

SCIENCE

REVISION and MODEL QUESTIONS

33)

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Using the lens formula,

$$\begin{aligned}\frac{1}{v} - \frac{1}{u} &= \frac{1}{f} \\ -\frac{1}{100} - \frac{1}{-25} &= \frac{1}{f} \\ \frac{1}{f} &= \frac{1}{25} - \frac{1}{100} \\ \frac{1}{f} &= \frac{4-1}{100} \\ f &= \frac{100}{3} = 33.3\text{cm} = 0.33\text{m}\end{aligned}$$

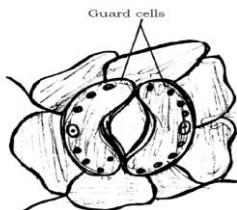
We know,

$$\begin{aligned}\text{Power, } P &= \frac{1}{f(\text{in metres})} \\ P &= \frac{1}{0.33} = +3.0\text{D}\end{aligned}$$

A convex lens of power +3.0 D is required to correct the defect.

34) Draw the diagram of open stomata and label the guard cells.

Ans.



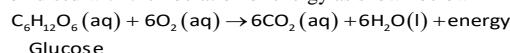
35) Why does the Sun appear reddish early in the morning?

Ans:- White light coming from the sun has to travel more distance in the atmosphere before reaching the observer. During this, the scattering of all coloured lights except the light corresponding to red colour takes place and so, only the red coloured light reaches the observer. Therefore, the sun appears reddish at sunrise and sunset.

36) Why is respiration considered an exothermic reaction? Explain.

Ans:- During digestion, food is broken down into simpler substances. Food like rice, potato and bread are made up of carbohydrates. These carbohydrates are further broken down to glucose.

Glucose during respiration (inhalation of oxygen) is oxidised with the liberation of energy as shown below



Thus respiration is an exothermic process.

37) How are salts formed? What determines their pH value in aqueous solution?

Ans:- Salts are formed by combination of acids and bases. Eg:- Salt of sodium sulphate, Na_2SO_4 is formed by reaction of sulphuric acid with sodium hydroxide. Salts of strong acid and a strong base are neutral with pH value of 7. Whereas salts of strong acid and weak base are acidic with pH value less than 7 and those of a strong base and weak acid are basic in nature with pH value more than 7.

38) State the characteristics of elements that from ionic compounds.

Ans:- For the formation of an ionic bond, an atom must lose electrons completely and the other atom should accept electrons. The elements which can lose elements easily are called highly electropositive elements and those accepting electrons are called highly electronegative elements. The elements (Na, Mg, Al, etc.) having 1, 2, or 3 electrons in the outermost shells have a tendency to lose electrons to elements (O, F, Cl etc.), having 6 or 7 electrons in their outermost shell.

39) Alloys are used in electrical heating devices rather than pure metals. Give one reason.

Ans:- On alloying metals get improved resistant to corrosion and thus their conductivity remains intact. Therefore, alloys instead of metals are used in electrical heating devices.

40) How would the following properties of the element vary down the group in the Modern Periodic Table? Give reason:

(a) Tendency to lose electrons

(b) Atomic size

(c) Valency.

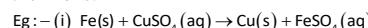
Ans: (a) Tendency to lose electrons goes on increasing down the group because atomic size goes on increasing and hence effective nuclear charge decreases.

(b) Atomic sizes goes on increasing down the group because number of shells go on increasing.

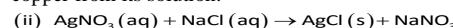
(c) Valency remains the same as valence electrons are same in a group.

41) What is the difference between displacement and double displacement reactions? Write equations for these reactions.

Ans:- In displacement reactions, a more reactive metal displaces a less reactive metal from its solution is double displacement reactions, two reactants in solution exchange their ions.



This is a displacement reaction where iron displaces copper from its solution.



This is a double displacement reaction where silver nitrate and sodium chloride exchange Cl^- and NO_3^- ions between them.

42) Suggest reason for each of the following:

a) The sky near the horizon appears to have a reddish colour at the time of sunset and sunshine.

b) The sun is visible to us two minutes before the actual sunrise and two minutes after the sunset.

c) Stars appear to twinkle.

Ans:- (a) At sunrise and sunset light has to pass through thicker layers of air and large distance. Shorter wavelengths are scattered away and only larger wavelengths of light reaches us.

(b) The sun appears visible two minutes before actual sunrise and two minutes after sunset due to atmospheric refraction, where light bends as it passes through Earth's atmosphere (from rarer to denser air), making the sun seem higher than it is, causing an "advanced sunrise" and "delayed sunset," effectively adding four minutes to the day's light.

(c) Due to atmospheric refraction of star light and physical conditions of earth's atmosphere not being stationary

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