DIRECTION:- THIS BOOKLET CONTAINS PHYSICS EXAMNATION FOR GRADE 12th.

THE EXMNATION CONTAINS 50 ITEMS. THERE IS ONLY ONE BEST ANSWER FOR EACH ITEM. CHOOSE THE BEST ANSWER FROM THE SUGGESTED OPTION AND WRITE THE LETTER OF YOUR CHOISE ON THE ANSWER SHEET. YOU ARE ALLOWED TO WORK ON THE EXAM FOR 2 HOURS.

1. Two containers has an ideal gas at the some temperature and pressure. Both containers hold the same type of gas but container B has twice the volume of container A. The average translational kinetic energy per molecule in container B is:

   A. The same as that for container A
   C. half that for container A
   B. Twice that for container A
   D. impossible to determine

2. The moral specific heat of a gas is measured at constant volume and found to be $\frac{11}{2} R$. The gas is most likely to be:-

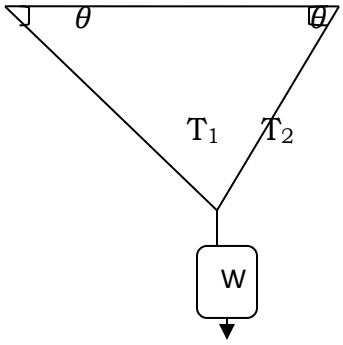
   A. Mono atomic B. Diatomic C polyatomic D. All

3. Which of the following is true for the entropy change of a system that under goes a reversible and adiabatic process?

   A. Change entropy of a system less than zero.
   B. Change in entropy of a system equal to zero.
   C. Change in entropy of a system greater than zero.
   D. For reversible and adiabatic process change in entropy of a system is always equal to one.

4. Traffic light weighting 125N are suspended from a cable as shows in figure below. Find the angle 'θ' that created (formed) by cable, if $T_1=T_2=125N$

   A. 180^0 B. 90^0 C. 30^0 D. 60^0



5. Which of the following statement about electric field lines associated with electric charge is false ?
   A. Electric field lines can be either straight or curve.
   B. Electric field lines can never intersect with one another.
   C. Electric field lines begin on positive and end on negative charge.
   D. Electric field lines can from closed loops.
6. Given vector $\vec{A}$=4i-6j ,$\vec{B}$ =-8i+3j and $\vec{C}$=2i-3j then what is the value of a and b respectively if a $\vec{A}$+b$\vec{B}$+$\vec{C}$=o
   A. o,$\frac{-1}{2}$ B. $\frac{-1}{2}$,0 C. -2,3 D. -3,2
7. A ball that is thrown vertically up ward on the moon return to its starting point in 8 sec. The acceleration due to gravity there is 1.6m/s^2 down ward. What is the ball's original speed?
   A. 5.12 m/s B. 9.6 m/s C. 12.8 m/s D. 6.4 m/s
8. In certain region of space the electric field is zero. From this we can conclude that the electric potential in this region is
   A. Negative B. Positive C. Constant D. Zero

9. A capacitor store charge Q at a potential differentΔV . If the voltage applied by a battery to the capacitor is double to $2\Delta V$.
   A. The capacitance remains the same and charge doubles.
   B. The capacitance and the charge both double.

C. The capacitance and the charge both fall to half their initial values.

D. The capacitance falls to half its initial value and the charge remains the same.

10. A constant force changes the velocity of 2gm particle from $U = (5i + 4j)m/s$ to $v = (-4i + 4j)m/s$ with in 0.4 sec. What is the value of force.

A. $(-0.45N)i$ B. $(-0.045N)i$ C. $(-4.5N)i$ D. $(-0.0045N)i$

11. The intensity of sound from a point source at a distance of 80m is $2\text{x}10^{-6}\text{w/m}^2$. What is the intensity from the same source at a distance of 160m?

A. $4\text{x}10^{-16}\, w/m^2$ B. $8\text{x}10^{-16}\, w/m^2$ C. $3\text{x}10^{-7}\, w/m^2$ D. $5\text{x}10^{-7}\, w/m^2$

12. A pipe open at both ends resonates at a fundamental frequency f_{open} . When one end is covered and the pipe is a again made to resonate the fundamental frequency is f_{closed}, which of the following comparisons describes the relationship between these two resonant frequencies ?

A. $f_{open} = 2\, f_{closed}$

B. $f_{open} = f_{closed}$

C. $f_{open} = \frac{1}{2} f_{closed}$

D. $f_{open} = \frac{3}{4} f_{closed}$

13. From the following engine cycles one classified under external combustion

A. otto cycle.

B. Carnot cycle.

C. Bray ton cycle.

D. Diesel cycle.

14. In using kirch hoff's rules, you generally assign a separate unknown current to

A. Each branch in the circuit.

B. Each resistor in the circuit.

C. Each loop in the circuit .

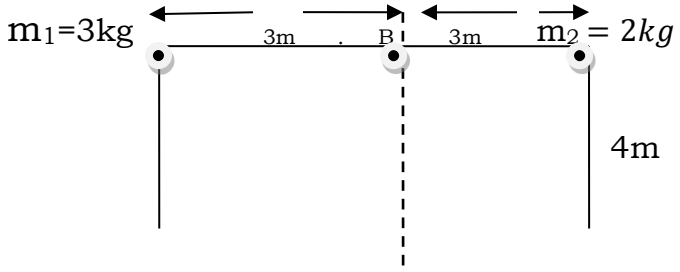
D. Each battery in the circuit.

15. Find the moment of inertia of the four masses as shows in figure below relative to an axis perpendicular to the page and extending through point B

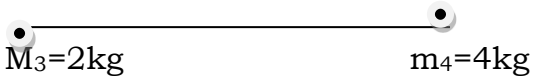
A. 141kgm^2

B. 45 kgm^2

C. 195 kg m^2



D. 95 kgm^2



16. The capacitor in Rc circuit begins to discharge. During the discharge ,in the region of space between the plates of the capacitor there is:-
    A. An electric field but no magnetic field .
    B. No field of any type.
    C. A magnetic field but no electric field.
    D. Both electric field and magnetic field.
17. A pump lifts water from a lake to a large tank of 60m above the lake. How much work against gravity does the pump do as it transfer $4m^3$ of water to the tank(one cubic meter of water has a mass of 1000kg)
    A. 6MJ B. 4MJ C. 1.2MJ D. 2.4 MJ
18. Which of the following is **Not** true about a body exist at equilibrium position ?
    A. Its net force is always zero.
    B. Its acceleration is always zero.
    C. Its change in momentum is always zero
    D. Its velocity is always zero.
19. In an Ac general , a coil with N turn of wire a spins in a magnetic field .Of the following choice, which will not cause an increase in the emf generated in the coil?
    A. Spinning the coil faster.
    B. Replacing the coil wire with one of the lower resistance.
    C. Increasing the magnetic field.
    D. Increasing the member of turns of wire on the coil.
20. On a velocity time graph straight line slopping upward to the right corresponding to motion of a is:
    A. Decreasing velocity C. Increasing Velocity
    B. Constant velocity D. Zero velocity
21. Three resistors, of 40Ω, 60Ω and 120 Ω are connected in parallel and this parallel group is connected in series with 15 Ω in series with 25 Ω. The whole

system is then connected to a 120V source. What is the value of current in the 25 Ω resister?

A. 2A B. 0.67A C. 4A D. 3A

22. The minimum energy required to release the electrons from the surface of metal is

A. Power function C. Photo energy

B. Kinetic energy D. Work function

23. From the following nuclear radiation which one is observed by surface layer of dead skin cells outside a body ?

A. Beta ray B. Alpha ray C. Gamma ray D. All

24. Which of the following statement might be true for resistor connected to a sinusoidal AC, source?

A. Both average power and average current are zero.

B. Average power is equal to zero and average current greater than zero.

C. Average power is greater than zero and average current is equal to zero.

D. Both average power and average current are greater than zero.

25. A column of water 80cm high support a 20cm column of an unknown fluid as shown in figure below. What is the density of the unknown fluid?

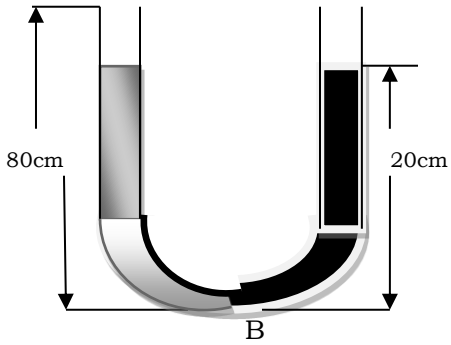
ρ_w=1000kg/m^3

A. 250kg/m^3

B. 4000kg/m^3

C. 500kg/m^3

D. 400kg/m^3



26. Which one of the following is not the behavior of an ideal fluid?

A. The fluid is non-viscous.

B. The fluid is incompressible.

C. The fluid motion is changed with time.

D. The fluid moves without turbulence.

27. A screen is placed 30cm from a single slit, which is illuminated with light of wavelength 240nm. If the distance between the first and third-order minima in the pattern is 6mm,what is the width of the slit?

A. $1.2x10^{-5}$m B. $4.8x10^{-11}$m C. $0.83x10^{9}$m D. $2.4x10^{-7}$m

28. A charged particle move with velocity $\vec{V}$ in magnetic field $\vec{B}$. The magnetic force on the particle is maximum when $\vec{V}$ *is*

A. Ant parallel to $\vec{B}$

B. Parallel to $\vec{B}$

C. perpendicular to $\vec{B}$

D. Zero.

29. Along conductor carries a current of 15A. What is the magnitude of the magnetic field at a perpendicular distance of 10cm from the conductor? ($\mu 0 = 4\pi x10^{-7} Tm/A$)

A. $2x10^{-5}$T B. $4x10^{-5}$T C. $1x10^{-5}$T D. $3x10^{-5}$T

30. A student of grade 12 is standing near the merge of a cliff holding physics text book firmly with his hands suddenly getting slide to the cliff on a friction less horizontal surface. If he understand Newton's law what should he do to save himself from falling into the cliff?

A. He should throw the text book in the forward direction with the appropriate amount.

B. He should jump up wards and leave the surface of the earth

C. He should press down wards on the earth to produce friction.

D. He should put text book on the earth and sit on them.

31. How much work must be done on a 4kg mass to change it velocity from $(3i+6j)$m/s to $(4i+7j)m/s$?

A. 40J B. 45J C. 65J D. 20J

32. The resistance of a coil of Aluminum wire is 4Ω at $0c^0$. What is resistance at 60^0c? (take $\propto_{Al} = 3.9x10^{-3}/c^0$)

A. 4Ω B. 4.936Ω C. 3.496Ω D. 6.394Ω

33. During what time the resultant of the two vectors can be determined its magnitude graphically by using parallelogram methods?

A. When they acts perpendicularly. C. when they acts Anti parallelly.

B. When they acts at any angle. D. when they act in the same direction.

34. An air craft decelerate at 0.25m/s^2. After 4minutes its velocity is dropped to 40m/s. what is the total displacement covered by air craft?

A. 2400m B. 6000m C. 4200m D. 12000m

35. A 12kg particle at the end of a spring moves according to the equation y= 200sin63tcm,where t is in second, what is the value of spring constant?

A. 11.84N/m B. 22.64N/m C. 47.37 N/m D63 N/m

36. Which one of the following statement is false ?

A. Wave fronts of point source of light are concentric spheres with the center at the source.

B. Light rays and wave front intersect at right angles.

C. Light rays and wave front are parallel.

D. Rays are the radii of the spherical wave front.

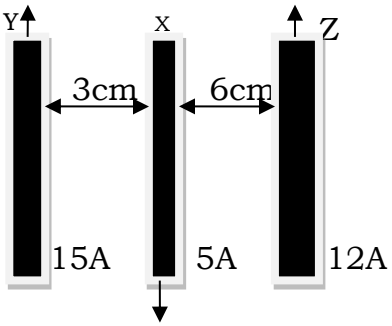
37. Let as consider the three long, straight, parallel wire as shown in figure below. What is the magnitude of the force experienced by 50cm length of wire 'x' ?

A. 3.6N

B. 4.8N

C. 7.2N

D. 12N



38. The wheel of a cycle rotates with a constant angular acceleration of 2 rad/s^2. If it attains an angular velocity of 80 rad/s in 30 sec, what was its angular displacement

A. 150 rad B. 750 rad C. 500rad D. 1500rad

39. Which one of the following statement is correct about inelastic collision

A. Linear momentum before collision is less than momentum after collision.

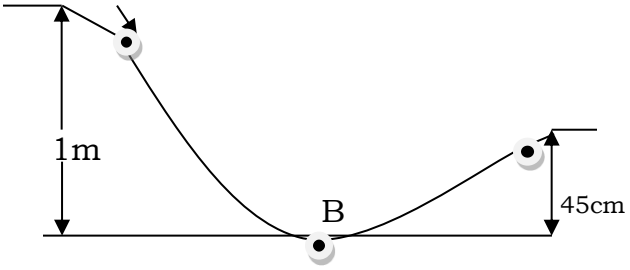
B. Kinetic energy before collision is less than kinetic energy after collision.

C. Linear momentum before collision greater than momentum after collision

D. Kinetic energy before collision is equal to kinetic energy after collision

40. A girl slide without friction an a wire as shows in figure below. If the girl has a speed of 400cm/s what will be her speed at point B?

A. 6 m/s
B. 16 m/s
C. 36 m/s
D. 20 m/s

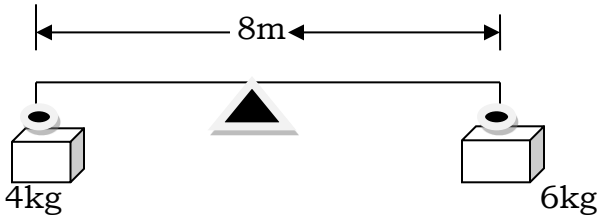


41. The impedance of a series RLC circuit at resonance is:

A. Zero
B. larger than resistors
C. Equal to Resistor
D. Less than Resistor

42. A 4kg and 6kg object connected by a horizontal weightless rod of length 8m. The system is pivoted at its center of mass as shows in figure below. What is the distance of the center of mass of the system from the 4kg object.

A. 1.8m
B. 4.8m
C. 4m
D. 2.4m



43. A stell ball of radius 4mm is being pulled with speed of 40m/s through water. If the flow around the steel ball is laminar, what is the drag force on the ball? ($\eta = 8.01x10^{-4}Ns/m^2$

A. $2.4x10^{-3}N$ B. $6.03x10^{-3}N$ C. $1.6x10^{-3}N$ D. $4.8x10^{-3}N$

44. Which of the following statement must be correct if the net flux through a Gaussian surface is zero?

A. The electric field is zero everywhere on the surface.
B. There are no charges inside the surface.
C. The number of electric field lines entering the surface less than the number leaving the surface.

D. The net charge inside the surface is zero.

45. If an object has kinetic energy, then it must also have

A. force acting on it
B. Acceleration
C. Impulse
D. momentum

46. Which of the following statement is in correct?

A. Fission reactions, which liberate energy, occur only with heavy nuclei.
B. Fusion reactions, which liberate energy ,occur only with light nuclei.
C. If a body of mass m is completely changed to energy, the energy $E = mc^2$ Where C is the speed of light
D. When a nucleus under goes an alpha decay, its atomic mass decrease by four

47. What is the phase different between the sinusoidal Oscillations of electric and magnetic field?

A. 45^0 B. 90^0 C. 0^0 D. 180^0

48. When one object is rotating on circular path which physical quantities are always different from zero?

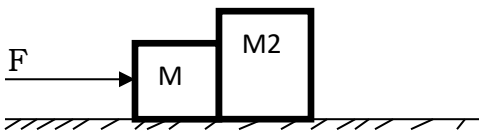
A. Radial Acceleration
B. Tangential velocity
C. Angular Acceleration
D. tangential Acceleration

49. A bout could travels at 120m/s relative to the water in a stream and the speed of the stream 40m/s. when the boat travels downstream, the speed of the boat relative to the shore are.

A. 80m/s B. 160m/s C. -80m/s D. -160m/s

50. Two block of masses m_1=4kg and m_2=5kg, are pushed by a force F as shown in figure below. The coefficient of friction between each block and the table is 0.5. If the block are to have an acceleration of 3m/s^2, How large a force does m_1 exert on m_2 ?

A. 32N
B. 72N
C. 27N
D. 40N



ENTRANCE PREPARATION

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