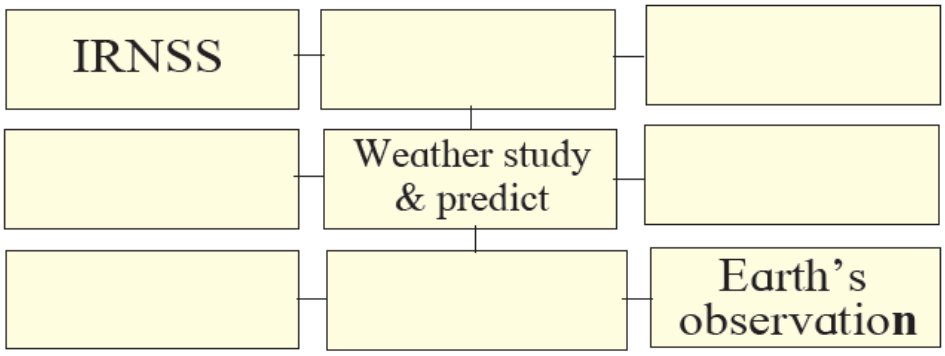
103) Write functions of Military satellite and Navigational satellite.

104) What is meant by Artificial satellite ? How are they classified depending on their functions?

105) If the mass of a planet is eight times the mass of the earth and its radius is twice the radius of the earth, What will be the escape velocity for that planet?

106) Explain : Escape velocity on the moon is less than escape velocity on the earth.

107) Complete the following chart.



Question no. 4 : Answer the following questions. (5 Marks each)

1) Read the given passage carefully and answer the questions.

We know that the gravitational force of the earth is applied to all objects. This force was used even when you were holding a stone in your hand. But the force you were pushing in the opposite direction with your hand was balancing it so that the stone was stable.When you let go of the hand ,only gravitational force is applied to the stone, so the stone falls under its influence. When an object is moving only under the influence of gravitational motion, that motion is called free fall,that is the stone falls. In free fall,the initial velocity is zero and it is increased due to gravitational acceleration over time.At the time of free fall on the earth , the friction of the air opposes the motion of the object. So in the true sense free fall cannot happen in the air. It can happen only in vacuum.

A) Complete the following statement by choosing the right option.

The stone held in the hand is stable because, on it ....

a) two unbalanced forces are exerted.

b) only the gravitational force of the earth is exerted.

c) gravitational force of the earth is not exerted.

d) two balanced forces are exerted.

B) Why does free fall not happen on the earth?

C)Why does the velocity of the object increase during the free fall?

D)Which type of force exerts on the object during free fall?

E) Why does free fall happen only in vacuum?

2) Note the relationship between the entries in all the three columns in the table and rewrite the table.

Column-1 (Location)	Column-2 Height from the earth's surface (km)	Column-3 g (m/s^2)
Earth's surface(average)	8.8	0.225
Mount Everest	36.6	9.81
The highest height ever reached by man made balloon	400	9.8
Orbit of spacecraft	35700	9.77
Orbit of communication satellite	0	8.7

3) Observe the given chart and answer the questions given below.

Element	A	B	C	D
Electronic configuration	2, 1	2, 8	2, 8, 1	2, 8, 8

A) Which elements are in the same row ? 1 mark

B) Which elements have the same column? 1 mark

C)Which elements are in the 18th column? 1 mark

D)Which element is more reactive in A and C ? 1 mark

E) Which of the following elements A and B is found in its compound? 1 mark

4) XY Compound formed by X (Atomic number 11) and Y (Atomic number 17) then answer the questions given below.

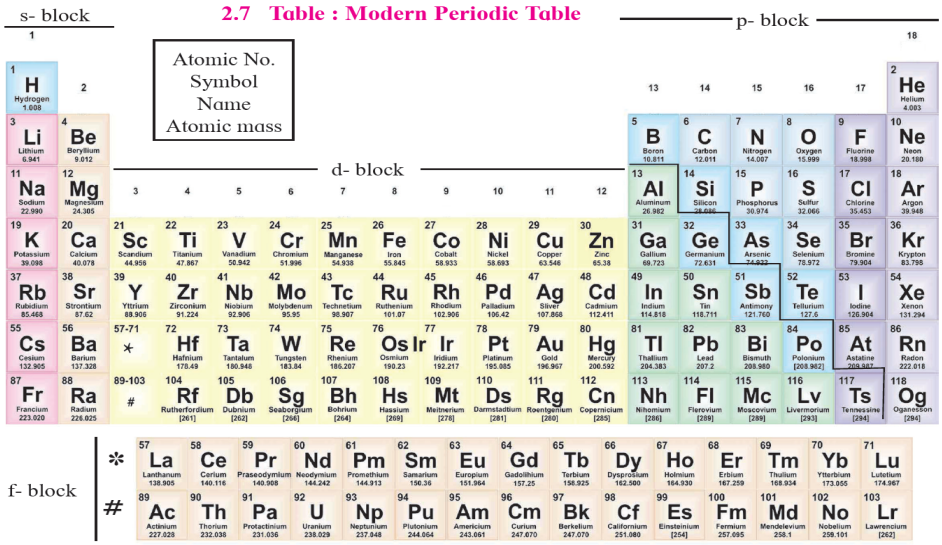
A) Determine the position of the element X and Y in the modern periodic table. 1 mark

B) Which type of elements X and Y are metals, nonmetals or metalloids? 1 mark

C)From which block the elements X and Y are? 1 mark

D) Determine the electronic configuration and valency of these elements. 2 marks

5) Observe the periodic table given below and write the answers of the questions.



A) Write the name and valencies of the elements in the 3rd row . 2 marks

B) Classify the elements in this row in metal, nonmetal and metalloids. 1 mark

C) Which block does nonmetals belong to? 1 mark

D) Write name of any two metalloid elements. 1 mark

6) Make a chart which shows the name of the element, valency, atomic number,electronic configuration in the 2nd row of the modern periodic table.and arrange these elements in ascending order of atomic mass.

7) What physical and chemical properties of elements did mendeleev consider in compiling the periodic table ?What challenges did mendeleev face in following periodic law?

8) Explain the structure of the modern periodic table in short.

9) The electronic configuration of an element is 2,8,2 then write the answers of the questions given below.

A. What is the atomic number of this element?

B. Which column does this element belong to?

C. Which row does this element belong to?

D. The chemical properties of this element will be similar to which of the following elements?

(Atomic numbers are given in the bracket)

N (7), Be (4) , Ar (18), Cl (17)

10) Balance the given chemical reaction as per the instructions below.

$NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$

A) Write names of reactants and products of chemical reaction.

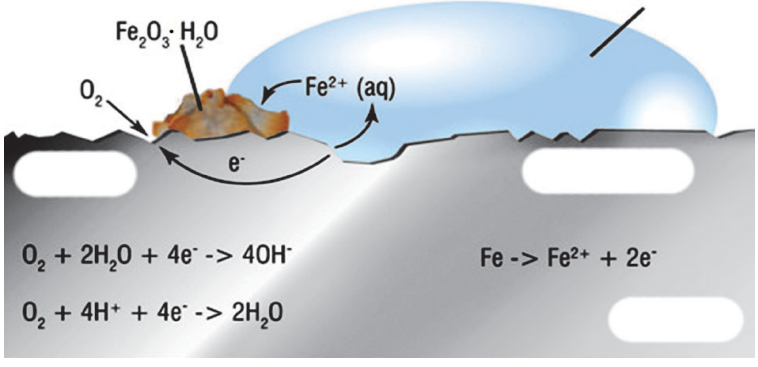
B) Make a list of the elements in the chemical equation.

C) write the number of atoms of reactants and products.

D) Balance the equation with proper coefficient and rewrite the equation.

E) Oxidation means losing electrons then what is reduction?

11) Observe the following figure and write the answer to the question.



A) Which process is shown in the figure?

B) Explain the chemical reaction shown in the figure.

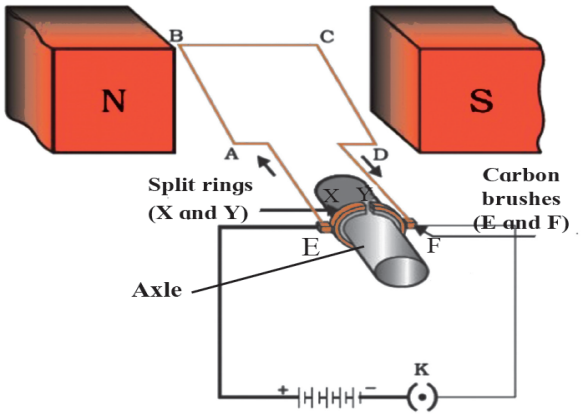
C) Write the reactions on anode and cathode.

12) Draw a diagram of an electric motor and explain the structure and function of it.

13) Explain the structure and function by drawing a diagram of an electric generator.

14) Explain the magnetic field created by a current around a conductor from the figure.

15) Observe the figure and write the answers to the questions asked.

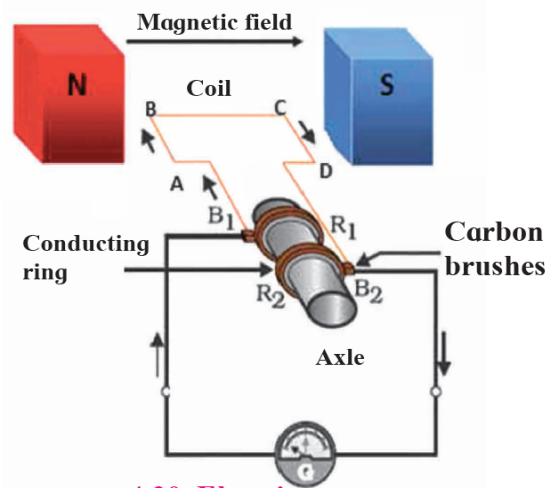


A) The structure shown in the figure is of which device?

B) Explain the principle on which this device works.

C)Write any three uses of this device.

16) Observe the figure and write the answers to the questions asked.



A) The structure shown in the figure is of which device?

B) Explain the principle on which this device works .

C)Write any three uses of this device.

17) Read the passage and answer the questions based on it.

If heat is exchanged between a hot and cold object , the temperature of the cold object goes on increasing due to gain of energy and the temperature of the hot object goes on decreasing due to loss of energy.The change in temperature continues till the temperatures of both the objects attain the same value.In this process, the cold object gains heat energy and the hot object loses heat energy. If the system of both the objects is isolated from the environment by keeping it inside a heat resistant box then no energy can flow from inside the box or come into the box. In this situation we get the following principle .

Heat energy lost by the hot object = Heat energy gained by the cold object. This is called the 'Principle of heat exchange'.

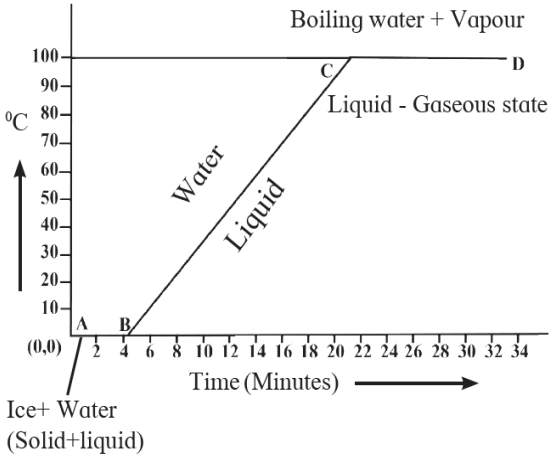
A) Where does heat transfer take place?

B) In such a situation which principle of heat do you perceive?

C) How can this principle be explained in short?

D) measuring the property of which substance this principle is used ?

18) Explain the following temperature-time graph.



19) Explain with a ray diagram the position, size,and the nature of the various images formed by convex lenses.

A) An object is at infinity.

B) An object beyond 2F1.

C) An object at 2F1 .

D) An object is in between F1 and 2 F2

E) An object is at focus F1

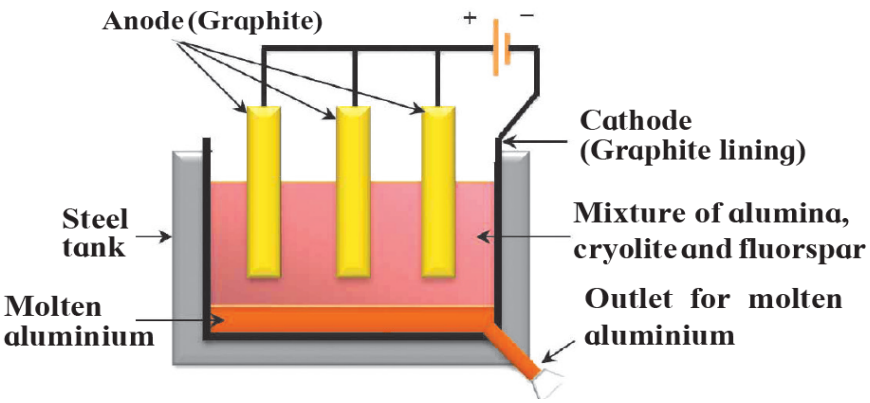
F) An object is in between F1 and O

20) Explain in brief types of extraction of highly reactive, moderately reactive and less reactive metals according to their reactivity.

21) Explain Bayer's process of concentration of bauxite with chemical equations.

22) Explain in brief electrolytic reduction of alumina with a neat labelled diagram.

23) Observe the figure and answer the following.



A) Write the name of the method.

B) What is used as anode and cathode in this method?

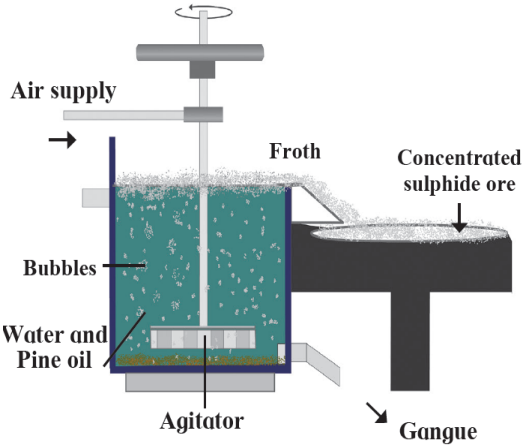
C) Write molecular formula and use of cryolite.

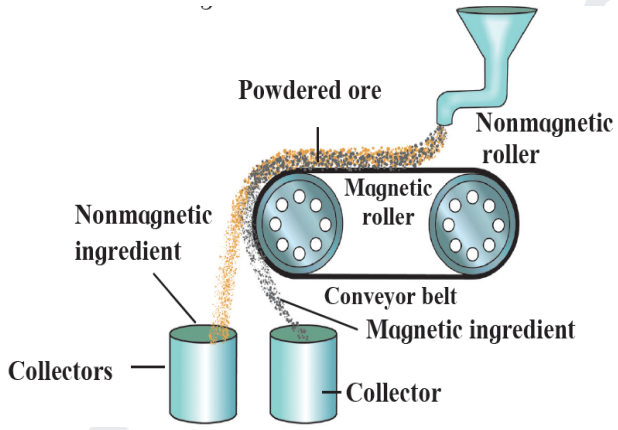
D) Write anode reaction.

E) Write cathode reaction.

24) Observe the figure and name and explain in brief the following methods

A) B)





25) Answer the questions in the following passage.

The minerals from which the metal can be separated economically are called ores. Ores contain many types of impurities such as soil, sand and rocky substances along with the metal compounds. These impurities are called gangue. Metals can be extracted from their ores by means of various methods of separation. The process of extraction of metal in pure state from the ores is also a part of metallurgy.

Ores are taken out from the mines and the gangue is usually separated from the ore at the site itself by various methods. Then the ores are carried out to the place where metals are produced. Here metals are extracted in pure form. Then metals are further purified by different methods of purification.this entire process is called metallurgy.

Most metals being reactive do not occur in nature in free state but are found in combined state as their salts such as oxides, carbonates, sulphides and nitrates.however, the most unreactive metals that are not affected by air,water and other natural factors like silver,gold,platinum,generally occur in free state. The compounds of metals that occur in nature along with the impurities are called minerals.

A) What are metals?

B) Which processes are involved in the branch of metallurgy? What is metallurgy?

C) Which metals are found in free state?

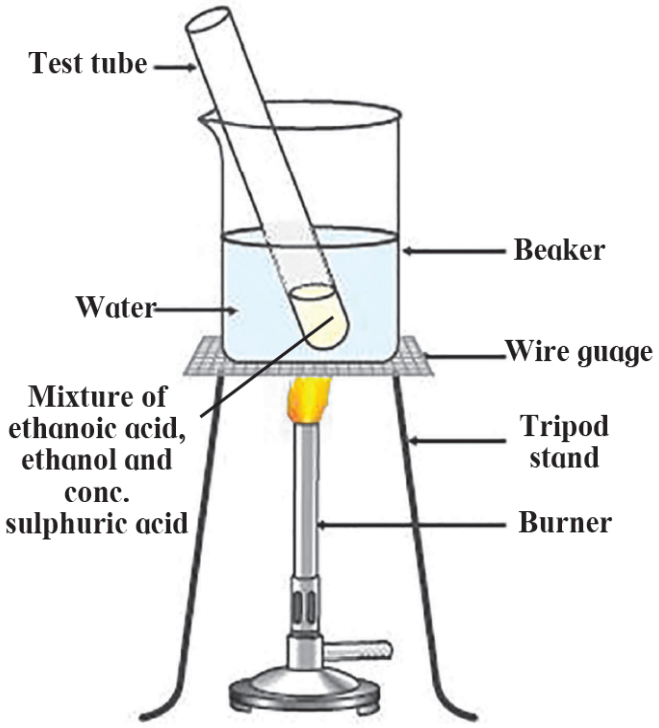
D) In what form are metals found in composite?

E) What is soil impurity?

26) Explain the difference between a bayer's process and a hall's process by explaining the bayer's process?

27) What is corrosion? Give solutions by giving examples of corrosion?

28) Observe the figure and write the answers to the following questions.



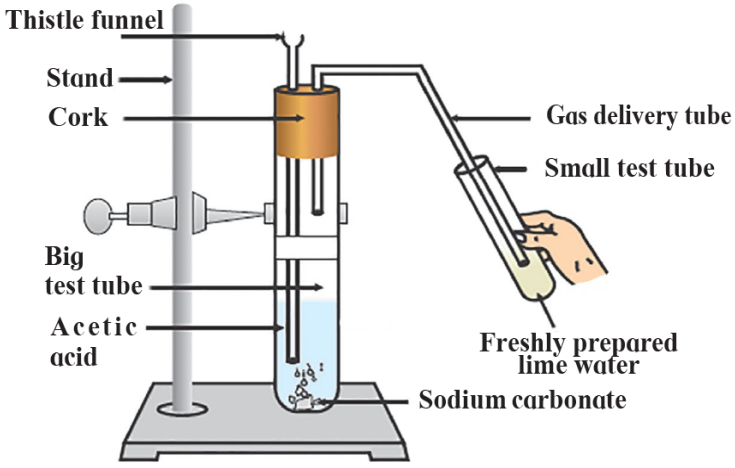
A) Write the name of the reaction shown in the following figure.

B) Write the above chemical reaction in the form of a balanced equation.

C) Write the name of the product produced in the above reaction, write a use.

D) Write the name of the catalyst used in the above reaction.

29) Write the answers to the questions by observing the following figure.



A) Write the chemical reaction shown in the figure above in the form of a balanced equation.

B) Write the name of the gas coming out of the large test tube in the above chemical reaction.

C) Why do small bubbles of lime appear in the small test tube?

D) What is the change in colour of lime net?

30) Write the names of India's satellite series and launchers?

31) What is a satellite launcher? Explain the external layout of a satellite launcher made by ISRO (I.S.R.O.) with diagrams.

32) Read the following paragraphs and write the answers.

Mars is the second closest celestial object to Earth after the Moon. It was sent to Mars by many nations. But since the campaign was difficult, almost half of the campaigns were not successful. But we have done something that we should be proud of. Launched by ISRO in November 2013 at a very low cost, the Mars rover was launched into Mars orbit in September 2014 and gained important information about the surface and atmosphere of Mars.

A) After the moon, which is the closest celestial object to the earth?

B) When did ISRO launch Mars spacecraft?

C) What important information did ISRO's Mars rover get?

D) Explain that specific velocity does not depend on the mass of the satellite?

33) Explain the need and importance of space missions.

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