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10th Standard

Science 1

Chapterwise PYQ - By Sai Sir

ACTIVITY SHEETS FOR PRACTICE

SCIENCE & TECHNOLOGY (PART 1)

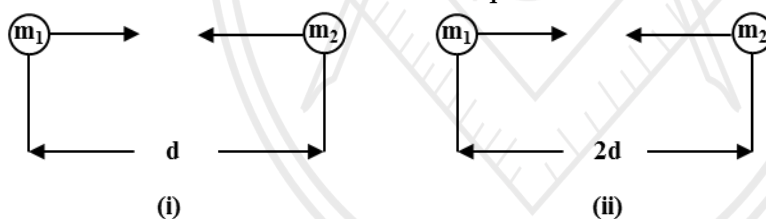
Chapter-1: Gravitation

Q.1: (A) Write the correct alternative:

- (1) How much will a person with 72 N weight on the earth, weigh on the moon?
(A) 12 N (B) 36N (C) 21 N (D) 63 N
- (2) The gravitational force between two particles separated by a distance r varies as _____
(A) $\frac{1}{r}$ (B) r (C) r^2 (D) $\frac{1}{r^2}$

Q.1: (B) Answer the following:

- (i) State whether the following statement is True or False:
❖ If the separation between two particles is doubled, the gravitational force between the particles becomes half the initial force.
- (ii) Write the correct answer in the square:



If this $F = x$ [Fig. (i)] then, [Fig. (ii)] $F =$

(iii) Match the columns:



Column 'A'	Column 'B'
Mass	(a) $N \cdot m^2/kg^2$ (b) m/s^2 (c) N

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Q.2: (A) Give scientific reasons:

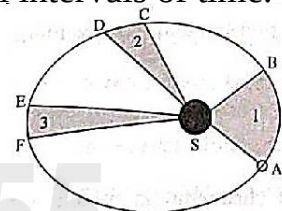
- (1) An object released from the hand, falls on the earth.
- (2) If value of g suddenly becomes twice its value, it will become two times more difficult to pull a heavy object along the floor.

Q.2: (B) Answer the following:

- (1) Distinguish between:
Universal gravitational constant and gravitational acceleration.
- (2) An object takes 5 s to reach the ground from a height of 5 m on a planet. What is the value of ' g ' on the planet?
- (3) 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?

Q.3: Answer the following:

- (1) Express escape velocity in terms of g and R .
- (2) In the following figure, an orbit of a planet around the Sun (S) has been shown. AB and CD are the distances covered by the planet in equal time. Lines AS and CS sweep equal areas in equal intervals of time. Hence, areas ASB and CSD are equal.



- (3) Write the three laws given by Kepler with the help of a diagram.

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Chapter-2: Periodic Classification of Elements

Q.1: (A) Write the correct alternative:

- (1) Metalloids have properties of _____
(A) metals (B) non-metals
(C) both metals and non-metals (D) neither metals nor non-metals
- (2) Halogens belong to group _____ in the modern periodic table.
(A) 15 (B) 16 (C) 17 (D) 18
- (3) The halogen which is liquid at room temperature is _____
(A) fluorine (B) astatine
(C) bromine (D) iodine

Q.1: (B) Answer the following:

- (1) Complete the flow chart:
Na → [.....] → Al → Si → P → [.....] → Cl → Ar

Q.2: (A) Give scientific reasons:

- (1) Sodium is more metallic than aluminium.

Q.2: (B) Answer the following:

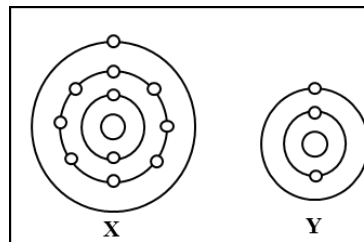
- (1) Distinguish between:
Mendeleev's periodic table and Modern periodic table.

Q.3: Answer the following:

- (1) Atomic number of metal "A" is 11, while atomic number of metal "B" is 20. Which of them will be more reactive? Write the chemical reaction of dilute KCl with metal "A".

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- (2) Observe the following diagram and answer the following questions:



- (A) Identify elements X and Y.
 (B) Do these elements belong to the same group?
 (C) Which element is more electropositive in nature? Why?
- (3) Considering the elements of period 3 in the modern periodic table, answer the following questions:
 (A) Name the 'element' in which all the shells are completely filled with electrons.
 (B) Name the element which has one electron in the outermost shell.
 (C) State the most electronegative element in this period.
- (4) Write a note on structure of the modern periodic table.
- (5) An element has an electronic configuration as 2,8,8,2. Answer the following questions based on it:
 (a) What is the atomic number of this element?
 (b) What is the group of this element?
 (c) To which period does this element belong?
- (6) State Newland's law of octaves. Illustrate it with a suitable example.
- (7) An element has its electronic configuration as 2, 8, 2. Now answer the following questions:
 (a) What is the atomic number of this element?
 (b) What is the valency of this element?
 (c) With which of the following elements would these elements resemble?
 (Atomic numbers are given in brackets) N(7), Be(4), Ar(18), Cl(17).

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Q.4: Answer the following:

- (1) (a) By referring the following modern periodic table find out the groups to which the given elements belong.

Element	K	Na	Rb	Cs	Li
Atomic radius (pm)	231	186	244	264	152

- (b) Arrange the above elements vertically downwards in an increasing order of atomic radii.
 (c) Does this arrangement match with the pattern of the group 1 of the modern periodic table.
 (d) Which of the above elements have the biggest and the smallest atom?
 (e) What is the periodic trend observed in the variation of atomic radii down a group?

Chapter-3: Chemical reactions and equations

Q.1: (A) Write the correct alternative:

- (1) In a double displacement reaction, _____
 (A) ions remain at rest (B) ions get liberated
 (C) ions are exchanged (D) ions are not created
- (2) The crystals of ferrous sulphate - are
 (A) blue in colour (B) pink in colour
 (C) pale green in colour (D) colourless

Q.1: (B) Answer the following:

- (1) State whether the following statement is True or False:
 ❖ When oils and fats are allowed to stand for a long time, they become rancid.

Q.2: (A) Give scientific reasons:

- (1) The colour of iodine disappears in the reaction between vegetable oil and iodine.

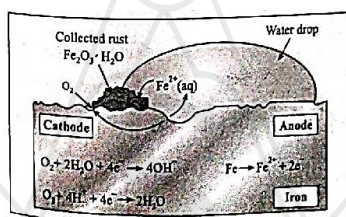
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Q.2: (B) Answer the following:

- (1) Explain the following reaction with the help of balanced equation:
Calcium reacts with water.
- (2) Explain the chemical reaction with a balanced chemical equation:
Manganese dioxide reacts with hydrochloric acid.

Q.3: Answer the following:

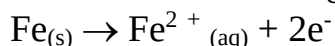
- (1) How does the rate of a reaction depend on the size of the particles of reactants? Give suitable example.
- (2) Observe the picture and explain it with a chemical equation:



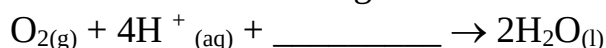
- (3) Observe the following reaction carefully and answer the questions below:

$$CuO + H_2 \rightarrow Cu + H_2O$$
 - (a) Name the reductant in above reaction.
 - (b) Name the oxidant in above reaction.
 - (c) Give one more example of such reaction.
- (4) Complete the process of iron rusting by filling the blanks. Suggest a Way prohibit the process.
 The iron rust is formed due to _____ reaction. Different regions on iron surface become anode and cathode.

- Reaction on anode region:



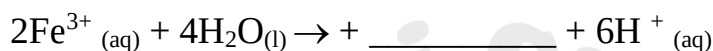
- Reaction on cathode region:



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When Fe^{2+} ions migrate from anode region they react with _____ to form Fe^{3+} ions.

A reddish coloured hydrated oxide is formed from _____ ions. It is called rust.



A way to prevent rusting _____

- (5) Balance the following chemical equation:



Q.4: Answer the following:

- (1) If the solution of K_2CrO_4 (potassium chromate) is mixed with barium sulphate solution (BaSO_4) _____
- What is the colour of the precipitate formed?
 - Name the precipitate.
 - What is the type of chemical reaction? Define it.
 - Write the balanced chemical equation.

Chapter-4: Effects of electric current

Q.1: (A) Write the correct alternative:

- (1) The device used for producing a current is called _____
- | | |
|--------------------|-----------------|
| (A) a voltmeter | (B) an ammeter |
| (C) a galvanometer | (D) a generator |

Q.1: (B) Answer the following:

- (1) Find the odd one out:
- ❖ Fuse, bad conductor, rubber gloves, generator.
- (2) Name the following:
- ❖ A component used to control the current.

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- (3) Name the following:
- ❖ A unit for intensity of magnetic field.
- (4) State whether the following statement is True or False:
- ❖ An electric motor converts mechanical energy into electric energy.
- (5) State whether the following statement is True or False:
- ❖ Magnetic field increases as we go away from a magnet.

Q.2: (A) Give scientific reasons:

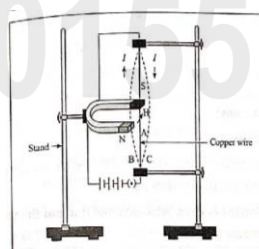
- (1) The material used for fuse has low melting point.

Q.2: (B) Answer the following:

- (1) Solve the following example:
Two tungsten bulbs of wattage 100 W and 60 W power work on 220 V potential difference. If they are connected in parallel, how much current will flow in the main conductor?
- (2) State Fleming's left-hand rule.
- (3) State the right-hand thumb rule.
- (4) Explain the application of heating effect of electric current in an electric iron.

Q.3: Answer the following:

- (1) Observe the following figure and answer the questions:



Questions:

- (a) Which principle is explained in this figure?

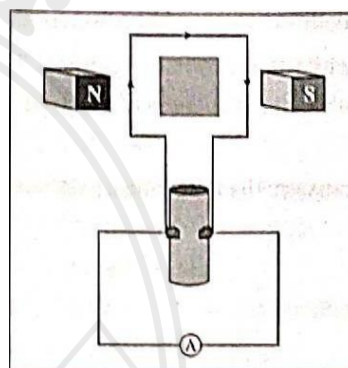
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- (b) Which rule is used to find out the direction of force in this picture?
 (c) In which machine is this principle used? Draw a diagram showing the working of that machine.

- (2) State the uses of an electric motor.
 (3) What is overloading? When does it occur? What does it cause?

Q.4: Answer the following:

- (1)
 (a) Identify the machine shown in the figure.
 (b) Write a use of this machine,
 (c) How does transformation of energy take place in this machine?
 (d) Draw a neat labelled diagram.



- (2) Study the following principle and answer the questions.
 A force is exerted on a current-carrying conductor placed in a magnetic field. The direction of this force depends on both the direction of the current and the direction of the magnetic field. This force is maximum when the direction of the current is perpendicular to the direction of the magnetic field.
 (a) By which law can we determine the direction of the force exerted on the current-carrying conductor?
 (b) In which electrical equipment is this principle used?
 (c) Draw a diagram representing the construction of this equipment.
 (d) Write the working of this equipment in brief.

Chapter-5: Heat

Q.1: (A) Write the correct alternative:

- (1) _____ heat is needed to raise the temperature of 1 kg of water from 14.5 °C to 15.5 °C.

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- (A) 4.180 J (B) 10^3 J (C) 1 kcal (D) 4180 cal
- (2) Heat absorbed when 1 g of ice melts at 0°C to form 1 g of water at the same temperature is _____ cal.
 (A) 80 (B) 800 (C) 540 (D) 54
- (3) At 4°C , the density of water is _____
 (A) 10 g/cm^3 (B) 4 g/cm^3
 (C) $4 \times 10^3\text{ kg/m}^3$ (D) $1 \times 10^3\text{ kg/m}^3$
- (4) The latent heat of fusion of ice is _____
 (A) 540 cal/g (B) 80 cal/g
 (C) 800 cal/g (D) 4 cal/g
- (5) _____ is an example of anomalous behaviour of water.
 (A) Dew point (B) Solidification
 (C) Cracking of rocks (D) Evaporation

Q.1: (B) Answer the following:

- (1) Find the odd one out:
 ❖ Temperature, conduction, convection, radiation.

- (2) Match the columns:

Column 'A'	Column 'B'
Specific heat capacity	(a) J/kg (b) kcal (c) cal/g. $^\circ\text{C}$

- (3) State whether the following statement is True or False:

❖ Specific latent heat of fusion is expressed in g/cal.

- (4) Match the following :

Column 'A'	Column 'B'
Absolute humidity	(a) kg (b) kg/m^3 (c) kcal

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Q.2: (A) Give scientific reasons:

- (1) In winter, the pipelines carrying water burst in cold countries.
- (2) During cold nights, sometimes dew is formed.

Q.2: (B) Answer the following:

- (1) Define: Specific latent heat of fusion.
- (2) Define specific latent heat of vaporization.
- (3) Explain the principle of heat exchange.

Q.3: Answer the following:

- (1) Study the following procedure and answer the questions below:
 - (a) Take 3 spheres of iron, copper and lead of equal mass.
 - (b) Put all the 3 spheres in boiling water in a beaker for some time.
 - (c) Take the 3 spheres out of the water. Put them immediately on a thick slab of wax.
 - (d) Note the depth that each sphere goes into the wax.

Questions:

- (a) Which property of a substance can be studied with this procedure?
 - (b) Describe that property in minimum words.
 - (c) Explain the rule of heat exchange with this property.
- (2) Define relative humidity. Write the formula for % relative humidity.

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Chapter-6: Refraction of light

Q.1: (A) Write the correct alternative:

- (1) The absolute refraction index _____
(A) is expressed in diopetre (B) is expressed in m/s
(C) of air is about $\frac{4}{3}$ (D) has no unit
- (2) Out of the following _____ has the highest absolute refractive index.
(A) fused quartz (B) diamond
(C) crown glass (D) ruby

Q.1: (B) Answer the following:

- (1) Considering the relation between the first two terms of first pair, complete the second pair:
❖ Incident ray: Rarer medium: _____: Denser medium.
- (2) Find the odd one out:
❖ Reflection, Neutralisation, Refraction, Dispersion.

Q.2: (A) Give scientific reasons:

- (1) The bottom of a pond appears raised.
- (2) A coin kept in a bowl is not visible when seen from one side. But, when water is poured in the bowl, the coin becomes visible.
- (3) The sun is seen on the horizon a little before sunrise.

Q.2: (B) Answer the following:

- (1) If the absolute refractive indices of glass and water are $\frac{3}{2}$ and $\frac{4}{3}$ respectively, what is the refractive index of glass with respect to water?

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- (2) The velocity of light in a medium is 2×10^8 m/s. What is the refractive index of the medium with respect to air, if the velocity of light in air is 3×10^8 m/s?
- (3) State the laws of refraction light.

Q.3: Answer the following:

- (1) Write a neat labelled diagram, explain advanced sunrise and delayed sunset.
- (2)
 - (a) What do you mean by dispersion of light?
 - (b) What is a spectrum of light?
 - (c) Name the different colours of light in the proper sequence in the spectrum of white light.
- (3) The observation made by Swarali while doing the experiment are given below. Based on these write answers to the following questions:

Swarali found that the light ray travelling from the denser medium to a rarer medium goes away from the normal. If the angle of incidence (i) is raised by Swarali, the angle of refraction (r) went on increasing. However, after certain value of the angle of incidence, the light ray is seen to return back into the denser medium.

So, Swarali has some questions. Answer them.

- (a) Name this certain value of i. What is the value of r at that time?
- (b) Name this process of returning of light in the denser medium.
Explain the process.

Q.4: Answer the following:

- (1) Prove the following statement:
A rainbow is the combined effect (an exhibition) of the refraction, dispersion and total internal reflection of light (taken together).
- (2) With a neat labelled diagram, explain twinkling of a star. Also explain Why a planet does not twinkle.

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Chapter-7: Lenses

Q.1: (A) Write the correct alternative:

- (1) The power of a convex lens of focal length 25 cm is _____
 (A) + 4.0 D (B) 0.25 D (C) — 4.0 D (D) — 0.4 D
- (2) When an object is placed at infinite distance, its image formed by a convex lens is _____
 (A) real and erect (B) inverted and diminished
 (C) real and inverted (D) virtual and erect
- (3) _____ represents the lens formula.
 (A) $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$ (B) $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$
 (C) $\frac{1}{v} + \frac{1}{u} = \frac{2}{f}$ (D) $\frac{1}{u} - \frac{1}{v} = \frac{1}{f}$
- (4) A convex lens forms a virtual image of an object placed _____
 (A) at infinity
 (B) at a distance 2F from the lens
 (C) at a distance F from the lens
 (D) between the principal focus and the optical centre of the lens
- (5) Inside water, an air bubble behaves _____
 (A) like a flat plate (B) like a concave lens
 (C) like a convex lens (D) like a concave mirror

Q.1: (B) Answer the following:

- (1) Find the odd one out:
 ❖ Myopia, Presbyopia, Hypermetropia, Spectrometer.

- (2) Match the columns:

Column 'A'	Column 'B'
Nearsightedness	(a) Colour-blindness (b) Image in front of the retina (c) Image behind the retina

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(3) Match the following:



Column 'A'	Column 'B'
Magnification	(a) $\frac{1}{f}$
	(b) $\frac{h_2}{h_1}$
	(c) f

(4) Considering the correlation between the words of the first pair, pair the third word accordingly with proper answer:

❖ Observation of stars and planets: Telescope: :Repairing a watch:

_____.

(5) Find the odd one out:

❖ Nearsightedness, Presbyopia, Retina, Farsightedness.

(6) Considering the correlation between the words of the first pair, pair the third word accordingly with proper answer:

❖ Convex lens: Positive power of the lens : : Concave lens _____

(7) Name the following:

❖ The instrument used to observe bacteria.

Q.2: (A) Give scientific reasons:

(1) A simple microscope is used by watch repairers.

Q.2: (B) Answer the following:

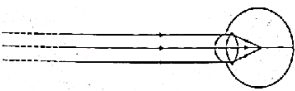
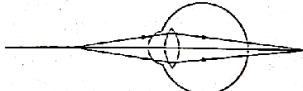
(1) Explain the term power of accommodation.

Q.3: Answer the following:

(1) State the rules used for drawing ray diagrams for the formation of an image by a concave lens.

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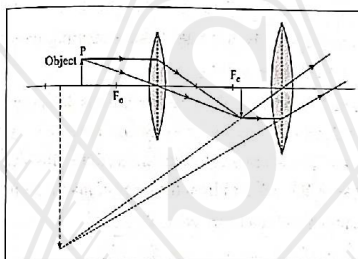
(2) Observe the diagrams and complete the chart:

Points		
(1) Name of the defect.		
(2) Where will the image form?		
(3) Which type of lens is used in the spectacle to remove the defect?		

(3) Observe the following figure and answer the questions:

Questions:

(a) In which type of microscope do you find the lenses arrangement as shown in the following figure?

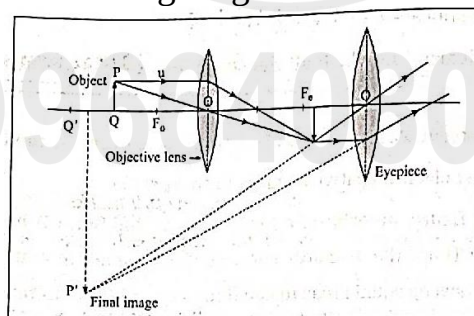


(b) Write in brief, the working of this microscope.

(c) How can we get different magnifications in this optical instrument?

Q.4: Answer the following:

(1) Observe the following diagram and answer the questions:



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Questions:

- (a) In which type of microscope do you find the lens arrangement as shown in the following diagram?
- (b) Write in brief, the working of this microscope.
- (c) Where is this microscope used?

Chapter-8: Metallurgy

Q.1: (A) Write the correct alternative:

- (1) Which of the following processes is to be carried out to avoid the formation of greenish layer on brass vessels due to corrosion?
(A) Electroplating (B) Anodization
(C) Tinning (D) Alloying
- (2) What would be the correct order if Zn, Fe, Al and Cu are arranged in increasing order of reactivity?
(A) Cu, Fe, Zn, Al
(B) Al, Cu, Fe, Zn
(C) Zn, Al, Cu, Fe
(D) Fe, Zn, Al, Cu
- (3) Silver gets corroded due to _____ in air.
(A) oxygen (B) hydrogen sulphide
(C) carbon oxide (D) nitrogen

Q.2: (A) Give scientific reasons:

- (1) Generally, the ionic compounds have high melting points.
- (2) Grills of windows and doors are always painted before they are used.

Q.2: (A) Give scientific reasons:

- (1) Explain the reaction that would take place when a piece of sodium metal is dropped in ethanoic acid.
- (2) Write a short note on: Tinning.

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Q.3: Answer the following:

- (1) Explain with the diagram:
Forth floatation method.
- (2) Explain the different methods to prevent corrosion of metals.
- (3) What is meant by an ionic compound? State the general properties of ionic compounds?
- (4) What is corrosion? Do gold ornaments corrode? Justify.
- (5) Write three methods of preventing rusting of iron.

Q.4: Answer the following:

- (1) Describe the process of preparation of aluminium by the electrolysis of alumina.

Chapter-9: Carbon compounds

Q.1: Give scientific reasons:

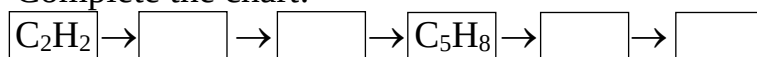
- (1) Naphthalene burns with a yellow flame.

Q.2: Answer the following:

- (1) Write molecular formula with structure and carbon skeleton Of Cyclohexane.
- (2) Complete the chart:

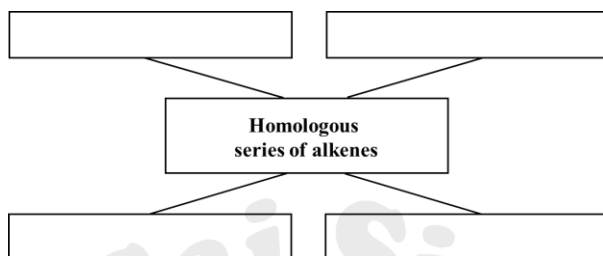
Common name	Structural formula	IUPAC name
acetic acid		ethanoic acid
.....	CH ₃ — CO — CH ₃	propan-2-one

- (3) Complete the chart:



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- (4) Write the names of first four homologous series of alkenes.



- (5) What happens when ethanol is heated at 170°C with excess of conc. sulphuric acid?

Q.3: Answer the following:

- (1) Write the structural formulae for the following IUPAC names:
 (a) Pent-2-one
 (b) Butanone
 (c) Propan-2-ol

- (2) Write IUPAC names for the following structural formulae:
 (a) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$
 (b) $\text{CH}_3 - \text{CHOH} - \text{CH}_3$
 (c) $\text{CH}_3 - \text{CH}_2 - \text{COOH}$

- (3) Define functional group and complete the following table:

Functional group	Compound	Formula
.....	Ethyl alcohol	
.....	Acetaldehyde	

Q.4: Answer the following:

- (1) Answer the following questions
 (a) Write the structural formula of Ethanol.
 (b) What happens when ethanol is burnt in air?
 (c) State the physical properties of ethanol.

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- (2) Considering the following experiment, answer the questions given below
it Take 10 ml ethanol in a big test tube. Cut sodium metal into 2-3 pieces of a serial grain size. Put the sodium pieces into the ethanol in the test tube and fix the gas delivery tube to the test tube. Take a burning candle near the outlet of the gas delivery tube and observe.
- (a) Which is the combustible gas coming out of the gas delivery tube?
(b) Why do the sodium pieces appear to dance on the surface of ethanol?
(c) Repeat the above procedure using magnesium ribbon instead of sodium.
(d) Do you see gas bubble released from the piece of magnesium ribbon?
(e) Does magnesium metal react with ethanol?

Chapter-10: Space Missions

Q.1: (A) Write the correct alternative:

- (1) Which of the following satellite launchers is developed by India?
(A) INSAT (B) IRNSS
(C) EDUSAT (D) PSLV
- (2) Which one of the following is a Low Earth Orbit (LEO) satellite?
(A) Navigational satellite
(B) Geostationary satellite
(C) International Space Station
(D) All of the above

Q.1: (B) Answer the following:

- (1) Considering the correlation between the words of the first pair, pair the third word accordingly with proper answer:
❖ IRNSS: Direction showing satellite: : INSAT: _____
- (2) Name the following:
❖ A country that executed the first ever mission to the moon in the world.

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Q.2: (A) Give scientific reasons:

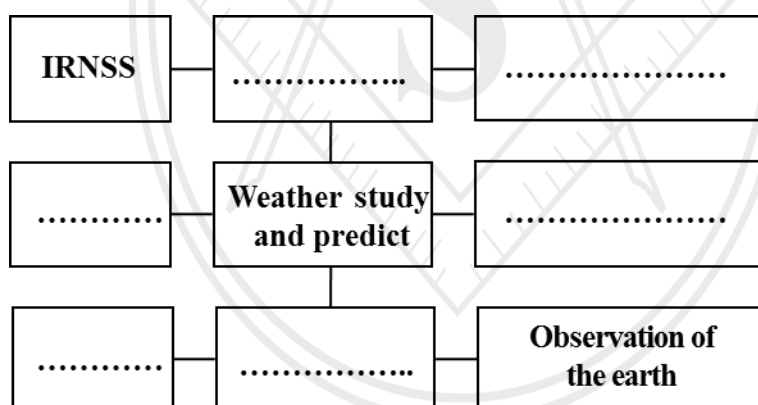
- (1) Geostationary satellites are not useful for studies of polar regions.

Q.2: (B) Answer the following:

- (1) What are the objectives of the space mission?

Q.3: Answer the following:

- (1) Write down the types of artificial satellites? Explain their functions.
- (2) What is meant by the orbit of a satellite? On what basis and how are the orbits of artificial satellites classified?
- (3) Bring out the contribution of India's space missions.
- (4) Complete the following chart:



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Previous year question papers (compilation)

Q.1: (A) Solve the following questions:

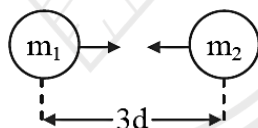
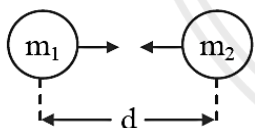
- (1) Fill in the blank and rewrite the sentence:
The initial velocity (during launching) of the Mangal-Yaan must be greater than _____ of the earth.

- (2) Match the pairs:

Group 'A'	Group 'B'
i. Ethanol	(a) Hydrogen peroxide
ii. Methane	(b) Tincture iodine
	(c) Biogas
	(d) Non-stick cookware

- (3) Write co-relation:
Molecular formula of beryllium oxide: BeO :: Molecular formula of beryllium chloride : _____
- (4) Write whether the following statement is true or false:
Simple microscope is used for watch repairs.

- (5) Write proper answer in the box:



If $F = \frac{Gm_1m_2}{d^2}$,

then $F =$

- (6) In Dobereiner's triads Li, Na, K, the atomic masses of Lithium and Potassium are 6.9 and 39.1 respectively, then what will be the atomic mass of sodium.
- (7) State whether the given statement is true or false:
A concave lens is a converging lens.
- (8) By considering first correlation complete the second correlation:

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Hubble telescope: 569 km high from earth surface

Revolving orbit of Hubble telescope:

- (9) Find the odd man out:
Tinning, Anodization, Alloying, Froth floatation.
- (10) Find the odd one out:
Voltmeter, Ammeter, Thermometer, Galvanometer.
- (11) Complete the correlation:
Alkene : $C = C$:: Alkyne: _____.
- (12) State true or false:
The frequency of AC is 50 Hz.
- (13) Match the Columns:

Column 'A'	Column 'B'
The wavelength of red light	(a) 600 nm (b) 700 nm (c) 500 nm

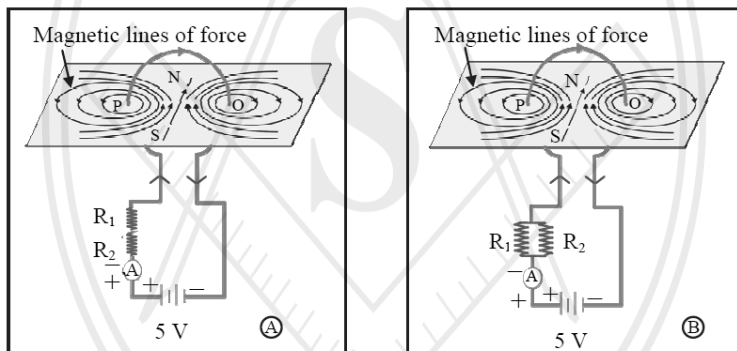
- (14) Name the first artificial satellite sent by Russia in space.

Q.2: (B) Choose the correct alternative and rewrite the statement:

- (1) Combustion of coal in air is a _____ reaction.
(A) combination (B) displacement
(C) decomposition (D) double displacement
- (2) When electric current is passed through the solenoid, it shows magnetic lines of force similar to a _____.
(A) bar magnet (B) horse shoe magnet
(C) disk magnet (D) spherical magnet
- (3) The crystals of ferrous sulphate are _____.
(A) Blue in colour (B) Pink in colour
(C) Pale green in colour (D) Colourless

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- (4) A laser beam enters from air to soap solution in water then _____.
 (A) it goes away from the normal
 (B) it bends towards the normal
 (C) it travels straight without bending
 (D) it returns back into air
- (5) When temperature of water is reduced below _____ °C, it expands.
 (A) 0 (B) 4 (C) 5 (D) 12
- (6) The reaction of iron nail with copper sulphate solution is _____ reaction.
 (A) Combination
 (B) Decomposition
 (C) Displacement
 (D) Double displacement
- (7) Observe the following diagram and choose the correct alternative:



- (A) The intensity of magnetic field in A is larger than in B.
 (B) The intensity of magnetic field in B is less than in A.
 (C) The intensity of magnetic field in A and B is same.
 (D) The intensity of magnetic field in A is less than in B.
- (8) A ray of light makes an angle of 50° with the surface S1 of the glass slab. Its angle of incidence will be _____.
 (A) 50° (B) 40°
 (C) 140° (D) 0°

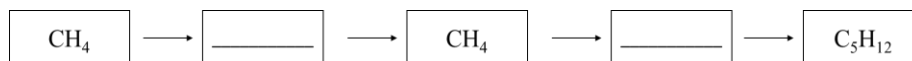
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- (9) Water expands on reducing its temperature below _____ °C.
(A) 0 (B) 4
(C) 8 (D) 12
- (10) The carbon compound is used in daily life is _____.
(A) Edible oil (B) Salt
(C) Carbon dioxide (D) Baking soda
- (11) According to Mendeleev's periodic law, properties of elements are periodic function of their _____.
(A) Atomic numbers (B) Atomic masses
(C) Densities (D) Boiling points
- (12) The vapour content in the air is measured using a physical quantity called _____.
(A) Absolute humidity (B) Relative humidity
(C) Dew point (D) Humidity
- (13) For the normal human eye, the near point is at _____ cm.
(A) 10 (B) 20 (C) 25 (D) 30
- (14) The astronomical object closest to us is _____ is our galaxy.
(A) Mars (B) Venus (C) Jupiter (D) Moon
- (15) In the Wilfley table method, the particles of gangue are separated by _____ separation method.
(A) Magnetic (B) Froth floatation
(C) Hydraulic (D) Gravitational

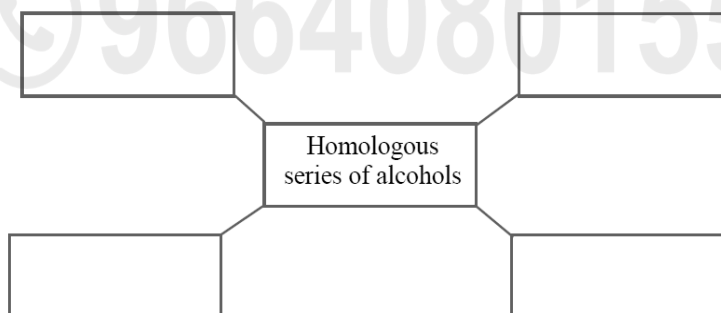
Q.2: Solve the following questions:

- (1) If 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 ratio of escape velocity of earth to the escape velocity on the planet?
- (2) Explain why value of g changes if we go inside the earth.
- (3) Complete the following flowchart and write the general formula of alkane:

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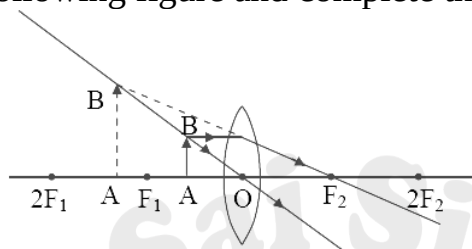


- (4) What is a geostationary satellite? Why are geostationary satellites not useful for studies of polar region?
- (5) If the speed of light in a medium is 1.5×10^8 m/s, what is the absolute refractive index of the medium?
(Velocity of light in vacuum 3×10^8 m/s)
- (6) In two methods of control of corrosion of aluminium, either a layer of aluminium oxide is formed or a silver plating is done on the surface. State to which electrode the aluminium article is attached in these methods respectively.
- (7) Write down any two rules used for drawing ray diagrams for the formation of image by convex lens.
- (8) Two tungsten bulbs of power 50 W and 60 W work on 220 V potential difference. If they are connected in parallel, how much current will flow in the main conductor?
- (9) Give scientific reason:
In the electric equipment producing heat e.g. iron, electric heater, boiler, toaster etc., an alloy such as Nichrome is used, not pure metals.
- (10) A metal ball of mass 5 kg falls from a height of 490 m. How much time it will take to reach the ground? ($g = 9.8 \text{ m/s}^2$)
- (11) Write names of first four homologous series of alcohols:



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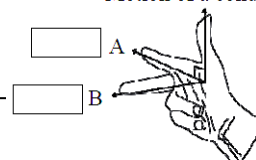
- (12) Observe the following figure and complete the table:



	Points	Answers
(i)	Position of the object	
(ii)	Position of the image	
(iii)	Size of the image	
(iv)	Nature of the image	

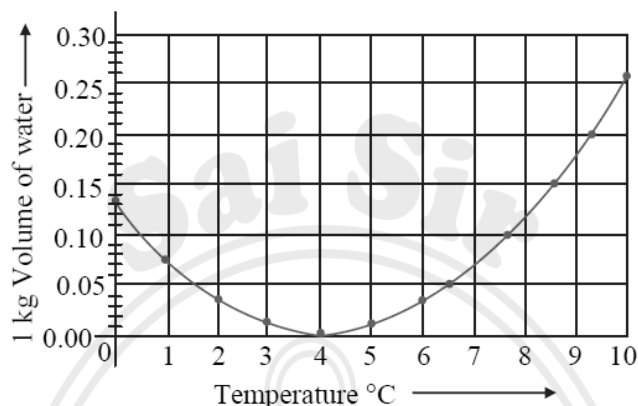
- (13) Out of sodium and sulfur which is a metal? Explain its reaction with the oxygen.
- (14) A tapping vessel opens in a tank like container that is tapering on the lower side. The tank has an outlet for water on the upper side and a water inlet on the lower side. Finely ground ore is released in the tank. A forceful jet of water is introduced in the tank from lower side and gangue particles and pure ore are separated by this method.
- The above description is of which gravitation separation method?
 - Draw labelled diagram of this method.
- (15) The weight of an object changes from place to place though its mass is constant.
- (16) Stars twinkle but we do not see the twinkling of planets.
- (17) Elements belonging to the same group have the same valency.
- (18) How much heat energy is necessary to raise the temperature of 5 kg of water from 20°C to 100°C?
- (19) Observe the given figure of Fleming's Right Hand Rule and write the labels of A and B correctly.

Motion of a conductor



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(20) Observe the given graph and answer the following questions:



- Name the process represented in the figure.
- At what temperature does this process take place?

(21) Complete the given chemical reaction:



Name the type of the reaction.

(22) Write a short note on Alloying.

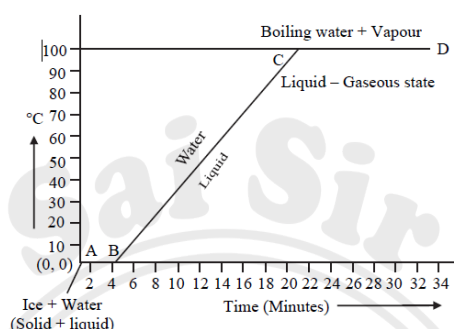
Q.3: Answer the following:

- An object thrown vertically upwards reaches a height of 500 m. What was its initial velocity?
How long will the object take to come back to the earth? ($g = 10 \text{ m/s}^2$)
- Explain the similarity and difference in two events namely adding NaOH to water and adding CaO to water.
- Observe the following reaction carefully and answer the sub-questions:

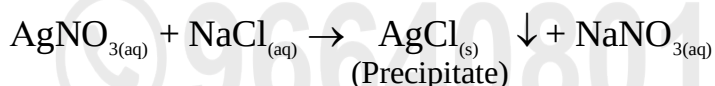
$$\text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl}$$
 - What are the salt and acid in the above reaction?
 - Which is the base in the above reaction? It is weak or strong?
 - Write a reaction showing dissociation of this base in water.

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- (4) Explain the following temperature Vs. time graph:



- (5) Doctor has prescribed a lens having power +1.5 D for correction of eye defect. What will be the focal length of the lens? What is the type of the lens and what must be the defect of vision?
- (6) Give scientific reason:
Anodes need to be replaced from time to time during the electrolysis of alumina.
- (7) What is meant by Vinegar and Gashol? What are their uses?
- (8) What would be the value of 'g' on the surface of the earth if its mass was twice and its radius half of what it is now?
- (9) Write merits of Mendeleev's periodic table.
- (10) Study the following chemical reaction and answer the questions given below:



- Identify and write the type of chemical reaction.
 - Write the definition of above type of chemical reaction.
 - Write the names of reactants and products of above reaction.
- (11) Surabhi from std. X uses spectacle. The power of the lenses in her spectacle is 0.5 D.

Answer the following questions from the given information:

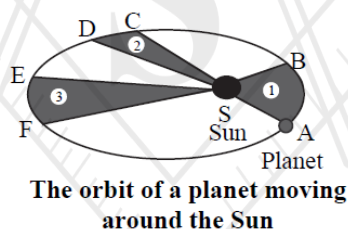
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- Identify the type of lenses used in her spectacle.
- Identify the defect of vision Surabhi is suffering from.
- Find the focal length of the lenses used in her spectacle.

(12) Complete the following table:

Sr. No.	Common Name	Structural Formula	IUPAC Name
1	Ethylene	$\text{CH}_2 = \text{CH}_2$	
2		CH_3COOH	Ethanoic acid
3	Methyl alcohol		Methanol

- What is meant by space debris? Why there is need to manage the debris?
- An element has its electronic configuration as 2, 8, 2. Now answer the following questions:
 - What is the atomic number of this element?
 - What is the group of this element?
 - To which period does this element belong?
- Observe the given figure showing the orbit of a planet moving around the Sun and write the three laws related to it:

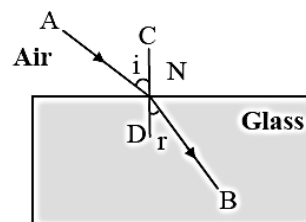


- Read the given passage and answer the following questions:
 The home electrical connection consists of 'live', 'neutral' and 'earth' wires. The 'live' and the 'neutral' wires have potential difference of 220 V. The 'earth' is connected to ground. Due to a fault in the equipment or if the plastic coating on the 'live' and the 'neutral' wires gives a way the two wires come in contact with each other and a large current flows through it producing heat. If any inflammable material (such as wood, cloth, plastic, etc.) exists around that place it can catch fire. Therefore a fuse wire is used as a precautionary measure.
 - Name the two wires having potential difference of 220 V.
 - What is short circuit?
 - Write the function of a fuse.

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(17) Observe the given figure and answer the following questions:

- Name the process represented by the figure.
- State the two laws related to the process.

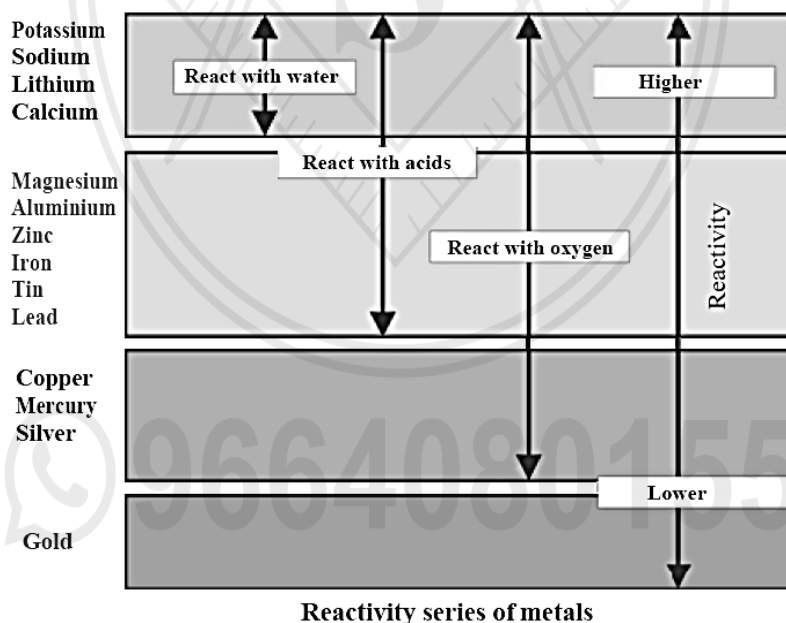


(18) What is an artificial satellite? Name any two types of artificial satellite and state their functions.

(19) Answer the following questions:

- Define Hydrocarbons.
- Name the types of Hydrocarbons.
- Name two carbon compounds used in day-to-day life.

(20) Observe the given figure of reactivity series of metals and answer the following questions:



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(22) Complete the following table:

Straight chain of Carbon compounds	Structural formula	Molecular formula	Name
C	$ \begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{H} \\ \\ \text{H} \end{array} $	CH ₄	Methane
C-C	_____	_____	Ethane
C-C-C	_____	C ₃ H ₈	_____
C-C-C-C	$ \begin{array}{cccc} \text{H} & \text{H} & \text{H} & \text{H} \\ & & & \\ \text{H} - \text{C} & - \text{C} & - \text{C} & - \text{C} - \text{H} \\ & & & \\ \text{H} & \text{H} & \text{H} & \text{H} \end{array} $	_____	_____

Q.4: Solve the following questions:

(1) Observe the following diagram and write the answers of the following questions:

	1	2		13	14	15	16	17	18
1	H 1								He 2
2	Li 2, 1	Be 2, 2		B 2, 3	C 2, 4	N 2, 5	O 2, 6	F 2, 7	Ne 2, 8
3	Na 2, 8, 1	Mg 2, 8, 2		Al 2, 8, 3	Si 2, 8, 4	P 2, 8, 5	S 2, 8, 6	Cl 2, 8, 7	Ar 2, 8, 8
4	K 2, 8, 8, 1	Ca 2, 8, 8, 2							
5		Sr							
6		Ba							
7		Ra							

Potassium atom

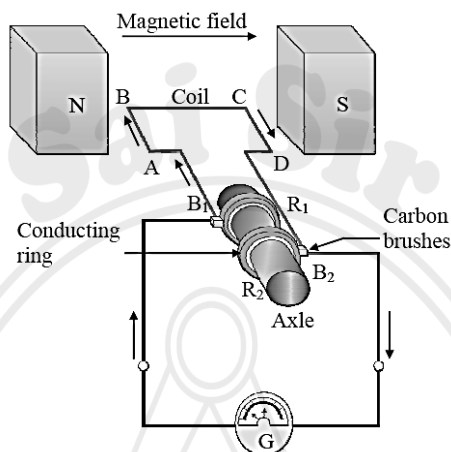
Argon atom

- Write the atomic numbers of first two elements in the second group.
- Write the number of valence electrons of the elements in the halogen group.
- Draw the diagram of electronic configuration of magnesium atom.
- After completion of a period, what change does take place in the electronic configuration of the next element?

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e. Write the names of any two elements from the diagram which do not take part in chemical reaction.

(2) Observe the following diagram and write the answers of the given sub-questions:



- Which instrument the above figure shows?
- Which rule is used to determine the direction of the current produced?
- State the rule.
- In which direction (B1 to B2 or B2 to B1) will the current flow in the external circuit in that situation?
- What change will have to be made in the coil for increasing the current several times without changing the magnet?

(3) Taking into consideration the period of the elements given below, answer the following questions:

Elements	Atomic Radius (pm)
O	66
B	88
C	77
N	74
Be	111
Li	152

- Arrange the above elements in a decreasing order of their atomic radii.
- State the period to which the above elements belong.
- Why this arrangement of elements is similar to the above period of modern periodic table?
- Which of the above elements have the biggest and the smallest atom?

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v. What is the periodic trend observed in the variation of atomic radius while going from left to right within a period?

- (4) The observation made by Swarali while doing the experiment are given below. Based on these write answers to the questions:

Swarali found that the light ray travelling from the denser medium to rarer medium goes away from the normal. If the angle of incidence (i) is raised by Swarali, the angle of refraction (r) went on increasing. However after certain value of the angle of incidence the light ray is seen to return back into the denser medium.

Questions:

- What is the specific value of Li called?
 - What is the process of reflection of incident ray into denser medium called?
 - Draw the diagrams of three observations made by Swarali.
- (5) Draw a scientifically correct labelled diagram of a human eye and answer the questions based on it:
- Name the type of lens in the human eye.
 - Name the screen at which the maximum amount of incident light is refracted?
 - State the nature of the image formed of the object on the screen inside the eye.

- (6) Observe the following picture and answer the following questions:
- What is a rust?
 - Write the chemical formula of rust.
 - Write the reaction of oxidation of iron at anode.
 - Write the reaction of oxidation of iron at cathode.
 - What is corrosion?

