symmetric charge distribution, at a distance r from the center of the sphere and smaller than the sphere radius a, is given by … (assuming the sphere is carrying a Q charge).
    a) Zero
    b) $E = k_e \frac{Q}{r^2}$
    c) $E = k_e \frac{Qr}{a^2}$
    d) $E = k_e \frac{Qr}{a^3}$
26. A proton moves 10 cm on a path in the direction of a uniform electric field of strength 3 N/C. How much work is done on the proton by the electrical field?
    a) $-4.8 \times 10^{-20} J$
    b) $1.6 \times 10^{-20} J$
    c) Zero
    d) $4.8 \times 10^{-20} J$
27. The unit of electrical potential, the volt, is dimensionally equivalent to:
    a) J.C.
    b) C/J.
    c) F.C.
    d) J/C.
28. A 12V battery is connected between two parallel metal plates 5 mm apart. What is the magnitude of the electric field between the plates?
    a) $4.17 \times 10^{-4} N/C$
    b) $12\ N/C$
    c) $60 \times 10^{-3} N/C$
    d) $2400\ N/C$

29. Find the electrical potential at 0.2 m from a point charge of 9 mC.
    a) $4.5 \times 10^{-2} V$
    b) $2 \times 10^{11} V$
    c) $2.02 \times 10^{9} V$
    d) $4.05 \times 10^{8} V$
30. Three-point charges of values +3, +4, and +6 μC are placed at the corners of an equilateral triangle with a side of 20 m. What is the potential energy of this three charges system?
    a) $2.43 \times 10^{10} J$
    b) $1.89 \times 10^{10} J$
    c) $1.89 \times 10^{-2} J$
    d) $2.43 \times 10^{-2} J$
31. When a charge Q1 is placed at some distance near a point P, the potential at P becomes V1. The Q1 is then totally removed and another charge Q2 is placed at some other position near P, then the potential at P becomes V2. If the charge Q1 is placed again at its original position while maintaining Q2 at its position, the potential at P is …
    a) V1 + V2
    b) V1 – V2
    c) V2 – V1
    d) (V1 + V2)/2
32. The unit of capacitance, the farad, is dimensionally equivalent to which of the following?
    a) C/V
    b) V/C
    c) V.C
    d) J/V
33. Increasing the charge on the two plates of a capacitor will produce what effect on the capacitor?
    a) increases voltage difference across the plates
    b) increases the capacitance of the capacitor
    c) decreases the capacitance of the capacitor
    d) decrease voltage difference across the plates
34. Calculate the capacitance of a sphere of radius 10 m.
    a) $1.11 \times 10^{-9} F$
    b) $5.56 \times 10^{-10} F$
    c) $2.22 \times 10^{-9} F$
    d) $2.78 \times 10^{-10} F$
35. The capacitance of an air-filled parallel plate capacitor with separation between the plates of 0.1 mm and a plate area of 50 cm^2 is …
    a) 0.44 nF
    b) 0.17 nF
    c) 1.77 nF
    d) 1.77 × 10-4 nF

36. If two parallel, conducting plates but not connected, have equal positive charge, which statement of the following is **false**?
   a) The capacitance of the two plates system is zero if the charge is removed and connected to a battery.
   b) The electric field midway between the plates is zero
   c) The potential difference between the plates is zero
   d) None of the above

37. Two capacitors, with C_A greater than C_B, are connected in series with a battery. Which of the following statements is **false**?
   a) The total charge on the equivalent capacitor equals the sum of charges stored on each capacitor.
   b) There is the same charge stored on each capacitor.
   c) There is more potential difference across CA.
   d) The equivalent capacitance is given by $C = \frac{C_A C_B}{C_A + C_B}$

38. If each of the shown capacitors in the figure has a capacitance of 0.2 mF, what is the equivalent capacitance between points a and b?



   a) 0.12 mF
   b) 0.33 mF
   c) 0.8 mF
   d) 0.05 mF

39. A 5mF capacitor is attached to a 10V power supply. How much energy is stored in the capacitor?
   a) 0.25 J
   b) 2 J
   c) 2.5 J
   d) 5 J

40. A pair of parallel plates, forming a capacitor, are charged. The separation between the plates is decreased to half the original separation, and the charges on the plates remain the same. What is the ratio of the final energy stored to the original energy stored?
   a) 1/2
   b) 2
   c) 1
   d) 4

End of questions

Answer sheet

	1	2	3	4	5	6	7	8	9	10
a)	O	O	O	O	O	O	O	O	O	O
b)	O	O	O	O	O	O	O	O	O	O
c)	O	O	O	O	O	O	O	O	O	O
d)	O	O	O	O	O	O	O	O	O	O

	11	12	13	14	15	16	17	18	19	20
a)	O	O	O	O	O	O	O	O	O	O
b)	O	O	O	O	O	O	O	O	O	O
c)	O	O	O	O	O	O	O	O	O	O
d)	O	O	O	O	O	O	O	O	O	O

	21	22	23	24	25	26	27	28	29	30
a)	O	O	O	O	O	O	O	O	O	O
b)	O	O	O	O	O	O	O	O	O	O
c)	O	O	O	O	O	O	O	O	O	O
d)	O	O	O	O	O	O	O	O	O	O

	31	32	33	34	35	36	37	38	39	40
a)	O	O	O	O	O	O	O	O	O	O
b)	O	O	O	O	O	O	O	O	O	O
c)	O	O	O	O	O	O	O	O	O	O
d)	O	O	O	O	O	O	O	O	O	O

With my best wishes

General Physics 2 (P105)
2nd semester 2022-2023
Final Exam (50 Marks)

Exam date: Wednesday, 31/05/2023
Exam Time: 2 hours

"يتم طمس(تسويد) الإجابة المختارة من قبل الطالب باستخدام القلم الجاف فقط"

1st Question: Choose the correct answer from the given options below and put your answers in the answer sheet (30 Marks)

1. Which magnitude of charge is stored on each plate of a 12 μF capacitor with 12 V applied across it?
   a. $-1x10^{-6}$ C
   b. $-1.44x10^{-4}$ C
   c. $1x10^{-6}$ C
   d. $1.44x10^{-4}$ C

2. Which factors determine the capacitance of a device?
   a. Capacitance depends only on the materials that make up the device.
   b. Capacitance depends on the electric field surrounding the device.
   c. Capacitance depends on the geometric and material parameters of the device.
   d. Capacitance depends only on the mass of the capacitor.

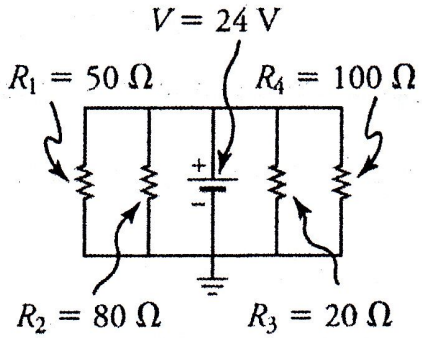
3. The energy required to bring a charge q=-8.8 nC from far away to 5.5 cm from a point charge Q is 13 mJ. What is the potential at the final position of q?
   a. $-112x10^{6}$ V
   b. $-1.47x10^{6}$ V
   c. $-0.66\ x10^{6}$ V
   d. $+1.47x10^{6}$ V

4. What power is dissipated in a circuit through which 0.12 A flows across a potential drop of 3.0 V?
   a. 0.36 W
   b. 0.011 W
   c. 5V
   d. 2.5 W

5. You connect a single resistor R across a 10-V battery and find that 0.01 A flows through the circuit. You add another resistor R after the first resistor and find that 0.005 A flows through the circuit. If you have 10 resistors R connected in a line one after the other, what would be their total resistance?
   a. R/10
   b. 5R
   c. 10/R
   d. 10R

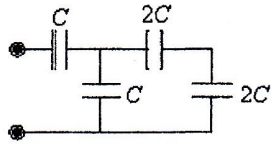
6. The electric potential is:
   a. potential energy per unit charge.
   b. electrical force per unit charge.
   c. simply electrical energy.
   d. is simply electrical charge.

7. What is the current through each resistor in the circuit?



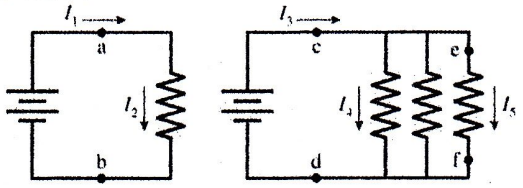
a. Current through resistors R1, R2, R3, and R4 is 0.48 A, 0.30 A, 1.2 A, and 0.24 A, respectively.
b. Current through resistors R1, R2, R3, and R4 is 1,200 A, 1,920 A, 480 A, and 2,400 A, respectively.
c. Current through resistors R1, R2, R3, and R4 is 2.08 A, 3.34 A, 0.833 A, and 4.17 A, respectively.
d. The same amount of current, 0.096 A, flows through all of the resistors.

8. If C = 36 μF, determine the equivalent capacitance for the combination shown.



a. 36 μF
b. 32 μF
c. 28 μF
d. 24 μF

9. In the two circuits on the right, the batteries are identical, and all resistors are identical. Which of the statements is true?



a. $I_1 > I_2$
b. $I_1 = I_3$
c. $I_1 = I_4$
d. $I_1 = 3\ I_3$

10. If you double the current through a resistor, by what factor does the power dissipated by the resistor change?
a. Power increases by a factor of two.
b. Power increases by a factor of four.
c. Power increases by a factor of eight.
d. Power increases by a factor of 16.

11. To measure the power consumed by your laptop computer, you place an ammeter in series with its DC power supply. When the screen is off, the computer draws 0.40 A of current. When the screen is on at full brightness, it draws 0.90 A of current. Knowing the DC power supply delivers 16 V, how much power is used by the screen?
a. The power used by the screen is -8.0 W.
b. The power used by the screen is 0.3 W.
c. The power used by the screen is 3.2 W.
d. The power used by the screen is 8.0 W.

12. A pair of parallel plates is forming a charged capacitor. The plates are pulled apart to double the original separation distance, the charges on the plates remain the same. What is the ratio of the final energy stored to the original energy stored?

a. 4 b. 2
c. 1 d. 0.5

13. A metallic conductor has a resistivity of 18 x 10^{-6} Ω.m. What is the resistance of a piece of this conductor that is 30 m long and has a uniform cross-sectional area of 3 x 10^{-6} m^2?

a. 0.056 Ω b. 180 Ω
c. 160 Ω d. 90 Ω

14. A tungsten wire is used to determine the melting point of indium. The resistance of the tungsten wire is 3 Ω at 20 °C and increases to 4.85 Ω as the indium starts to melt. $\alpha_{tungsten}$ = 4.5 x 10^{-3} $°C^{-1}$. What is the melting temperature of indium?

a. 132°C b. 157°C
c. 351°C d. 731°C

15. What current is flowing if 0.67 C of charge pass a point in 0.30 s?

a. 2.2 A b. 0.67 A
c. 0.30 A d. 0.20 A

2nd Question: Choose whether the following is true or false and put your answers in the answer sheet (20 Marks)

16. The change in the potential energy (ΔU) of moving particles between points on the same equipotential surfaces is > 0. ( )

17. The potential energy (U) of a system that consists of four-point charges (Q_1, Q_2, Q_3, Q_i) can be estimated from $U = K\left(\frac{Q_1Q_2}{r_{12}} + \frac{Q_1Q_4}{r_{14}} + \frac{Q_2Q_3}{r_{23}} + \frac{Q_3Q_4}{r_{34}}\right)$. ( )

18. The direction of electric filed ($\vec{E}$) is always in the direction, which the electrical potential decreases. ( )

19. The electric field ($\vec{E}$) inside a charged conductor is constant, meanwhile the electric potential (V) is zero at every point inside the conductor. ( )

20. Inserting a dielectric between the parallel plate capacitor will reduce the electric potential (ΔV) ( )

21. The storge energy per unit volume (U_E) between parallel plate capacitor that includes insulator material with electric permittivity (**ε**) and dielectric constant (**K**) is defined as $U_E = \frac{1}{2}\frac{\varepsilon}{K}E^2$ ( )

22. The average current (I_{av}) flowing in the conductor can be estimated from the following equation: $I_{av} = \frac{nqA}{v_d}$ ( )

23. The capacitance of isolated charged sphere with radius **R** can be estimated from $4\pi\varepsilon_o R$ ( )

24. The relation between current (I) and the applied potential difference (ΔV) is nonlinear for ohmic materials ( )

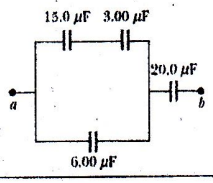
25. If two capacitors connected in **series** with capacitance of $2\mu F$ and $5\mu F$ are connected in **parallel** with a third capacitor of $3\mu F$. Hence, the equivalent capacitance $C_{eq} = \frac{31}{7}\ \mu F$ ( )

26. The increase of conductor temperature leads to a decrease in it's conductivity (σ) ( )

27. the maximum power delivered to the load resistance R in the case of non-ideal battery occurs when internal resistance (r) equals to the load resistance ( )

28. The temperature coefficient of resistivity (α) is given by $\alpha = \frac{T-T_o}{T_o(\rho_o-\rho)}$ ( )

29. If the potential difference (V_{ab}) between point **a** and **b** equals 10 V. Hence, the charge (Q_C) on the capacitor ($C = 20\mu F$) equal 6.95 μC. ( )

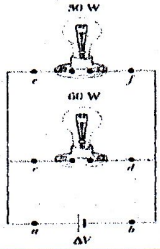


30. The potential energy (U) between three-point charge system (Q_1=2μC, Q_2=3μC, and Q_3=-6μC) with mutual separating distances (r_{12} = 4 m, r_{13}=3m, and r_{23}=5m) equals to -0.0549 J. ( )

31. If a resistance thermometer of materials (α=0.004 °C^{-1}) has a resistance of 40 Ω at 20 °C. Hence, with increasing temperature to 156 °C its resistance will increase to 65 Ω. ( )

32. The Kirchhoff's junction rule states that the sum of the currents entering any junction in a circuit must equal the sum of the currents leaving that junction ( )

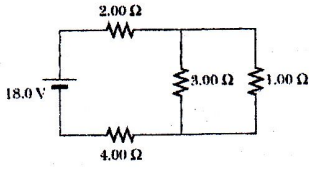
33. If two light bulbs are connected in parallel with applied potential (ΔV) as shown in next figure, hence the bulb with higher electrical power (P) possesses the higher electrical current (I).



( )

34. The temperature coefficient of resistivity (α) is always positive for all materials including conductors and semiconductors ( )

35. The power (P) delivered to the resistance ($R = 1\Omega$) is 4 W.



( )

With all my best regards
Dr. Mohaned M. M. Mohammed
Dr. Ahmed Galal

كلية العلوم
جامعة أسيوط

Final Exam
2ed semester 2022/2023
General Phys. P100

Date:31/05/2023 **Exam Time:2h**

Total Marks: 50

جامعة أسيوط

Q1: Answer (T) for True sentences or (F) for False sentences: (1 Mark each)

Sentence	True	False
1-The distance travelled is the magnitude of the displacement vector.	(T)	(F)
2- If an object is at rest, then there are no forces acting upon the object.	(T)	(F)
3- The object accelerates only if the net force acting on it is not equal to zero.	(T)	(F)
4- Newton's first law of motion is applied to both moving and non-moving objects.	(T)	(F)
5- The acceleration of a projectile is equal to zero when it reaches the top of its trajectory.	(T)	(F)
6- If the particle does not move the force does work on it.	(T)	(F)
7- A scalar quantity has only magnitude and no direction.	(T)	(F)
8- Speed of a particle is not equal to the magnitude of its instantaneous velocity.	(T)	(F)
9- If the net force acting on a body is zero, the body is said to be in equilibrium.	(T)	(F)
10-The magnitude of the velocity is called the average velocity	(T)	(F)

Q2: Choose the correct answer from the following (1.5 Mark each)

1- Which of the following are not a basic units in the SI system:

a) kilogram. b) kelvin. c) meter. d) volt.

2- Suppose A = BC, where A has the dimension L/M and C has the dimension L/T. Then B has the dimension:

a) T/M b) L^2/TM c) TM/L^2 d. L^2T/M

3- A vector has an x-component of -60 units and a y-component of 80 units, the angle this vector makes with the positive x-axis is:

a) 20° b) 140° c) 100° d) 126.87°

4- 36 mi/ h = ... km /h

a) 131 b) 58 c) 22 d) 64

5- The amount of work required to stop a moving object is equal to:

a) The velocity of the object b) The kinetic energy of the object

c) The mass of the object x its acceleration

d) The mass of the object x its velocity

6- Ignoring air resistance, the horizontal component of a projectile's velocity is

a) zero. b) remains constant.

c) Continuously increases. d) continuously decreases

7- The acceleration of an object is inversely proportional to.....

a) The net force acting on it. b) Its position. c) Its velocity. d) Its mass.

8- An object sits on a frictionless surface. A 16 N force is applied to the object, and it accelerates at 2.0 m/s^2. What is the mass of the object?

a) 4 kg b) 8 kg c) 32 kg d) 78 N

9- When you sit on a chair, the resultant net force on you is.....

a) zero. b) up. c) down. d) depending on your weight.

10- The polar coordinates of a point are r = 5.50 m and θ = 240°. The Cartesian coordinates x, y of this point are:

a) (2.75, 4.76) b) (-2.75, -4.76) c) (-2.75, 9.53) d) (-4.76, -2.75)

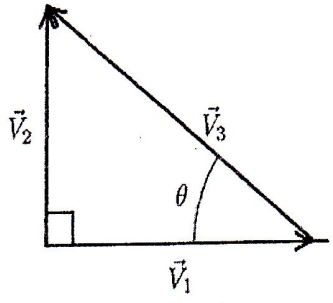
11- A particle of mass 0.6 kg and kinetic energy 7.5 J, its speed is:

a) 5 m/s b) 3 m/s c) 25 m/s d) 17 m/s

12- The vector $\overrightarrow{V_3}$ in the diagram is equal to:

a) $\overrightarrow{V_1} - \overrightarrow{V_2}$ b) $\overrightarrow{V_1} + \overrightarrow{V_2}$

c) $\overrightarrow{V_2} - \overrightarrow{V_1}$ d) $\overrightarrow{V_1} \cos\theta$



13- Which of the following groups does NOT contain a scalar quantity?

a) velocity, force, power b) displacement, acceleration, force

c) acceleration, speed, work d) energy, work, distance

14- In SI system, work is measured in Joule which is equivalent to:

a) m/s^2 b) m/s c) $kg.\ m/s^2$ d) N. m

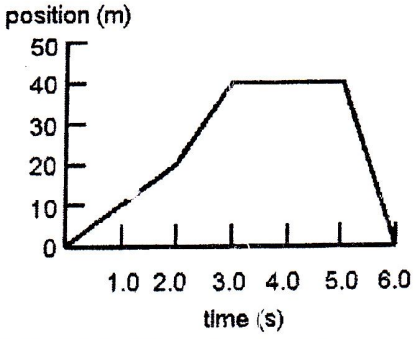
15-The weight of a car is 2500 N, its mass is: ($g = 9.8\ m/sec^2$)

a) 2.55 kg b) 0.25 kg c) 255 kg d) zero

16- A car starts from rest and accelerates uniformly over a time of 5 sec for a distance of 100 m , the acceleration is.....

a) $4m/s^2$ b) 8m/s c) $8m/s^2$ d)4m/s

17- In the corresponding figure, What is the velocity at t = 1.0 s, and 4.0 s?



a) 10 m/s, 0 m/s b) 0 m/s, 10 m/s

c) 20 m/s, -40 m/s d) -40 m/s, 20 m/s

18- If the displacement of an automobile is given by $x = 4t^2 + 3t^3$, after a time t =2 seconds the acceleration becomes:

a) $40\ m/s^2$ b) $44\ m/s^2$ c)$14\ m/s^2$ d) $52\ m/s^2$

19-An object of mass m is moving at constant velocity v. The total force F on that object is given by:

a) $F = v^2/2m$ b) $F = mv$ c) $F = 0$ d) $F = mg$

20-A rock is thrown straight up with an initial velocity of 24.5 m/s. What maximum height will the rock reach before starting to fall downward? ($g = 9.8\ m/sec^2$)

a) 9.80 m b)19.6 m c) 30.6 m d) 24.5 m

Q3: Solving the following problems (10 degree)

1- A racket player kicks the ball by an angle 45° above the horizontal with a speed 45 m/s . Find:

a) The maximum height b) The range of the ball

where, $R = \frac{v_i^2 \sin 2\theta}{g}$ and $h_{max} = \frac{v_i^2 \sin^2 \theta}{2g}$ $(g = 9.8\ m/sec^2)$

2- For the two vectors: A= 3i – 2j + k and B= 2i + j + 2k, where i, j and k are the unit vectors in the x, y and z axis. Find:

a- The magnitude of each vector. b-The scalar product A.B.

c- The angle between the two vectors A and B.

انتهت الأسئلة

مع أطيب التمنيات بالتوفيق

الفرقة الاولى