

Question 50

A 1000W, 220 V heating

- A. 5.0 A
- B. 2.5 A
- C. 3.0 A
- D. 4.0 A

Hfh

Question 49

A metal wire extends by 5 cm under a load of 60N. When the load is replaced by a steel block, the new extension is 7 cm. The weight of the steel block is

- A. 12 N
- B. 43 N
- C. 96 N
- D. 84 N

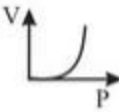

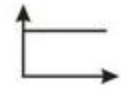
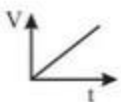
Question 48

Given that P and Q are two co-planar vectors in opposite directions, the resultant vector in the direction of P is

- A. $\vec{P} + \vec{Q}$
- B. $\vec{Q} + \vec{P}$
- C. $\vec{Q} \times \vec{P}$
- D. $\vec{P} - \vec{Q}$

Question 47

Which of the following graphs represent the current-voltage of a p-n junction in the forward biased mode?

- A. 
- B. 
- C. 
- D. 

Question 46

A piece of cork is of volume 2.8m^3 . What would be the volume of a piece of wood of the same mass as the cork?

[Density of wood = 840kgm^{-3} , Density of cork = 60kgm^{-3}]

- A. 0.30m^3
- B. 0.01m^3
- C. 0.20m^3
- D. 0.50m^3

Question 45

Which parts of a d.c generator convert an a.c in the armature to a d.c in the external circuit?

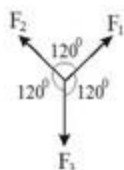
- A. Commutator and brushes.
- B. Slip rings and brushes.
- C. Armature and core.
- D. Filed poles.

Question 44

The pressure of air in a car tyre is $1.85 \times 10^5\text{ Pa}$ at 29°C . At what temperature would the pressure reduce to $1.81 \times 10^5\text{ Pa}$ at constant volume?

- A. 295.5°C
- B. 222.0°C
- C. 22.5°C
- D. 20.5°C

Question 43



The condition for the forces F_1 , F_2 and F_3 in the diagram above to be in equilibrium is

- A. $F_3 + F_2 - F_1 = 0$
- B. $F_3 = F_1 + F_2$
- C. $F_1 = F_2 + F_3$
- D. $F_1 + F_2 + F_3 = 0$

Question 42

Calculate the current flowing in a cell of emf 2.5V and an internal resistance of 0.5Ω if it is connected in series with two resistors of resistances 1.5Ω and 3.0Ω respectively.

- A. 0.75 A
- B. 0.55 A
- C. 0.50 A
- D. 0.25 A

Question 41

If the voltage applied across the plates of a parallel plate capacitor separated by a distance of 0.02m is 5V, the magnitude of the electric field intensity in the capacitor is

- A. 150 Vm^{-1}
- B. 200 Vm^{-1}
- C. 300 Vm^{-1}
- D. 250 Vm^{-1}

Question 40

Under what conditions do

- A. At low press
- B. At low press
- C. At low press
- D. At low press

Question 39

If the energy for the level $n=1$ in an atom is -13.6 eV , the excitation energy for levels $n = 1$ and $n = 4$ is

$$[h = 6.6 \times 10^{-34} \text{ Js}; f = 10]$$

- A. 2.40 eV
- B. 40.80 eV
- C. 12.75 eV
- D. 10.0 eV

Question 38

A dynamic equilibrium exists between water molecules and its vapour molecules in an en

- A. vapour is unsaturated
- B. vapour coexists with solid molecules
- C. vapour is saturated.
- D. molecules are moving with the same speed

Question 37



The electromotive force in the secondary winding is

- A. increasing
- B. reducing
- C. varying.
- D. stabilizing

Question 36

The correct expression for the potential at a point, distance r from a charge q , in an electric field is

- A. $\frac{q}{4\pi\epsilon_0 r}$
- B. $\frac{q^2}{4\pi\epsilon_0 r}$
- C. $\frac{q}{4\pi\epsilon_0 r^2}$
- D. $\frac{q^2}{4\pi\epsilon_0 r^2}$

Question 35

Cooking pots are usually made of metals because metals

- A. are good conductors of heat
- B. are poor radiators of heat
- C. have high specific heat capacity
- D. have high coefficient of expansion

Question 34

If a charge of $2\mu\text{C}$ is situated in a field of intensity 400NC^{-1} , the force on the charge is

- A. $4 \times 10^5\text{N}$
- B. $4 \times 10^6\text{N}$
- C. $8 \times 10^{-2}\text{N}$
- D. $8 \times 10^{-4}\text{N}$

Question 33

The physical quantity that has the same unit as pressure is

- A. coefficient of viscosity
- B. impulse
- C. work
- D. tensile stress.

Question 32

A pump lifts water into an overhead tank at a height of 12m at the rate of 5kg s^{-1} . The power of the pump is $[g = 10\text{ms}^{-2}]$

- A. 60 W
- B. 1200 W
- C. 720 W
- D. 600 W

Question 31

If a car moves such that the force due to the engine is greater than the force due to friction, it will

- A. experience an acceleration
- B. decelerate suddenly
- C. slow down gradually
- D. come to a stop.

Question 30

Calculate the force acting on an electron of charge $1.5 \times 10^{-19}\text{C}$ placed in an electric field of intensity 10^5Vm^{-1} .

- A. $1.5 \times 10^{-11}\text{N}$
- B. $1.5 \times 10^{-12}\text{N}$
- C. $1.5 \times 10^{-14}\text{N}$
- D. $1.5 \times 10^{-13}\text{N}$

Question 29

Two capacitors, $6\mu\text{F}$ and $12\mu\text{F}$ are connected in series. What additional capacitance must be connected in series with this combination to give a total capacitance of $2\mu\text{F}$?

- A. $12\mu\text{F}$
- B. $6\mu\text{F}$
- C. $4\mu\text{F}$
- D. $3\mu\text{F}$

Question 28

The charge particles in the nucleus of an atom are

- A. protons
- B. positrons.
- C. electrons
- D. neutrons

Question 27

When an x-ray collides elastically with a free electron, there is conservation of

- A. energy but not momentum
- B. both momentum and energy.
- C. neither momentum nor energy
- D. momentum but not energy

Question 25

The thermometer that can be used to measure the temperature between -50°C to -80°C is the

- A. resistance thermometer
- B. clinical thermometer
- C. mercury-in-glass thermometer.
- D. alcohol-in -glass thermometer

Question 26

The transverse wave with the longest wavelength is

- A. x-rays
- B. ultra-violet rays
- C. radio wave.
- D. infrared ray

Question 24

The gravitational potential at a point in a gravitational field is the work done in taking a unit mass from

- A. zero to infinity
- B. one point to another point
- C. a distance to a given point.
- D. infinity to the point

Question 23

The P-type semiconductor is produced when doped with a

- A. divalent atom
- B. pentavalent atom
- C. trivalent atom
- D. monovalent atom.

Question 22

A block and tackle arrangement is used to raise a load of 100N through a vertical distance of 10m. Calculate the work done by the effort if the work done against friction

- A. 100N
- B. 500N
- C. 600N
- D. 1500N

Question 21

When an athlete perspires after running, he loses heat through

- A. evaporation
- B. radiation.
- C. conduction
- D. convection

Question 20

Shortsightedness occurs if the

- A. focal length of the eye is at infinity
- B. eyeball is too long
- C. eyeball is too short.
- D. parallel rays are brought to a focus behind the retina

Question 19

According to the kinetic theory of gases, collision of the gas molecules with the walls of the container is responsible for the

- A. viscosity of the gas
- B. pressure of the gas
- C. temperature of the gas
- D. density of the gas.

Question 18

An electric heater of power 1000W is used to heat a piece of metal of mass 5kg. If in 300s the temperature rose by 20°C, the specific heat capacity of the object is

- A. 100 Jkg⁻¹ K⁻¹
- B. 3000 Jkg⁻¹ K⁻¹
- C. 300 Jkg⁻¹ K⁻¹
- D. 50Jkg⁻¹K⁻¹

Question 17

An electric heater of resistance 110Ω is connected to a 220V mains supply. The time it takes to dissipate 121kJ of energy is

- A. 275.0s
- B. 137.5s
- C. 27.5s
- D. 55.0s

Question 16

An astronomical telescope in normal use has an angular magnification of 4 and the lenses are at a distance of 25cm. Calculate the focal length of the eyepiece.

- A. 25 cm
- B. 15 cm
- C. 5 cm
- D. 10 cm

Question 15

A vector has x-component of -25.0 m and y-component of 40.0m . What is the magnitude of the vector?

- A. 47.2 m
- B. -65.0 m
- C. 15.0 m
- D. 65.0 m

Question 14

Polarization can be overcome in a Daniel cell by using a

- A. zinc rod amalgam as the cathode
- B. copper container as the anode.
- C. lead rod as the cathode
- D. copper sulphate solution

Question 13

The magnification of a real image formed by a converging lens is $\frac{1}{3}$ when the object distance is 60 cm. Find the focal length of the lens.

- A. 10 cm
- B. 20 cm
- C. 15 cm
- D. 12 cm

Question 12

If a current of 5A is passed through a 10Ω resistor, how much energy will be generated by the resistor in 2s?

- A. 350 J
- B. 150 J
- C. 200 J
- D. 500 J

Question 11

A stone is shot vertically at 30ms^{-1} . How far will it rise ignoring air resistance?

[$g=10\text{ms}^{-2}$]

- A. 45 m
- B. 40 m
- C. 30 m
- D. 20 m

Question 10

What is the period of vibration of a source of sound if it produces waves in air of wavelength 33m?

[speed of sound in air = 330ms^{-1}]

- A. 0.2s
- B. 0.5s
- C. 0.3s
- D. 0.1s

Question 9

Two bodies have masses in the ratio 3:2. If their accelerations are in the ratio of 3 : 1, find the ratio of the forces which cause the acceleration.

- A. 3:2
- B. 9:1
- C. 9:2
- D. 3:1

Question 8

At what distance should an object be placed from a diverging mirror of focal length 20cm for an image to be formed 15cm from the mirror?

- A. 12 cm
- B. 60 cm
- C. 50 cm
- D. 40 cm

Question 7

When an object is placed at the centre of curvature of a concave mirror, the image is formed at

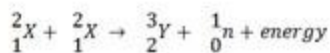
- A. the centre of curvature.
- B. the pole
- C. the focus of the mirror
- D. infinity

Question 6

An open pipe has a length of 25cm. The frequency of the fourth overtone of the stationary wave set-up in the air in the pipe with velocity of 25ms^{-1} is

- A. 200 Hz
- B. 250 Hz
- C. 625 Hz
- D. 300 Hz

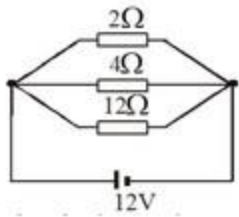
Question 5



What type of reaction is represented by the equation above?

- A. Ionization.
- B. Chain.
- C. Fission.
- D. Fusion.

Question 4



In the circuit above, three resistors 2Ω , 4Ω and 12Ω are connected in parallel and a 12V battery connected across the combination. The current flowing through the 12Ω resistor is

- A. 1.0 A
- B. 3.2 A
- C. 14.4 A
- D. 9.6 A

Question 3

The Thermos Flask consists of a double walled glass vessel. Between this double walled glass is

- A. air.
- B. vacuum
- C. water
- D. cotton wool

Question 2

The bond between silicon and germanium is

- A. covalent.
- B. electrovalent
- C. dative
- D. ionic

Question 1

A bucket full of water weighing 5N is to be drawn out of a well of depth 15m. How much work must be done to pull it out?

- A. 25N
- B. 10N
- C. 15N
- D. 75N