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Subject – Science I
Std : 10th SSC

Model Answer Set - VII

Q.1 A) Solve the following questions.

1) The current is flowing in the upward direction
2) What happens when potassium chromate is added to a solution of barium sulphate, a yellow coloured is precipitate of barium chromate is formed.
3) The retina in our eyes consists of many light sensitive cells.
4) According to Mendeleev's periodic table eka – silicon was later discovered and named as germanium(Ge)
Right
5) For going beyond the earth's gravitational area each space craft needs a velocity which is known as escape velocity.

B) Choose the correct alternative and rewrite the statement.

1) The main constituents of cooking gas are Propane and butane .
2) The moisture in the atmosphere is called humidity.
3) When an iron nail is kept dipped in freshly prepared ferrous sulphate solution taken in a test – tube, the blue colour of the solution changed to green.
4) The hot liquidcoolquickly, it should be placed in the open the winter
5) When aqueous NaOH is added to copper sulphate solution. The products formed are copper hydroxide and sodium sulphate.

Q.2 Answer the following questions.(Any Five)

1) Solution :
Given Power (P) = 100W, Time (t) = 2 h /day,
Number of days (n) = 366 days (leap year)
To find Number of consumed in any leap year
Formula Energy consumed = P × t × n
Calculation Form formula,
Energy consumed = 100 × 2 × 366
= 73200W h
$= \frac{73200}{1000}$ kWh
As,1kWh = 1unit
73.2 kWh is equal to 73.2 units
Ans : The number of units consumed in any leap year is 73.2

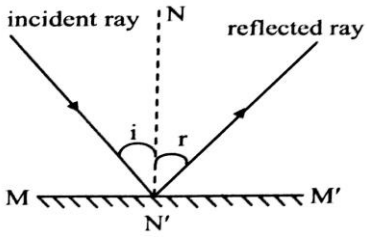
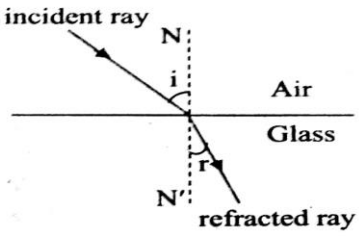
2) Preparation of ethane from ethanol.

3) i) The vehicles with the help of which the satellites are placed in their specific orbits are called satellite launch vehicles.
ii) The working of the satellite launch vehicle is based on the Newton's third law of motion.
iii)The launch vehicle uses specific type of fuel which whenburned, produces a gas. The gas expands due to its hightemperature and is expelled forcefully through the nozzles at rear side of the launch vehicle. As a result, a thrust acts on the vehicle, which drives the vehicle high into the space.

4) (i) Galvanization (ii) Anodization (iii) Electroplating (iv) Alloying

5)

	Reflection of light	**Refraction of light**
i)	When light is travelling in a medium and falls on a surface, it changes its path and returns in the same medium. This phenomenon is called reflection of light.	The phenomenon of change in the path of light as it travels obliquely from one transparent medium to another transparent medium is called refraction of light
	Speed of light does not change after reflection.	Speed of light changes due to refraction.
	Reflection takes place from a polished	Refraction takes place through a transparent

	surface.Example: Mirror	medium. Example: Glass
	Diagrammatic representation : **Diagrammatic representation:**  	**Diagrammatic representation :** **Diagrammatic representation:** 

6) i)The whole number atomic mass of the elements cobalt (Co) and nickel (Ni) is the same. Therefore, it was difficult to interpret the position of these elements in Mendeleev's periodic table

ii) Isotopes have same chemical properties but different atomic masses. Therefore, it would be difficult to place them in Mendeleev's periodic table.

iii) In Mendeleev's periodic table, elements were arranged in an increasing order of atomic masses. But the increase in atomic mass is not uniform. Hence, it was not possible to predict the number of elements that could be discovered between two heavy elements.

iv) Hydrogen resembles alkali metals (group I) as well as halogen(group VII). Therefore, the correct position of hydrogen atom could not be decided.

7) i) Though steam and boiling water same temperature, the heat contained in steam is more than that in boiling water.

ii) Steam is formed when boiling water absorbs specific latent heat of vaporistaion i.e, 540cal/g

iii) As a result, when steam comes in contact with the skin of a person, it gives off additional 540 calories per gram causing severe (more serious) burns.

Hence, burns caused from steam are more serious than those caused from boiling water at same temperature.

Q.3 Answer the following questions.(Any Five)

1) a) Method to concentrate ore : Magnetic separation

b)Method to concentrate ore : Leaching

c)Principle : It is based on magnetic properties of ore particles

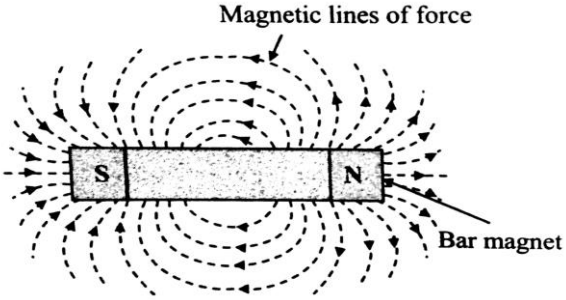
d)Principle : It is based on hydrophilic and hydrophobic properties of ore particles

e)Example of ore : Copper pyrite (or zinc blende)

f)Example of ore: Bauxite

2) i) The parallel magnetic lines of force inside the solenoid indicate uniform magnetic field.

ii) Magnetic field of bar magnet:



iii) If direction of current is reversed, direction of magnetic field produced will get reversed. As a result, the end of solenoid acting as south pole will now act as north pole and vice – versa.

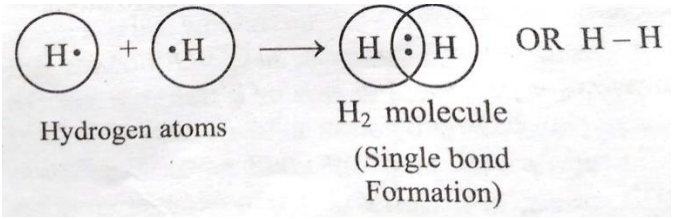
3) i) The chemical bond formed by sharing of two valence electrons between two atoms is called covalent bond.

ii) One pair of shared electrons constitutes one covalent bond or a single bond. Similarly, two and three pairs of shared electrons constitute double and triple bonds respectively.

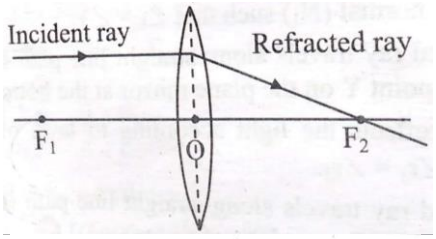
E.g. Formation of H_2 molecule :

Hydrdogen has 1 electronin its valence shell. It requires one more electron to complete its duplet to achieve the stable electronic configuration of helium. Therefore, two hydrogen atoms share their electrons with each other to form H_2 molecule. A single covalent bond is formed between two hydrogen

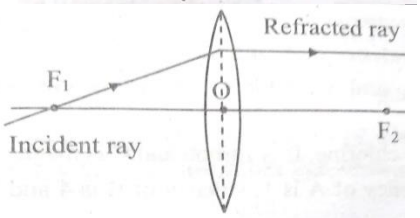
atoms by sharing of two electrons.



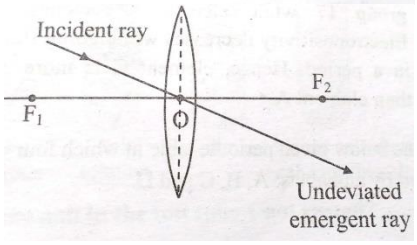
4) i)When the incident ray is parallel to the principal axis, the refracted ray passes through the principal focus.



ii)When the incident ray passes through the principal focus, the refracted ray is parallel to the principal axis.



iii) When the incident ray passes through the optical centre of the lens, it passes without changing its direction.



5) i) The element in which both the shells are completely filled with electrons is noon. It has electronic configuration.
ii) The element which has same number of electronic in the first and second shell is beryllium.
The first shell has 2 electrons, so the second shell should also have 2 electrons. So, the electronic configuration should be (2,2). Hence, the element is heryllium with electronic configuration (2,2)
iii) Electropositivity decreases from left to right within a period. Hence, lithium is the most electropositive element in period2.

6) According to principle of heat exchange,
Heat required to obtain water at 50^0C (Q) = Heat required to convert ice at 0^0C into water at 0^0C (Q_1) + Heat required to raise temperature of water from 0^0C to 50^0C (Q_2)

But $Q_1 = m_{ice} \times L_{melt}$

$= 150 \times 80$

$= 12000$ cal

And $Q_2 = m_{water} \times c_{water} \times \Delta T$

$= 150 \times 1 \times (50 - 0)$

$= 7500$ cal

$\therefore$ $Q = 12000 + 7500 = 19500$ cal

This heat energy is to be supplied by steam say mass 'm'

$\therefore Q = m \times c_{water} \times \Delta T + mL_{vap}$

$\therefore$ $19500 = m [1 \times (100 - 50) + 540]$

$\therefore$ $m = \frac{19500}{590} = 33$ g

Ans : 33g of steam of 100 ^{0}C should be mixed.

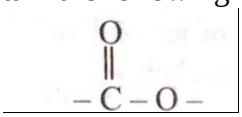
7)

	Conversion	Reaction
i	Formation of Fe^{2+} from Fe^{3+}	$Fe^{3+} + e^- \rightarrow Fe^{2+}$
ii	Formation of Zn from Zn^{2+}	$Zn^{2+} + 2e^- \rightarrow Zn$
iii	Formation of Fe^{2+} from Fe	$Fe \rightarrow Fe^{2+} + 2e^-$

Q.4 Answer the following questions.(Any One)

1) i) Gravitational force is a vector as it acts along direction.
ii) As value of G is constant throughout and does not from place to place, it is called as universal gravitational constant.
iii) By reducing mass of any of the two objects to half of original mass or by increasing the distance by 472 times original distance, gravitational force 'between two objects be half of its original value.
iv) Gravitational force between two masses when placed at bottom of swimming pool without changing distance between them will be FG. This is because gravitational force between two masses docs not depend upon the nature of the medium between them.
v)CGS unit of G is dyne cm g .

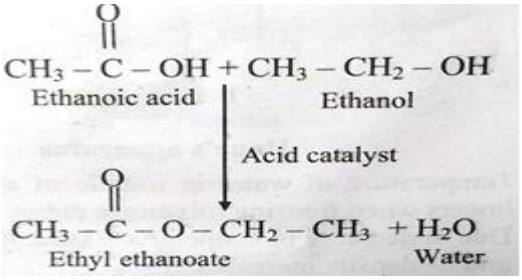
2) i) Easter are organic compounds which contain the following functional group :



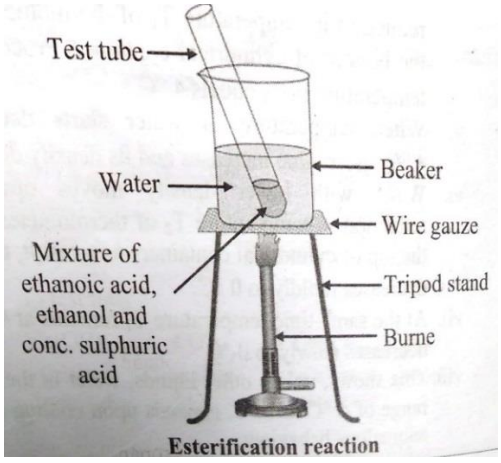
ii)Preparation of esters:

Easters are produced when carboxylic acids are heated with alcohols in the presence of an acid catalyst.

E.g.When ethaonic acid is heated with ethanol in the presence of concentrated sulphuric acid, ethyl ethanoate and water are formed.



iii) **Diagram**



*This question paper is for practice purpose only.