

PHY 9am

1 :- the purpose of the vacuum in a thermos flask is to reduce the loss or gain heat by

CORRECT ANSWER =

convection

2 :- the body which emits light itself is

CORRECT ANSWER =

a luminous body

3 :- calculate the frictional force acting on a 20kg mass on a horizontal floor if the coefficient between the surface is 0.5 ($g = 10 \text{ m s}^{-2}$)

CORRECT ANSWER =

100N

4 :- given the radius of the earth to be $6.4 \times 10^6 \text{ m}$. What velocity would a space agency consider to put a satellite in orbit?

CORRECT ANSWER =

11.300 ms^{-1}

5 :- an electron of charge $1.6 \times 10^{-19} \text{ C}$ moves at right angle to the magnetic field of intensity $2.0 \times 10^{-4} \text{ T}$. If the speed of the electron is $1.5 \times 10^3 \text{ ms}^{-1}$. calculate the force acting on the charge

CORRECT ANSWER =

$4.8 \times 10^{-5} \text{ N}$

6 :- the two processes that are essential in an air conditioning system are

CORRECT ANSWER =

evaporation and condensation

7 :- if atmospheric pressure is taken to be $1.3 \times 10^6 \text{ Nm}^{-2}$, the pressure at the swimming pool 200m deep is ($g = 10 \text{ ms}^{-2}$, density of water = 10^3 kgm^{-3})

CORRECT ANSWER =

$3.3 \times 10^6 \text{ Nm}^{-2}$

8 :- calculate the spring constant when a force of 10N applied on a spring produced an extension of 0.05m

CORRECT ANSWER =

200 Nm^{-1}

9 :- 0.1kg of steam at 100°C condenses to water at 100°C . If the specific latent heat vaporization of water is $2.2 \times 10^6 \text{ Jkg}^{-1}$, the amount of heat given up is

CORRECT ANSWER =

$2.2 \times 10^5 \text{ J}$

10 :- an electric iron rated 200W is used for 5hrs. Calculate the cost of using the iron if the cost electrical energy is N5.00 per kWh

CORRECT ANSWER =

N5.00

11 :- which of the following radiation has the highest penetrating power?

CORRECT ANSWER =

gamma rays

12 :- the power of a convex lens of focal length 20cm is

CORRECT ANSWER =

5D

13 :- a lift of mass 1000kg lifts up 10 person with total masses 650kg to a height of 40m in 50s. Calculate the power of the lift

CORRECT ANSWER =

132,000W

14 :- if the length of air column in a closed pipe at which the first resonance was observed is 0.425m, what is wavelength of the air column?

CORRECT ANSWER =

1.70m

15 :- what principle is the beam balance based on?

CORRECT ANSWER =

principle of moments are equilibrium

16 :- where will an object be placed in front of a concave mirror to have an image which is magnified, upright and virtual?

CORRECT ANSWER =

between the mirror

17 :- which of the following is an example of a secondary cell?

CORRECT ANSWER =

voltaic cell

18 :- when white light is dispersed, the component of the visible spectrum having the longest wavelength is

CORRECT ANSWER =

red

19 :- which of the following statements is correct when an alternating current circuit resonates?

CORRECT ANSWER =

$$XL = Xc$$

20 :- from the diagram above, a boat cruised due east and changes its direction 60° north east before it encountered an engine failure. Calculate the shortest distance of a rescue boat from the same point of departure.

CORRECT ANSWER =

67.66m

21 :- which of the statements above define the velocity ratio of a machine?

CORRECT ANSWER =

I, II and IV

22 :- a stone weighs N in air and 2 in water. Calculate the relative density of the stone.

CORRECT ANSWER =

$$w_1/(w_1-w_2)$$

23 :- a pin is placed at the bottom of water, if when viewed directly above the water it is displaced by 3cm, calculate the thickness of the water

CORRECT ANSWER =

4cm

24 :- the diagram above shows an electric circuit. If the key is closed the voltmeter V reads the

CORRECT ANSWER =

terminal voltage

25 :- the minimum distance between a sound and a reflector for an echo to be heard in a second is (velocity of sound in air = 340 m/s)

CORRECT ANSWER =

170m

26 :- the isotope which decays by emission to produce

CORRECT ANSWER =

${}_{111}^{48}Y$

27 :- the temperature $-273.15^\circ C$ is called the

CORRECT ANSWER =

absolute zero of temperature

28 :- from the diagram above, calculate the moment of the force of 40N about the point O

CORRECT ANSWER =

120Nm

29 :- the magnetic elements that determine the earth's magnetic field at a place are given below except

CORRECT ANSWER =

electric induction

30 :- from the diagram above, calculate the equivalent capacitor

CORRECT ANSWER =

2F

31 :- if a charge of 60 C experience a force of 12N, calculate the electric intensity

CORRECT ANSWER =

$2.0 \times 10^5 \text{ Ac}^{-1}$

32 :- the major carriers in a p-type semiconductor material are

CORRECT ANSWER =

holes

33 :- a certain box has a length of 90cm at 30 °C and 90.1cm at 530 °C. Calculate the coefficient of superficial expansion

CORRECT ANSWER =

$4.4 \times 10^{-6} \text{ K}^{-1}$

34 :- the absorption of ink by blotting paper involves

CORRECT ANSWER =

capillary action

35 :- which of the following has the largest heat capacity

CORRECT ANSWER =

10kJ of water

36 :- from the above diagram, a hunter threw a spear at 45° to kill an antelope. What is R?

CORRECT ANSWER =

maximum range

37 :- which of the following is NOT part of a.d.c generator?

CORRECT ANSWER =

slip rings

38 :- all of the following indicate thermometric properties except

CORRECT ANSWER =

change in mass

39 :- 60 waves pass through a point in a ripple tank in 30s. The frequency of the wave is

CORRECT ANSWER =

2Hz

40 :- find the mass of copper deposited on the cathode of copper voltameter if a current of 1.5A passes through it for 900s. (e.c.e of copper = $3.3 \times 10^{-2} \text{kgC}^{-1}$)

CORRECT ANSWER =

$4.5 \times 10^{-4} \text{kg}$