Rao IIT Academy
Symbol of Excellence and Perfection

JEE | MEDICAL-UG | BOARDS | KVPY | NTSE | OLYMPIADS

X - CBSE BOARD - 2018

Date: 16.03.2018   **SCIENCE - QP + SOLUTIONS**

SECTION - A

1.   Write the energy conversion that takes place in a hydropower plant.

Ans.   Potential energy of water stored in a dam is converted into kinetic energy of the falling water. The water falls on the turbine, so kinetic energy of the flowing water is converted into the kinetic energy of the armature of the generator connected to the turbine. Then kinetic energy is converted into the electrical energy known as hydro-electricity.

*Topic:Sources of energy__Subtopic:Power plant_ Level:Easy__Std. X__CBSE Board / Science*

2.   A Mendelian experiment consisted of breeding pea plants bearing violet .flowers with pea plants bearing white flowers. What will be the result in F_1 pregeny ?

Ans.   In mendelian experiment, breeding of pea plants bearing violet flowers with pea plant bearing white flower leds to production of all violet coloured flowers (F_1 progeny plants). The plants bearing violet coloured of the flower is dominant over write coloured flower in pea plant.
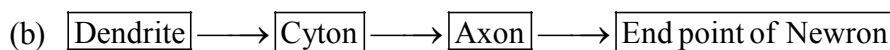
Topic: Heredity and evolution_Level: Tough__Std. X__CBSE Board / Science

3.   (a) Name one gustatory receptor and one alfactory receptor present in human beings.

        (b) Write *a* and *b* in the given flow chart of neuron through which information travels as an electrical impulse.

$$\boxed{\text{Dendrite}} \longrightarrow \boxed{a} \longrightarrow \boxed{b} \longrightarrow \boxed{\text{End point of Newron}}$$
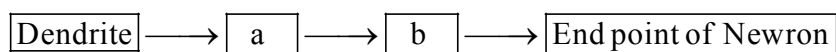
Ans.   (a) Gustatory receptors – Tongue

        Olfactory receptors – Nose

        (b) $\boxed{\text{Dendrite}} \longrightarrow \boxed{\text{Cyton}} \longrightarrow \boxed{\text{Axon}} \longrightarrow \boxed{\text{End point of Newron}}$

Topic: Control and co-ordination_ Level: Easy__Std. X__CBSE Board / Science

4. If the image formed by a spherical mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it ? Draw a labelled ray diagram to support your answer.
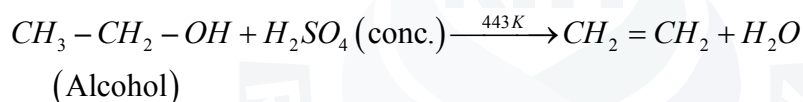
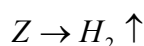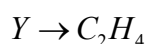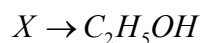Ans. To get erect and diminished image mirror used is convex mirror.
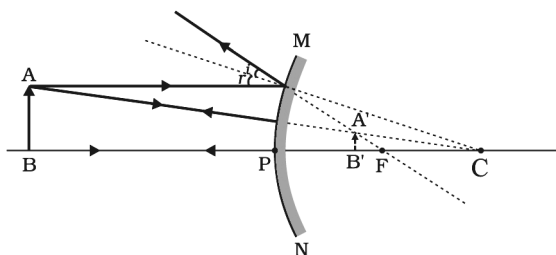
Topic: Light relfection and refraction_Subtopic: Convex mirrror_ Level:Medium __Std. X__CBSE Board / Science

5. A compound 'X' on heating with excess conc. sulphuric acid at 443 K gives an unsaturated compound 'Y'. 'X' also reacts with sodium metal to evolve a colourless gas 'Z'. Identify 'X', 'Y' and 'Z'. Write the equation of the chemical reaction of formation of 'Y' and also Write the role of sulphuric acid in the reaction.

Ans. Compound 'X' on heating with excess conc. sulphuric acid at 443 gives unsaturated compound.

$$CH_3 - CH_2 - OH + H_2SO_4\,(\text{conc.}) \xrightarrow{\ 443K\ } CH_2 = CH_2 + H_2O$$
$$(\text{Alcohol})$$

$$CH_3 - CH_2 - OH + Na \longrightarrow CH_3 - CH_2 - ONa + H_2$$

Concentrated H_2SO_4 act as a dehydrating agent

$$X \rightarrow C_2H_5OH$$

$$Y \rightarrow C_2H_4$$

$$Z \rightarrow H_2 \uparrow$$

Topic: Acids, bases and salts_Level:Medium __Std. X__CBSE Board / Science

6. State the laws of refraction of light. Explain the term 'absolute refractive index of a medium' and write an expression to relate it with the speed of light in vacuum.

Ans. **Laws of Refraction of light :**

Refraction of light follows the following two laws :

First Law : The incident ray, the normal to the transparent surface at the point of incidence and the refracted ray, all lie in one and the same plane.

Second Law : The ratio of sine of the incidence angle $(\angle i)$ to the sine of the refracted angle of the medium is called refractive index. It is denoted by n.

i.e., $\dfrac{\sin i}{\sin r} = n$

Refractive index of second medium with respect to the first medium is denoted by $_2 n_1$.

Thus, eq.(i) can be written as $_2 n_1 = \dfrac{\sin i}{\sin r}$

This law is called Snell's law as it was stated by Prof. Willenbrord Snell (Dutch mathematicial and astronomer).

Absolute Refractive index :

Absolute refractive index of a medium is defined as the ratio of the speed of light in vacuum or air to the speed of light in the medium. It is denoted by n.

Then, $n = \dfrac{\text{speed of light in air}}{\text{speed of light in medium}} = \dfrac{c}{v}$

It has no unit.

Topic: Light relfection and refraction_Subtopic: Refractive index_ Level:Easy __Std. X__CBSE Board / Science

OR

What is meant by power of a lens ? Write its SI unit. A student uses a lens of focal length 40 cm and another of –20 cm. Write the nature and power of each lens.

Ans. $P \propto \dfrac{1}{f}$

Unit of Power is Dioptre (D)

Focal length = 40 cm

Focal length = –20 cm

Convex lens $P = \dfrac{1}{f} = \dfrac{100}{40} = 2.5\,D$

Concave lens $P = \dfrac{1}{f} = \dfrac{-100}{20} = -5\,D$

Topic: Light relfection and refraction_Subtopic: Power of lens_ Level: Easy__Std. X __CBSE Board / Science

7.   Write one main difference between asexual and sexual mode of reproduction. Which species is likely to have comparatively better chances of survival - the one reproducing asexually or the one reproducing sexually ? Give reason to justify your answer.

Ans.   Asexual reproduction involves single individual which produces new generation whereas sexual reproduction involves two individuals one is male parent & other is female parent to produce new individuals. Sexually reproducing species is likely to have comparitively better chance of survival as it involves two different individuals.

Sexual mode of reproduction incorporates such a process of combining DNA from two different gametes of two different parents i.e., male and female gametes of male and female parents respectively. Thus sexual reproduction involves variation in the new individuals which helps in survival of the species.

Topic: How do organisms reproduce?_Level: Medium__Std. X__CBSE Board / Science

8.   Show how would you join three resistors, each of resistance 9Ω so that the equivalent resistance of the combination is (i) 13Ω (ii) 6Ω ?

Ans.   (i) $\dfrac{9\times 9}{9+9}=\dfrac{9\times 9}{2(9)}=4.5\Omega+9\Omega=13.5\Omega$
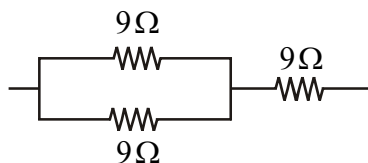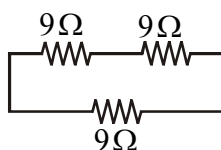

two 9Ω resistors are connected in parallel and one in series.

(ii) 2 resistors connected in series $=(9+9)\Omega=18\Omega$

18Ω and 9Ω are connected in series.

$\dfrac{18\times 9}{18+9}=6\Omega$

Topic: Electricity_Subtopic: Resistors_ Level: Medium__Std. X__CBSE Board / Science

OR

(a) Write Joule's law of heating.

(b) Two lamps, one rated 100 W; 220 V, and the other 60 W; 220 V, are connected in parallel to electric mains supply. Find the current drawn by two bulbs from the line, if the supply voltage is 220 V.

Ans.   (a) Joule's law of heating $H=I^2Rt$

When electric current flows through resistance element, the flowing charges suffer resistance, the work done to overcome resistance is converted to heat energy.

(b) $P_1=100W,V_1=220V$

$P_2=60W,V_2=220V$

$P=VI$

$I_1=\dfrac{P_1}{V_1}=\dfrac{100}{220}=\dfrac{10}{22}=0.45\,Amp$

$I_2=\dfrac{P_2}{V_2}=\dfrac{60}{220}=\dfrac{3}{11}=0.27\,Amp$

Topic:Electricity_Subtopic: Power_ Level: Medium__Std. X__CBSE Board / Science

9.   Name the hormones secreted by the following endocrine glands and specify one function of each :

(a) Thyroid   (b) Pituitary   (c) Pancreas

Ans.   Following are the hormones & functions secreted by given glands.

(a) **Thyroid** : Thyroid gland secretes thyroxin hormone.

Function : Thyroxin regulates carbohydrate, protein & fat metabolism in the body to provide best balance for the growth.

(b) **Pituitary gland** : Pitutary gland secretes growth hormone.

    Function : Growth hormone regulates growth & development of the body.

(c) **Pancreas** : Pancreas secretes insulin hormone.

    Function : Insulin helps in regulating blood sugar level.

Topic: Control and coordination_Level:Medium __Std. X__CBSE Board / Science

10.   2 mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. When the contents are warmed, a gas evolves which is bubbled through a soap solution before testing. Write the equation of the chemical reaction involved and the test to detect the gas. Name the gas which will be evolved when the same metal reacts with dilute solution of a strong acid.

Ans. (i) $Zn + 2NaOH \longrightarrow Na_2ZnO_2 + H_2 \uparrow$

    (ii) The liberated H_2 gas can be detected by putting a burning matchstick at the opening of test tube, it will burn with a pop sound with blue flume.

    (iii) $Zn + 2HCl \longrightarrow ZnCl_2 + H_2 \uparrow$
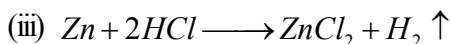
Topic:Chemical reactions and equations__Level: Medium__Std. X__CBSE Board / Science

OR

The pH of a salt used to make tasty and crispy pakoras is 14. Identify the salt and write a chemical equation for its formation. List its two uses.

Ans. (i) The salt is $NaHCO_3$.

    (ii) $Na_2CO_3 + H_2O + CO_2 \longrightarrow 2NaHCO_3$

    (iii) (a) In medicine as antacid.

        (b) Used in cakes to make it more fluffy.

Topic:Acid, bases and salts_Level:Medium __Std. X__CBSE Board / Science

11.   (a) Why are most carbon compounds poor conductors of electricity ?

    (b) Write the name and structure of a saturated compound in which the carbon atoms are arranged in a ring. Give the number of single bonds present in this compound.
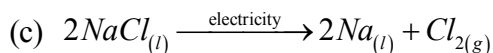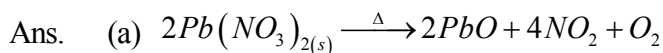
Ans. (a) An carbon is a non-metal so most of its compound are poor conductors of electricity.

(b)
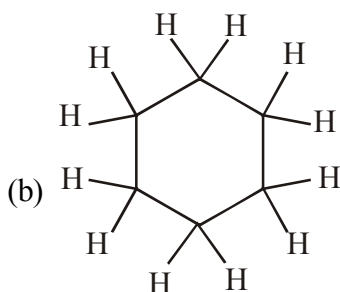
Name - Cyclohexane
Single bond - 18

Topic: Carbon and it's compounds_Level:Medium __Std. X__CBSE Board / Science

12. Decomposition reactions require energy either in the form of heat or light or electricity for breaking down the reactants. Write one equation each for decomposition reactions where energy is supplied in the form of heat, light and electricity.

Ans. (a) $2Pb\left(NO_3\right)_{2(s)} \xrightarrow{\Delta} 2PbO + 4NO_2 + O_2$

(b) $2AgCl_{(s)} + \text{Sunlight} \longrightarrow 2Ag_{(s)} + Cl_{2(g)}$

(c) $2NaCl_{(l)} \xrightarrow{\text{electricity}} 2Na_{(l)} + Cl_{2(g)}$

Topic: Chemical reactions and equations_Level:Medium __ Std. X__CBSE Board / Science

13. What is a dam ? Why do we seek to build large dams ? While building large dams, which three main problems should particularly be addressed to maintain peace among local people ? Mention them.

Ans. A dam is a barrier constructed to hold back water and raise its level forming a reservoir used to generator electricity or as a water supply.

Large dams are built in order to generate electricity from water supply.

The dams can be constructed only in a limited number of place preferably in hilly terrains. large areas of agricultural land and human habitation are to be sacrificed as they get submerged. large eco-systems are destroyed when submerged under the water in dams. The vegetation large amounts of methane which is also a green-house gas. It created the problem of satisfactory rehabilitation of displaced people.

Topic: Sources of energy_Subtopic: Dam_ Level: Medium__Std. X__CBSE Board / Science

14. Students in a school listened to the news read in the morning assembly that the mountain of garbage in Delhi, suddenly exploded and various vehicles got buried under it. Several people were also injured and there was traffic jam all around. In the brain storming session the teacher also discussed this issue and asked the students to find out a solution to the problem of garbage. Finally they arrived at two main points - one is self management of the garbage we produce and the second is to generate lee garbage at individual level.

(a) Suggest two measures to manage the garbage we produce.

(b) As an individual, what can we do to generate the least garbage ? Give two points.

(c) List two values the teacher instilled in his students in this episode.

Ans. (a) (i) Garbage should be kept in proper place indicated by municipality.
   (ii) We can put wet garbage and dry garbage in separate container so that they can be used for recycling.
(b) (i) We should be careful in kitchen not to cook more food than necessary.
   (ii) We can also give green vegetable and food waste to nearby pet animals like cow etc.

(c) (i) Teacher is environment corrsious.
   (ii) Teacher wants to make his students responsible citizens.

Topic: Our environment_Level:Easy __Std. X__CBSE Board / Science

15. (a) List the factors on which the resistance of a conductor in the shape of a wire depends.

(b) Why are metals good conductors of electricity whereas glass is a bad conductor of electricity? Give reason.

(c) Why are alloys commonly used in electrical heating devices ? Give reason.

Ans. (a) Resistance of conductor depends on following factor:

(i) Resistance of conductor is directly proportional to length (*l*) of the conductor.

$R \propto \ell$

(ii) Resistance of conductor is inversely proportional to area of cross section of conductor.

$R \propto \dfrac{1}{A}$

(iii) Resistance also depends on a material of conductor (ρ)

$\therefore R = \rho \dfrac{\ell}{A}$

(iv) Resistance and resistivity also depends on temperature.

(b) Metals have more free electrons than glass to carry currents. That's why glass is bad conductor and metals are good conductors.

(c) Alloys are used rather than pure metals in electrical heating devices, since they have low electrical conductivity and also low melting point.

Topic:Electricity_Subtopic: Resistance_ Level:Easy__Std. X__CBSE Board / Science

16. (a) State Fleming's left hand rule.

(b) Write the principle of working of an electric motor.

(c) Explain the function of the following parts of an electric motor.

(i) Armature (ii) Brushes (iii) Split ring

Ans. (a) Hold the forefinger the centre finger and the thumb of your left hand at right angles to one another If the forefinger points in the direction of magnetic field, and centrefinger points in the direction of current, the thumb gives direction of motion conductor.

(b) Electric motor is based on the principal that a current carrying conductor placed perpendicular to the magnetic field experience a force.

(c) (i) **Armature :** It contains of a single loop of inculated copper wire in the form o a rectangle. rectangle.

(ii) **Brushes :** Two carbon brushes B_1 and B_2 press against the commutator. These brushes act as the contacts between the commutator and the terminals of the battery.

(iii) **Split-ring :** It consists of two halves (R_1 and R_2) of a metallic ring. The two ends of the armature coil are connected to these two halved of the ring. Commutator reverses the direction of current in the armature coil.

Topic:Magnetic effect of electric current_Subtopic: Electric motor__ Level: Medium__Std. X__CBSE Board / Science

17. (a) Write the function of following parts in human female reproductive system :

(i) Ovary   (ii) Oviduct   (iii) Uterus

(b) Describe in brief the structure and function of placenta.

Ans. (a) Functions of following parts of human reproductive system.

(i) Ovary – production of egg every month.

(ii) Oviduct or fallopian tube.

Function – carries egg from the ovary to the womb.

(iii) Uterus function :

* Implantation of zygote in the lining of the uterus.

* Nourishes the growing embryo as its lining is thickened due to rich supply of blood.

(b) Structure & function of placenta :

The placenta is a disc – like structure which is embedded in the uterine wall.

Placenta contain villi on the embryo side of the tissue.

Function of placenta :

1. It helps in nourishment of the embryo.

2. It also helps in exchange of gases by providing O_2 & removal of CO_2 from the foetus.

3. A placenta is also involved in removal of metabolic wastes generated by embryo through the placenta.

*Topic: How do organisms reproduce?_Level:Tough __Std. X__CBSE Board / Science*

18. (a) Write the steps involved in the extraction of pure metals in the middle of the activity series from their carbonate ores.

(b) How is copper extracted from its sulphide ore ? Explain the various steps supported by chemical equations. Draw labelled diagram for the electrolytic refining of copper.

Ans. (a) Let us consider the case of Zn metal extraction from its carbonate ore.

Steps involved are

(i) The ore $ZnCO_3$ is first concentrated by gravity separation method.

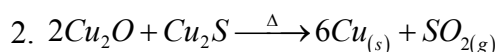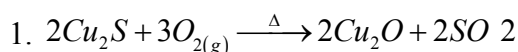(ii) The ore is calcinated absence of it gets converted to oxide

$$ZnCO_3 \xrightarrow{\Delta} ZnO + CO_2 \uparrow$$
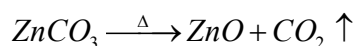
(iii) The oxide is reduced by coke

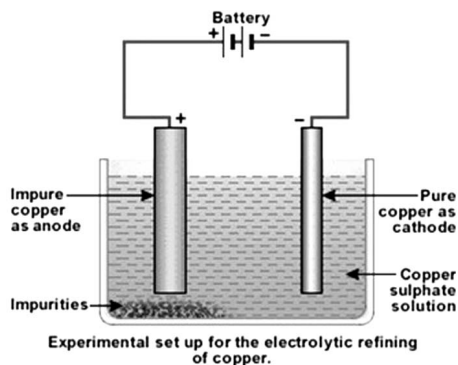$$ZnO + c \longrightarrow Zn + CO$$

(iv) The impure Zn thus obtained can be purified by electrolysis.

(b) (i) Copper from its sulphide ore can be extracted simply by heating in air.

The steps involved are

1. $2Cu_2S + 3O_{2(g)} \xrightarrow{\Delta} 2Cu_2O + 2SO\ 2$

2. $2Cu_2O + Cu_2S \xrightarrow{\Delta} 6Cu_{(s)} + SO_{2(g)}$

(ii)

Experimental set up for the electrolytic refining of copper.

Topic:Metals and non-metals_Level: Medium__Std. X__CBSE Board / Science

19.   (a) Mention any two components of blood.

(b) Trace the movement of oxygenated blood in the body.

(c) Write the function of valves present in between atria and ventricles.

(d) Write one structural difference between the composition of artery and veins.

Ans.   (a) Two components of blood are (i) Blood plasma (ii) Blood cells

(b) Movement of oxygenated blood in the body as follows

(i) Pulmonary veins $\rightarrow$ Left atrium $\rightarrow$ Left ventricle $\rightarrow$ Systemic aorta $\rightarrow$ All part of the blood

(c) The valves in the heart are to prevent the backflow of blood when the atria or ventricles contract.

(d) Ateries are thick walled whereas veins are thin walled.

Topic: Life processes_Level: Easy__Std. X__CBSE Board / Science

OR

(a) Define excretion.

(b) Name the basic filtration unit present in the kidney.

(c) Draw excretory system in human beings and label the following organs of excretory system which perform following functions :

(i) form urine

(ii) is a long tube which collects urine from kidney

(iii) store urine until it is passed out.

Ans.   (a) The biological process involved in the removal of these harmful metabolic wastes from the body is called excretion.

(b) The nephron is the filtration units present in the kidney.

(c)
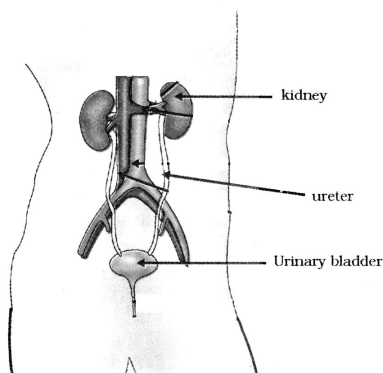
Excretory system in human beings

Topic: Life processes_Level: Easy__Std. X__CBSE Board / Science

20.   (a) The modern periodic table has been evolved through the early attempts of Dobereiner, Newland and Mendeleev. List one advantage and one limitation of all the three attempts.

       (b) Name the scientist who first of all showed that atomic number of an element is a more fundamental property than its atomic mass.

       (c) State Modern periodic law.

Ans.   (a) **Dobereiner triad :**

       Advantage : The three elements of a triad were found to process similar properties.

       Limitation : Some elements which are dissimilar were being grouped into a triad.

       Newland's octave :

       Advantage : If the elements known at that time were arranged in the increasing order of their atomic weights, the properties of every eighth element were similar to those of the first one.

       Limitation : This classification did not include elements beyond atomic weight 40 (calcium)

       Mendeleev :

       Advantage : The physical and chemical properties of elements are periodic function of their atomic weights.

       Limitation : Position of rare earths was not clear. They were placed in group III A.

       (b) Mendeleev

       (c) The modern periodic law can be stated as physical and chemical properties of the elements are periodic functions of their atomic numbers.

Topic: Periodic classification of elements_Level:Easy __Std. X__CBSE Board / Science

21.   (a) A student is unable to see clearly the words written on the black board placed at a distance of approximately 3 m from him. Name the defect of vision the boy is suffering from. State the possible causes of this defect and explain the method of correcting it.

   (b) Why do stars twinkle ? Explain.

Ans.   (a) Myopia is that defect of human eye by virtue of which it can see clearly the objects lying at short distance from it. But the far off objects cannot be seen clearly by the myopic eye.

**Causes of Myopia :** The two possible causes of this defect are :

Increase in the length of the eye ball, as if distance of retina from the eye lens has increased.

Decrease in focal length of the eye lens when the eye is fully relaxed. This is as if the ciliary muscles holding the eye lens do not relax fully and have some tension.

Correction : The image of a distant object (i.e., at infinity) is formed in front of the retina of eye suffering from myopia as shown in figure. (a)
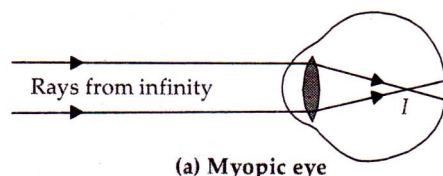
(a) Myopic eye

As the image of the object lying at infinity is not formed on the retina of the eye, so such object can not be seen clearly by the myopic eye. The far point of such an eye is near to the eye as shown in figure (b).

(b) Far point of a myopic eye
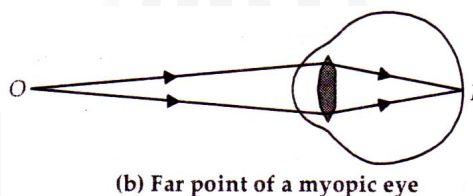
This defect can be corrected by using a concave lens of suitable focal length. So, a man suffering from this defect wears spectacles having concave lens of suitable focal length. The concave lens diverges the rays of light entering the eye from infinity. Hence this lens makes the rays of light appear come from the far point (O') of the defective eye as shown in figure (c).

(c) Correction for myopia
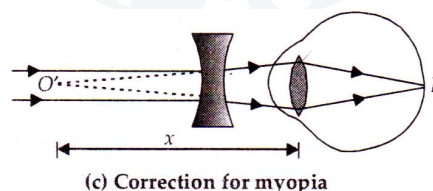
Let x = distance of far point of myopic eye, f = focal length of concave lens to be used.

As the object to be seen is at infinity and its image is to be formed at the far point, therefore, $u = \infty$ and $v = -x$. Distance of far point O' from eye lens is taken same as the distance of far point O' from concave lens.

From, $\dfrac{1}{f} = \dfrac{1}{v} - \dfrac{1}{u}$

or $f = -x$

Hence, focal length of concave lens used for correcting the myopic eye is equal to distance of far point of the myopic eye.

(b) **Twinkling of Stars**

Light emitted by stars passes through the atmosphere of the earth reaching our eyes. The atmosphere of the easth is not uniform but consists of many layers of different densities. The layers close to the surface of the earth are optically denser. As we go higher and higher, the density of layers and refractive index decreases progressively. As the light from a star enters the upper most layer of the atmosphere, it bends towards the normal as it enters the next layer.
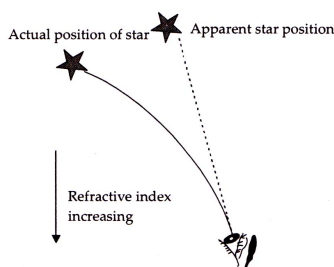
This process continues till the light enters our eyes. So due to refraction of light, the apparent position of the star is different from the actual position of the star. Moreover, the different layers of the atmosphere are mobile and the temperature and the density of layers of atmosphere changes continuously. Hence, the apparent position of the star changes continuously. The change int he apparent position of the star continuously leads to the twinkling of a star.

Topic: Human eye and colourful world_Subtopic: Eye_ Level:Medium __Std. X__CBSE Board / Science

OR

(a) Write the function of each of the following parts of human eye :

(i) Cornea   (ii) Iris   (iii) Crystalline lens   (iv) Ciliary muscles

(b) Why does the sun appear reddish early in the morning ? Will this phenomenon be observed by an astronaut on the Moon ? Give reason to justify your answer.

Ans. (a) (i) **Cornea :** Its function is to act as a windoe to the world, i.e., to allow the light to enter the eye ball.

(ii) **Iris :** Its function is to control the amount of light entering in the eye.

(iii) **Crystalline lens :** Its function is to focus the images of the objects at different distances, clearly on the retina.

(iv) **Ciliary muscles :** Its function is to alter the focal length of the crystalline lens, so that the image of the objects at various distances if clearly focussed on the retina.

(b) **Colour of the sun at sunrise and sunset**

At the time of sunrise and sunset, the position of the sun is very far away from us. The sunlight travels longer distance through the atmosphere of the earth before reaching our eyes. Scattering of blue light is more than the scattering of red light. As a result of this, more red light reaches our eyes than any other colour. Therefore at sunset and sunrise sun appears red.
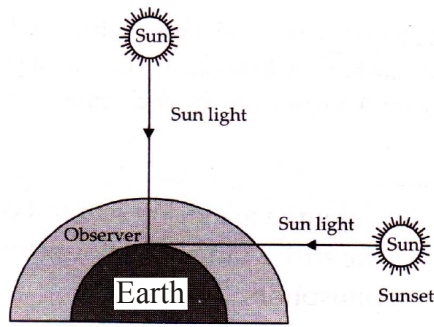
This phenomenon will not be observed by an stronour on moon, since there is no atmosphere so no scattering of light takes place, thus the sun appears dark

Topic: Human eye and colourful world_Subtopic: Scattering_ Level:Medium __ Std. X__CBSE Board / Science

SECTION - B

22.   Name the process by which an amoeba reproduces. Draw the various stages of its reproduction in a proper sequence.

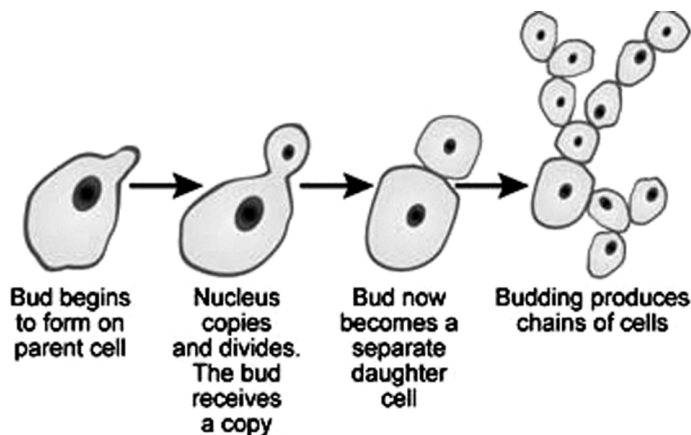Ans.   Amoeba reproduces by binary fission. Amoeba splits into two daughter cells in any plane.
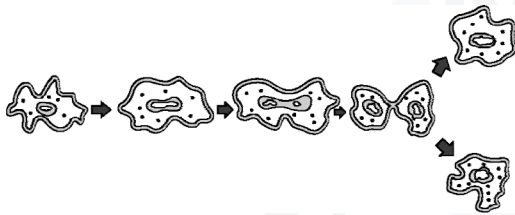
Topic:How do organisms reproduce?_Level: Medium__ Std. X__CBSE Board / Science

OR

A student is viewing under a microscope a permanent slide showing various stages of asexual reproduction by budding in yeast. Draw diagrams of what he observes. (in proper sequence)

Ans.

Topic:How do organisms reproduce?_Level: Medium__ Std. X__ CBSE Board / Science

23. An object of height 4.0 em is placed at a distance of 30 cm from the optical centre 'O' of a convex lens of focal length 20 cm. Draw a ray diagram to find the position and size of the image formed. Mark optical centre 'O' and principal focus 'F' on the diagram. Also find the approximate ratio of size of the image to the size of the object.

Ans. Given data :

$u = -30\,cm$; $f = +20\,cm$; $h_o = 4\,cm$; $v = ?$; $h_i = ?$

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

$$\Rightarrow \frac{1}{v} - \frac{1}{(-30)} = \frac{1}{20}$$

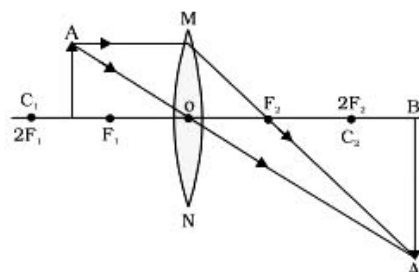$$\Rightarrow \frac{1}{v} = \frac{1}{20} - \frac{1}{30}$$

$$v = 60\,cm$$

magnification ratio $= \dfrac{v}{u} = \dfrac{h_i}{h_o} = m$

$$\Rightarrow \frac{60\,cm}{30\,cm} = \frac{h_i}{4\,cm}$$

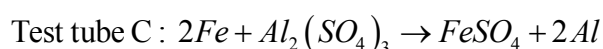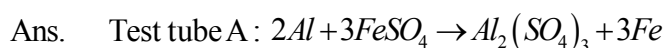$$\Rightarrow h_i = 8\,cm$$

ratio of size of image to size of object $\Rightarrow \dfrac{h_i}{h_0} = \dfrac{8}{4} = 2$

Topic: Light reflection and refraction_Subtopic: Focal length_ Level: Medium__Std. X__CBSE Board / Science

24. A student added few pieces of aluminium metal to two test tubes A and B containing aqueous solutions of iron sulphate and copper sulphate. In the second part of her experiment, she added iron metal to another test tubes C and D containing aqueous solutions of aluminium sulphate and copper sulphate.

 In which test tube or test tubes will she observe colour change ? On the basis of this experiment, state which one is the most reactive metal and why.

Ans. Test tube A : $2Al + 3FeSO_4 \rightarrow Al_2(SO_4)_3 + 3Fe$

 Test tube B : $2Al + 3CuSO_4 \rightarrow Al_2(SO_4)_3 + 3Cu$

 Test tube C : $2Fe + Al_2(SO_4)_3 \rightarrow FeSO_4 + 2Al$

 Test tube D : $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$

 The colour charge in test tube (green) that is from blue to light green.

Aluminium is more reactive than iron because aluminium reacts with oxygen in air to form a larger of oxide which protects the aluminium from further oxidation. Therefore, Aluminium does not carrode as much as iron.

Topic: Chemical reactions and equations_Level:Tough __Std. X__CBSE Board / Science

25. What is observed when a solution of sodium sulphate is added to a solution of barium chloride taken in a test tube ? Write equation for the chemical reaction involved and name the type of reaction in this case.

Ans. When sodium sulphate is added to Barium chloride it gives white ppt of barium sulphate which is insoluble in water. The reaction also creates sodium chloride, which remains dissolved in water and so cannot be seen.

It is double displacement type of reaction.

$$Na_2SO_4 + BaCl_2 \longrightarrow 2NaCl + BaSO_4$$
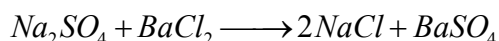
Topic: Chemical reactions and equations_Level:Medium __Std. X__CBSE Board / Science

26. The values of current (I) flowing through a given resistor of resistance (R), for the corresponding values of potential difference (V) across the resistor are as given below:

V (volts)	0.5	1.0	1.5	2.0	2.5	3.0	4.0	5.0
I (amperes)	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0

Plot a graph between current (I) and potential difference (V) and determine the resistance (R) of the resistor.

Ans. Resistance (R) = Slope of line $= \dfrac{1-0.5}{0.2-0.1} = \dfrac{0.5}{0.1} = 5\Omega$
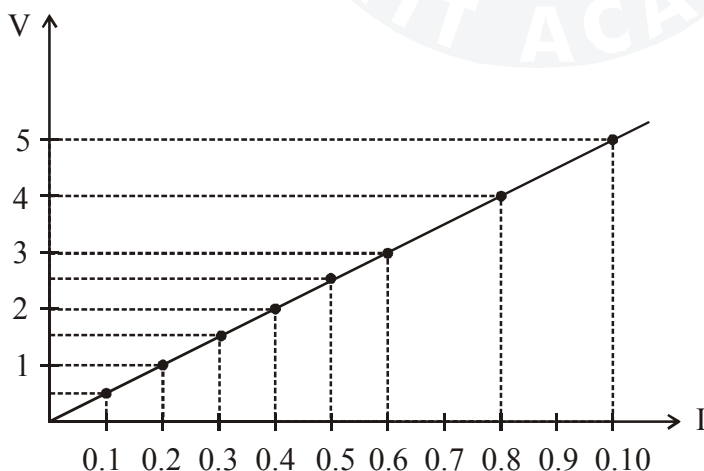
Topic: Electricity_Subtopic: Resistance_ Level: Easy__Std. X__CBSE Board / Science

27. List the steps of preparation of temporary mount of a leaf peel to observe stomata.

Ans. The following are the steps of preparation of temperory amount of a leaf peel to observe stomata.
(i) Remove a healthy leaf from the plotted plant.
(ii) Remove a part of the peel from the lower surface of the leaf by folding the leaf over and gently pulling the peel a part using forceps.

(iii) Put a few drops of saffranin stain in a watch glass.

(iv) After 2-3 minutes take out the peel and place it on a clean glass slide.

(v) Put a drop of glycerin over the peel and place a clean coverslip gently over it.

(vi) Remove the excess stain and glycerin with the help of blotting paper.

(vii) Observe the slide under the low-power and high-power magnifications of the compound microscope.

Topic:Life processes_Level:Medium __Std. X__CBSE Board / Science