2nd term | lap physics 1 أسئلة | 2011 - 2012

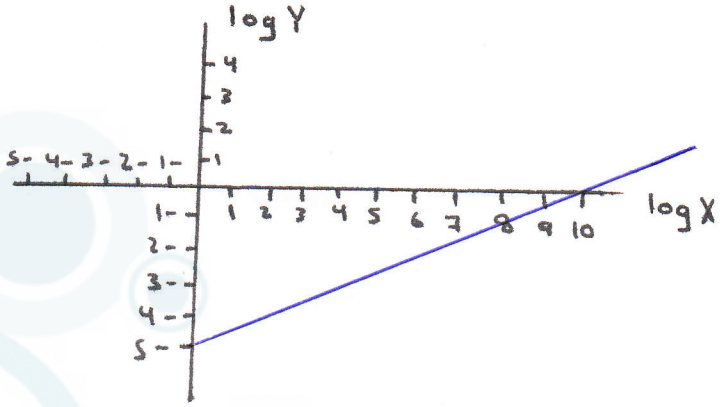
Q1 :- From the graph if y = F(x) then the relation-ship between x & y :-

a) $y = 2x^2 - 5$

b) $y = 0.5x - 5$

c) $y = 10^{(5)} \cdot x^{(0.5)}$

d) $y = 10^{(-5)} \cdot x^{(0.5)}$



Q2 :- One of these quantities is scaler quantity :-

a) velocity

b) acceleration

c) Force

d) Tempreture

Q3 :- clynder with raduis of 1 c.m & uncertainty of 0.01 c.m & his hight = 5 .cm with uncertainty of 0.01 c.m find the uncertainty in his volume in ($c.m^3$) :-

a) 0.16

b) 0.032

c) 0.32

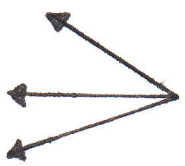
d) 3.15

Q4 :- which of these Forces has resultant Force = 0 :-

a) 

b) 

c) 

d) 

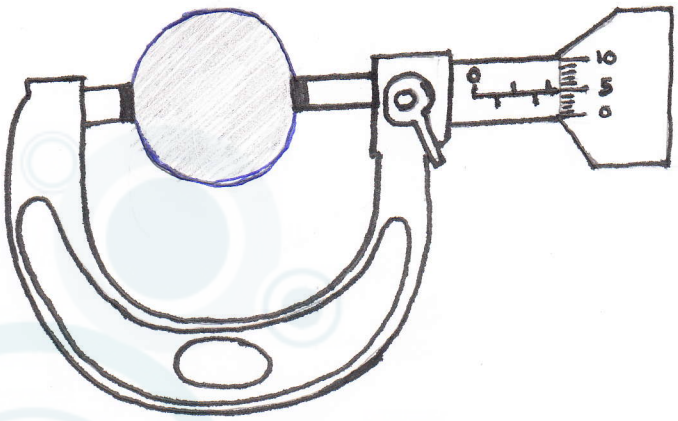
Q5 :- The area of the disk in the graph is:.

a) 6.6

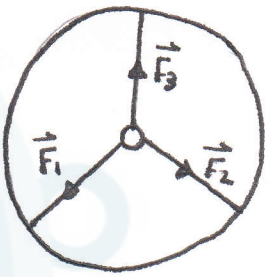
b) 3.3

c) 0.33

d) 0.66



Q6 :- Three forces $\vec{F}_1, \vec{F}_2, \vec{F}_3$ acts on the pin if This pin is in Equilibrium which of These sentence is Not true about This situation :.



a) The Three force are in the same plane

b) The compuenets of resultant force in any direction = 0

c) $\vec{F}_3$ is the resultant force of $\vec{F}_1$ & $\vec{F}_3$

d) The resultant force of $\vec{F}_1$ & $\vec{F}_2$ & $\vec{F}_3$ equal zero

---

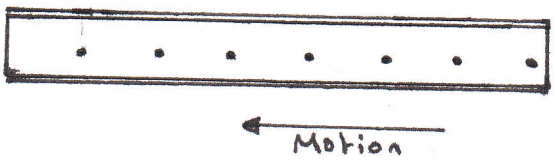
Q7 :- which of these choice is true about the ticker tap of an object:.

a) The object move in constant acceleration.

b) The object move up way on inclined track

c) The object deacceleteted

d) The object move in constant speed



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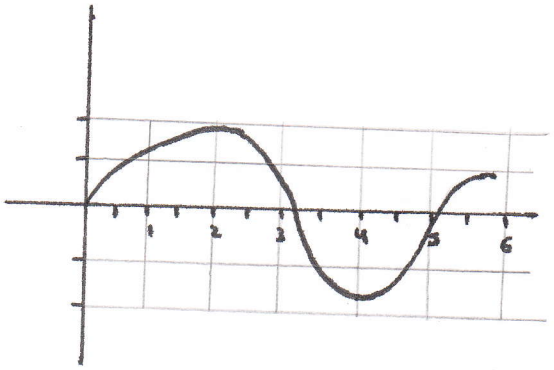
Q8:- The v-t graph show the Motion of an object which of these choice not true about the graph:-



a) The object speedest at t=2.00sec

b) The object was at rest at t=5.2 approximetly

c) The object has negative acceleration at t=4.5 sec

d) The object speed up from t=0 to t=2.00 sec

Q9:- an amount of water at 70 degrees transfered to a pot of aluminum in isolated thermal condition at 20 degrees which of these statement is true when the system reach the thermal equilibrium:-

a) The heat which aluminum gains is less than the heat which water loss

b) The heat which the aluminum gains is greater than the heat which water loss

c) The change of heat of water is less than the change of heat of aluminum

d) water gains heat from aluminum pot to reach the equilibrium

e) The change of heat of water equal to the change of heat of aluminum pot.

Q 10 :- The most common unit of the acceleration is :-

a) Kg / m

b) N / m

c) Kg / N

d) m / s^2

..... The End of the exam .....

The answer table :-

Question	Answer
1	d
2	d
3	c
4	b
5	b
6	c
7	d
8	c
9	c
10	d

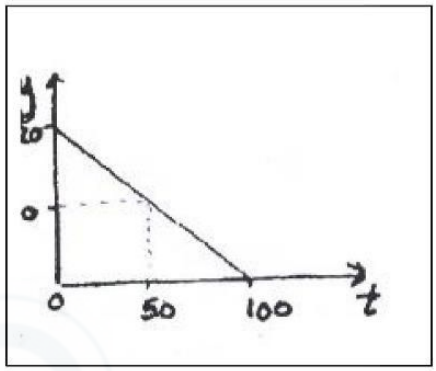
بسم الله الرحمن الرحيم

General Lab Physics-I

Date: 2005 **Med Exam**

Collection and Analysis of Data:

1- For the figure shown, (y) as a function of (t) is given by:



b) 20 – 0.2t **a) 5t + 20**

d) 100 – t **c) 20 – 5t**

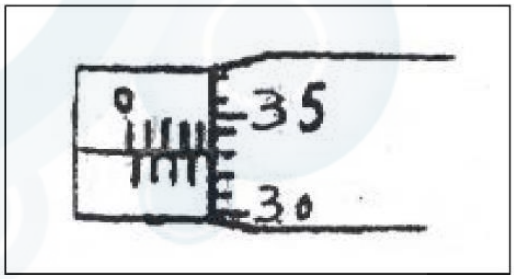
2- Given that (Z = k xn) where k and n are constants. If you plot (log Z) versus (log x) to get a straight line, then the y-intercept is:

b) k **a) log n**

d) log k **c) n**

Measurements and Uncertainties:

3- The diameter of a sphere was measured by the micrometer shown in the figure, the reading (in mm) is:



b) 5.33 **a) 4.33**

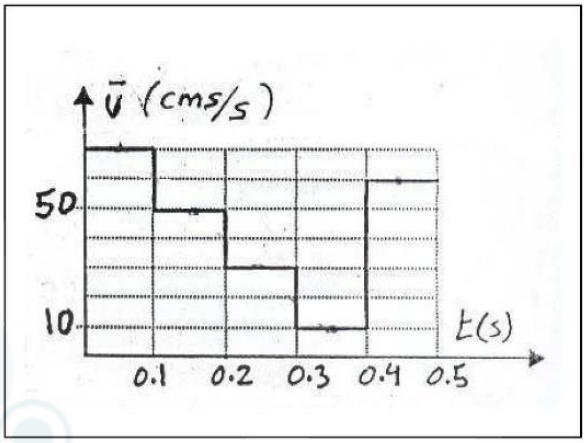
d) 4.48 **c) 4.44**

4- Five measurements of the volume of object are (3.15, 3.2, 3.16, 3.18, 3.15) the mean value of the volume (V) is:

d) 3.15 **c) 3.17** **b) 3** **a) 3.16**

Kinematics of Rectilinear Motion:

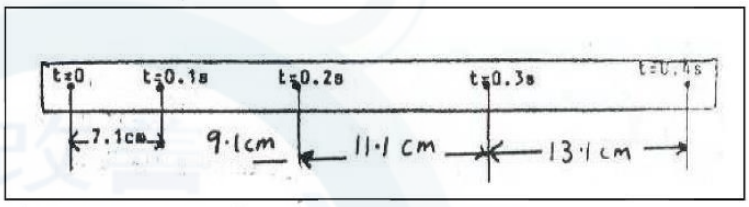
5- In the experiment of one dimensional rectilinear motion, the figure shows a histogram plot of $\bar{V}$ versus t. then the instantaneous velocity at t = 0.3 s is:



b) 30 cms/s **a) 10 cms/s**

d) 35 cms/s **c) 20 cms/s**

6- The ticker tape shown below was recorded for a certain uniformly accelerated motion. the average acceleration in (cm/s^2) Is



b) 200 **a) 293**

d) 132 **c) 260**

Force and motion :

7- Find the mass of the cart from the graph of force vs acceleration for a constant mass system of mass = mass of the cart +100g

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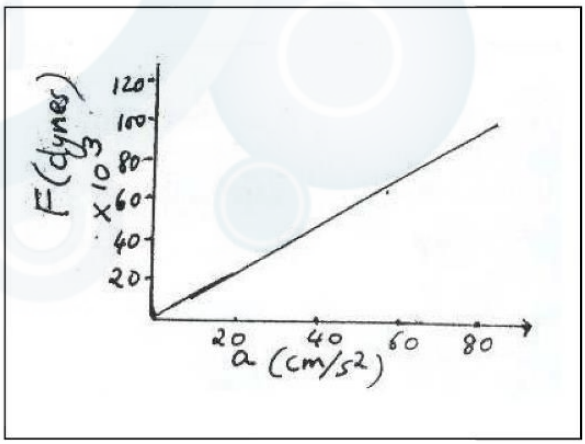


❁ Falling Sphere Viscometer:

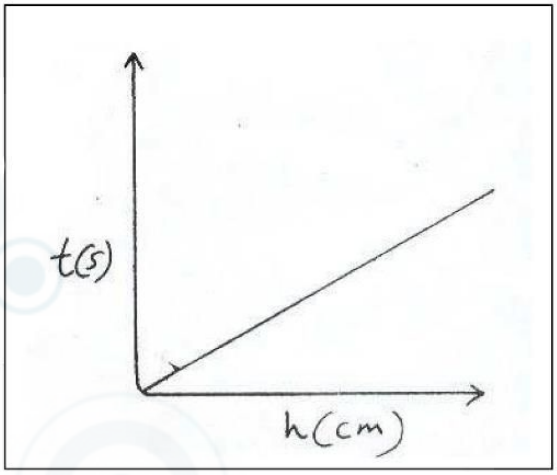
8- In the graph shown (h) is the distance between the two rubber bands, (t) is the time of fall for this distance, the slope represents:

a) the terminal velocity

b) the coefficient of viscosity

c) the reciprocal of terminal velocity

d) the acceleration of the steel sphere.



9- The terminal velocity is defined to be the velocity:

a) when the ball moves with constant acceleration

b) when the ball moves with zero acceleration

c) when the ball moves with increasing acceleration

d) when the ball moves with decreasing acceleration

❁ Specific Heat:

10- what is the main source of error in this experiment? Due to this error will the value of specific heat obtained be greater or smaller than the expected value?

Answer key

1	2	3	4	5
b	d	a	c	c
6	7	8	9	10
b	1150	c	b	------

10- lost of heat in the surrounding / it will be smaller than the expected value

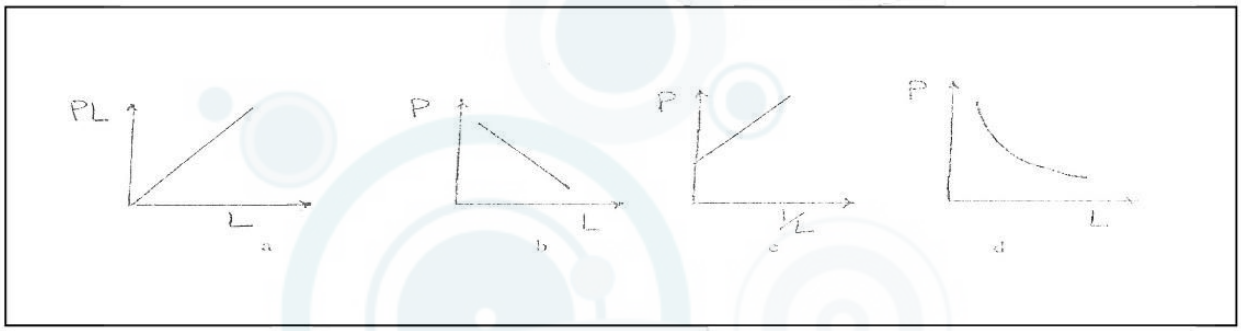
بسم الله الرحمن الرحيم

General Lab Physics-I

Date: 2005 **Med Exam**

BOYLE'S LAW:

1- Which of the following graphs represents Boyle's Law



2- In this experiment we investigate the relation between the pressure P and the length of the column of trapped gas L, rather than its volume. Explain briefly.

3- Two readings were taken for h (the difference between the two mercury levels) and L (the length of the enclosed gas) as shown in the table.

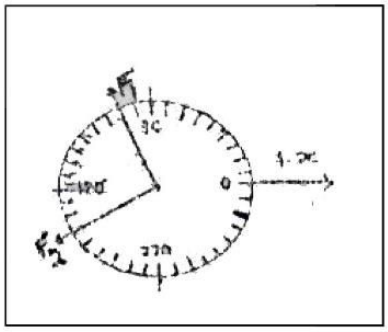
h (cm Hg)	**40.0**	**12.8**
L (cm)	**15.0**	**20.0**

The atmospheric pressure is ----------

VECTORS:

The figure shows a Force table with two forces F1 = F2 = 50 N

4- The magnitude of the third force F3 which balances the two forces F1 and F2 (in N) is:----------



5- The direction of the 'balance force' F3 measured with respect to the +x axes counter clock wise is: ----------

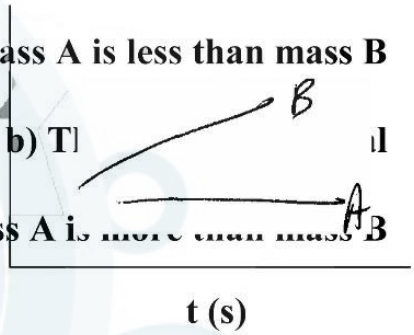
6- Mention two sources of error in this experiment.

ROTATIONAL MOTION:

7- If we plot calculated moment of inertia of a turn table versus the added mass to the turntable for a constant hanging mass, the y-intercept represents:--------

8- Moment of inertia is

9- The following graph shows angular velocity vs time for two different added masses A and B



a) The mass A is less than mass B

b) Th l

c) The mass A is more than mass B

10- In the experiment if the hanging mass is increased then

a) The moment of inertia of the turntable increases

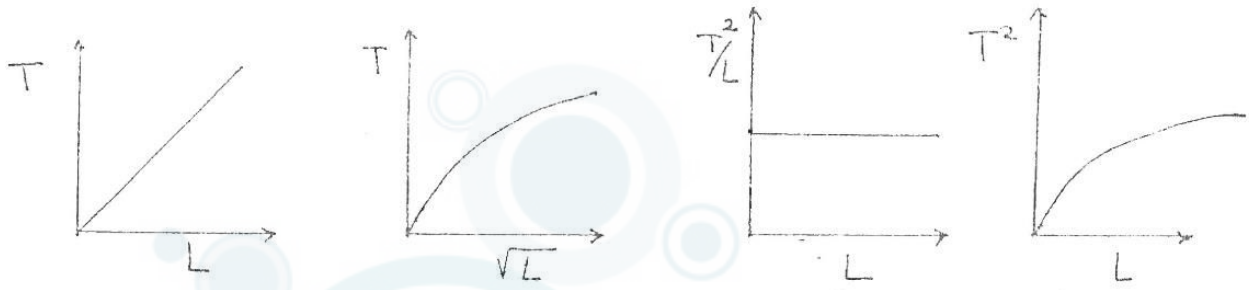
b) The moment of inertia of the turntable decreases

c) The angular acceleration of the turntable increases

d) The angular acceleration of the turntable decreases

❁ SIMPLE PENDULUM:

11- Which of the following graphs represents correctly the relationship between T (in sees.) and L (in cm)



12- If we plot log T vs log L where T is the period and L is the length of the pendulum, the slope will be:

a) $-\frac{1}{2}$ b) $\frac{1}{2}$ c) log $\frac{2\pi}{\sqrt{g}}$ d) log $\frac{4\pi^2}{g}$

13- The pendulum is set to oscillate through a small angel (about 5 degrees). Why?

14- How dose one increase the accuracy of finding T (time period) in this experiment?

بسم الله الرحمن الرحيم

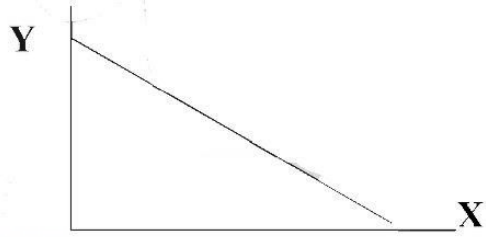
General Lab Physics-I

Consider g = 981 cm/s^2

❋Check by true (√) or false (X) in the questions from 1 to 6 only:

1- Collection and Data Analysis:

Refer to figure beside



- **The relation between y and x is linear [ ]**
- **The relation between y and x3 is linear [ ]**

2- Vector

- **The major error in this experiment is that due to frictional forces | |**
- **Using force table, one can directly measure the resultant | |**
- **The method of components to find a resultant is not as accurate as the force table | |**

3- Kinematics of Rectilinear Motion:

Note: Time interval between two successive points equal 0.1 s

- **In the first two intervals, the speed is almost equal | |**
- **The acceleration at 0.2 s is negative [|**
- **The largest acceleration occurs at 0.4 s | |**
- **The speed is slowest at 0.25 s. | |**

4- The Falling Sphere Viscometer:

- **The time needed for the ball to reach the bottom of the container increases when using a larger ball diameter. | |**
- **The viscosity coefficient increases by increasing the ball diameter | |**
- **The terminal velocity increases increasing the ball diameter | |**

5- Collision in Two Dimensions:

The value of the initial momentum of the projectile ball:

- **Can be obtained by adding the final momentum of the balls vectorially. [ ]**
- **Can be obtained by performing the experiment with only the projectile ball[ ]**

6- Force & Motion

A- in this experiment, two taps were obtained. The time interval between two successive points equals = 0.1 sec.

- **If the total hanging mass is the same for both tapes, then the added mass to the cart for**
  - **Tape B is larger than that for Tape A ( )**
  - **The acceleration is constant in Tape A and is negative ( )**
  - **If the cart is empty in both cases, then the total hanging weight for Tape B is larger than that for Tape A ( )**

Fill or Round the right answer in the following three questions:

7-Measurement & Uncertainties:

A- Five measurements of the volume of a disk (diameter, d and thickness, t) were made. Let the fractional errors in d and t be A (i.e. $A = \Delta d/d$) and B (i.e. $B = \Delta t/ t$) respectively. Then the fractional error in the volume is:

a- $(4A+B)^{1/2}$ **b-** $4A^2+B^2$

c- $(4A^2+B^2)^{1/2}$ **d-** (A^2+B^2)

B –

- **The error in the Micrometer reading for a single measurement is:-----**
- **The error in the Vernier caliper is:--------**

8- Gas Laws:

B) A change of atmospheric pressure during the experiment:

a) Would affect the results of the experiment.

b) Would have no effect on the results of experiment.

9- Specific Heat:

A) A 100 gm copper block with specific heat 0.1 cal/gram °C at a temperature (T= 95°C) calorimeter is immersed a colorimeter 100 grams of water initially at 20 °C. If the final temperature is 25 °C.T heat capacity of the calorimeter is -----

B) To minimize the heat loss to the surroundings, one should:

a) Insulate the calorimeter.

b) Increase the initial temperature of *the* co over block.

c) Decrease the mass of the water in the calorimeter

d) Increase the mass of the water in the calorimeter.

10- Collisions

A) The following data was obtained for a collision experiment using two balls of equal mass. P_{1f}= 40 cm.

P_{2f} is at an angle of 60^o with P_{1f}

The momentum P_{2f} is: ----------

The momentum P_{1f} is: ----------

B) As the offset (الإزاحة) between the path of the colliding (الصادمة) ball and the center of the stationary (ثابتة) ball is increased.

a) The angles change but their sum remains constant.

b) The angles of the final momentum with the initial direction decrease.

c) The angles remain constant.

d) The angles of the final momentum with the initial direction increase.

11- Simple Pendulum:

In this experiment , increasing the number of oscillations of the which the time interval is measured.

a) Causes the measured value of g to increase.

b) Causes the measured value of g to decrease.

c) Has no effect on the measured value of g.

12- Specific Heat Capacity of Metals:

- **The unit of Specific heat capacity is**
- **The major error contributing to this experiment is**

13- Rotational Motion:

Answer by (Increasing, decreasing OR constant) under the following conditions:

Condition	(torque)	I (moment of inertia)
M decreasing B_h constant		
M= constant m_h= increasing		

(Where M is the mass of the turntable, m_1 is the mass of the holder.)