Question Review

All

Total flux produced by a source of 1 cd is

- $\frac{1}{4\pi}$
- 8π
- 4π ✓
- $\frac{1}{8\pi}$

EXPLANATIONS

Report

55 % were correct!

Luminous intensity is the luminous flux per unit solid angle.

$$L = \frac{\phi}{\Omega} \Rightarrow 1 = \frac{\phi}{4\pi} \Rightarrow \phi = 4\pi.$$

When viewed in white light soap bubbles show colours because of

Not Attempted

- interference ✓
- diffraction
- scattering
- dispersion

Equipotential surfaces associated with an electric field which is increasing in magnitude along the x-direction are

Not Attempted

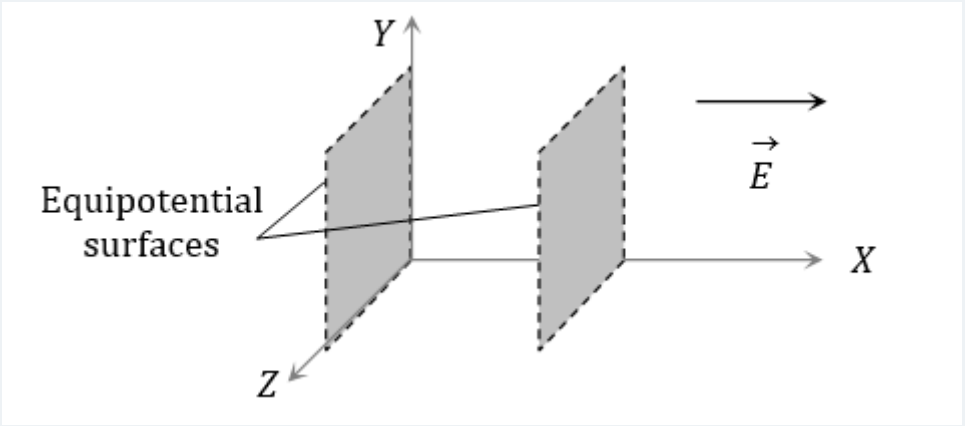
- Planes parallel to yz-plane ✓

- ○ Planes parallel to *xy*-plane
- ○ Planes parallel to *xz*-plane
- ○ Coaxial cylinders of increasing radii around the *x*-axis

EXPLANATIONS

Report

60 % were correct!



From the above figure, equipotential surfaces are parallel to yz-plane.

In a charged capacitor the energy resides

Not Attempted

- ● on the field between the plates
- ○ around the edge of capacitor plates
- ○ on the positive plate
- ○ on both positive and negative plates

A kilowatt hour is a unit of

Not Attempted

- ● energy
- ○ power
- ○ electric change
- ○ electric current

Self-induction of solenoid is

Not Attempted

- directly proportional to current following through the coil
- directly proportional to its length
- directly proportional to area of cross-section
- inversely proportional to the area of cross-section

In a radioactive reaction ${}_{92}X^{232} \rightarrow {}_{82}Y^{204}$, the number of $\alpha-$ particles emitted is

Not Attempted

- 4
- 5
- 6
- 7

EXPLANATIONS Report

40 % were correct!

$$n_\alpha = \frac{A - A'}{4} = \frac{232 - 204}{4} = 7$$

In a semi-conductor the forbidden energy gap between the valency band and the conduction band is of the order of

Not Attempted

- 1eV
- 5 eV
- 1 keV
- 1 MeV

The cathode of a photoelectric cell is changed such that the work function changes from W_1 to W_2 ($W_2 > W_1$). If the current before and after change are I_1 and I_2, all other conditions remaining unchanged, then (assuming $hf > W_2$)

Not Attempted

- $I_1 = I_2$

- $I_1 < I_2$
- $I_1 > I_2$
- $I_1 < I_2 < 2I_1$

EXPLANATIONS Report

34 % were correct!

The work function has no effect on current so long as $h\nu > W_0$. The photoelectric current is proportional to the intensity of light. Since there is no change in the intensity of light, therefore $I_1 = I_2$.

The specific rate constant of a first order reaction depends on the

Not Attempted

- concentration of the reactant
- concentration of the product
- time
- temperature

An apparatus used for the measurement of quantity of electricity is known as a

Not Attempted

- Calorimeter
- Cathetometer
- Coulometer
- Colorimeter

EXPLANATIONS Report

62 % were correct!

Cu voltameter or Cu or Ag coulometer are used to detect the amount deposited on an electrode during passage of know charge through solution.

The total no. of electrons, neutrons and protons present in the oxide ion is

Not Attempted

- 8, 8, 8

- ○ 10, 10, 8
- ◉ 10, 8, 8
- ○ 8, 10, 10

EXPLANATIONS Report

61 % were correct!

Oxide ion is formed when neutral oxygen atom gains 2 electrons.

So number of electrons is 2 more than noumber of protons and neutrons.

Ionic compound having high lattice energy becomes.

Not Attempted

- ○ highly soluble in water
- ◉ almost insoluble in water
- ○ both
- ○ none

EXPLANATIONS Report

65 % were correct!

Ionic compounds get surrounded by water molecules and to dissociate they must overcome the lattice energy, thus higher lattice energy means less solubility.

Faraday's laws of electrolysis are related to the

Not Attempted

- ○ Atomic number of cation
- ○ Atomic number of anion
- ◉ Equivalent weight of the electrolyte
- ○ Speed of the cation

EXPLANATIONS Report

94 % were correct!

$w \propto E$

if i and t are constant.

Which of following turns lead acetate paper black

Not Attempted

- SO_2
- SO_3
- H_2SO_4
- H_2S ✓

Which one is the anhydride of $HClO_4$?

Not Attempted

- Cl_2O
- ClO_2
- Cl_2O_6
- Cl_2O_7 ✓

EXPLANATIONS Report

38 % were correct!

$2HClO_4 \rightarrow H_2O + Cl_2O_7$

Nitrous acid is a/an

Not Attempted

- Oxidizing agent
- reducing agent
- both oxidizing and reducing agent ✓
- none of above

EXPLANATIONS Report

74 % were correct!

The oxidation state of nitrogen in HNO_2 is +3 which lies in between the possible oxidation states of nitrogen i.e. (+5) and (-3). So, it acts as both reductant and oxidant.

HNO_2 as an oxidant:

$H_2S + 2HNO_2 \longrightarrow 2H_2O + 2NO + S$

HNO_2 as an reductant:

$$\mathrm{HNO_2 + I_2 + H_2O \longrightarrow 2HI + HNO_3}$$

Which of the following is a hydrocarbon ?

Not Attempted

- Urea
- Benzene
- Ammonium cyanate
- Phenol

EXPLANATIONS Report

62 % were correct!

Benzene is made up of hydrogen and carbon only.

Acetylene can be converted into methyl vinyl ether

Not Attempted

- methanal
- vinyl alcohol
- methyl alcohol
- dimethyl ether

Attacking group in halogenation of benzene is

Not Attempted

- Cl^+
- Cl^-
- Cl
- Cl_2