CAREERS360

Maharashtra SSC

Science Part 1

Question Bank 2023

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महाराष्ट्र शासन
शालेय शिक्षण व क्रीडा विभाग
राज्य शैक्षणिक संशोधन व प्रशिक्षण परिषद,महाराष्ट्र
७०८ सदाशिव पेठ, कुमठेकर मार्ग, पुणे ४११०३०.

Question Bank

March 2023

Standard :- Tenth

Medium :- English / Semi English

Subject :- Science and technology part – 1

सूचना-

1. सदर प्रश्नपेढी ही १००% अभ्यासक्रमावर तयार करण्यात आली आहे.
2. सदर प्रश्नपेढीतील प्रश्न हे अधिकच्या सरावासाठी असून प्रश्नसंचातील प्रश्न बोर्डाच्या प्रश्नपत्रिकेत येतीलच असे नाही, याची नोंद घ्यावी.

Instructions -

1. This question bank is based on 100% syllabus.
2. It should be noted that the questions in the said question bank are for more practice and the questions in the question bank may not be there in the board question paper.

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Que 1: Choose the correct option in the multiple-choice answer for the following questions: (1 mark each)

1) A ……. Is necessary to change the speed as well as the direction of motion of an object.
   a) force b) inertia c) momentum d) motion
2) The orbit of a planet revolving around a star is ……
   a) circular b) linear c) towards the focal point d) elliptical
3) The square of its period of revolution around the sun is directly proportional to the ……. of the mean distance of a planet from the sun.
   a) square b) square root c) cube d) cube root
4) The gravitational force between two bodies is directly proportional to the product of the masses of those bodies and is ……. of the distance between them.
   a) inversely proportional to the square b) directly proportional to the square
   c) inversely proportional to the cube d) inversely proportional to the square root
5) The value of the universal gravitational constant (G) in SI unit is……
   a) 6.673×10^{-11} Nm^2/ kg^2 b) 6.673×10^{11} Nm/ kg
   c) 9.673×10^{-11} Nm/ kg d) 9.673×10^{-11} Nm^2/ kg^2
6) The ……. force is much weaker than other forces in nature.
   a) gravitational b) electromagnetic c) nuclear force d) intermolecular
7) The value of gravitational acceleration (g) is …….
   a) highest at the poles b) highest at the equator
   c) same everywhere on the surface of the earth d) lowest at the poles
8) The value of gravitational acceleration(g) is ……at the equator.
   a) 9.78 m/s^2 b) 9.832 m/s^2 c) 9.8 m/s^2 d) 6.67 m/s^2
9) The free fall of an object is possible only in…….
   a) air b) vacuum c) on the surface of earth d) None of these
10) The weight of any object on the moon is nearly ……of the weight of the earth.
   a) 1/6 b) 1/8 c) 1/2 d) 2/6
11) A person weighs 60N on earth. His weight on the moon will be……
   a) 360N b) 60N c) 6N d) 10N
12) Newton presented the laws of motion, equations of motion and theory of gravitation in his book…….
   a) Origin of Species b) Principia c) Calculus d) Gravity
13) Laws of planetary motion were discovered by …….
   a) Sir Isaac Newton b) Tycho Brahe c) Johannes Kepler d) Henry Cavendish
14) Dobereiner presents the rule of ……
   a) periodic b) modern periodic c) triads d) octaves
15) Newlands' Law of Octaves is applicable up to ….
   a) oxygen b) calcium c) cobalt d) potassium

16) X and Y are two elements having similar properties which obey Newlands's Law of Octaves.The minimum and maximum number of elements in between X and Y respectively are……

a) 6 and 8 b) 7 and 15 c) 8 and 14 d) 6 and 13

17) At the time of Mendeleev …. elements were known.

a) 56 b) 65 c) 63 d) 118

18) In Mendeleev's periodic table eka- silicon was later named as…….

a) Scandium b) Gallium c) Germanium d) Thorium

19) In the Modern Periodic Table the number of columns and periods are respectively …….and …….

a) 16,7 b) 6,16 c) 18,7 d)18,6

20) …….is the outermost shell for elements of period 2.

a) K b) L c) M d) N

21) The groups 1 and 2 constitute the……..block.

a) s b) p c) d d) d

22) Which pair of atomic numbers represents elements in the same group?

a) 11,19 b) 6,12 c) 4,16 d) 8,17

23) Which among the following elements would lose an electron easily?

a) Mg b) Na c) Al d) Cl

24) Which among the following is the largest element?

a) Na b) Mg c) K d) Ca

25) Arrange the following elements in order of their decreasing metallic character.

Na, Si, Cl, Mg, Al

a) Cl > Si > Al > Mg > Na b) Na > Mg > Al > Si > Cl

c) Na > Al > Mg > Cl > Si d) Al > Na > Si > Ca > Mg

26) Which one of the following does not increase while moving down the group of the Modern periodic table

a) Atomic radius b) Metallic character c) Valency d) Number of shells

27) On moving from left to right in a periodic table, the size of the atom…….

a) increases b) decreases c) decreases first and then increases d) does not change

28) Which of the following statements about the Modern periodic table is correct?

a) 18 horizontal rows are known as Periods. b) 7 vertical columns are known as Periods.

c) 18 vertical columns are known as groups. d) 7 horizontal rows are known as Periods.

29) The d-block elements are called as……..elements

a) Transition b) Metalloid c) Normal d) Iner transition

30) The size of an atom is indicated by its…….

a) atomic number b) radius c) number of shells d) atomic mass

31) ……. is the distance between the nucleus of the atom and its outermost shell.
a) atomic radius b) Atomic diameter c) atomic mass d) atomic size

32) Atomic radius is expressed in the unit ……
a) nanometer b) picometer c) micrometer d) millimeter

33) The tendency of an element to form cation is the ……. character of that element.
a) nonmetallic b) basic c) metallic d) acidic

34) …… is in liquid form in the halogen family.
a) Fluorine b) Chlorine c) Bromine d) Iodine

35) While going from top to bottom in a group the atomic radius……
a) increases b) decreases c) remains same d) No change occurs

36) The tendency of an element to form anion is the ……. character of that element.
a) nonmetallic b) basic c) metallic d) acidic

37) The elements from the zero group are called……
a) alkali metals b) alkaline earth metals c) halogen d) noble gases

38) Writing a chemical reaction in brief by using chemical formulae is called as…….
a) chemical change b) chemical symbol c) chemical equation d) chemical reaction

39) When the positive charge on an ion increases or the negative charge on them decreases it is called as……..
a) reduction b) corrosion c) oxidation d) decomposition

40) The chemical reaction in which two or more products are formed from a single reactant is called ……..reaction.
a) decomposition b) combination c) displacement d) double displacement

41) In the chemical equation the ……..are written on the left-hand side.
a) products b) reactants c) element d) catalyst

42) Aqueous solution of $ZnSO_4$ is added into the aqueous solution of $BaCl_2$, this is the example of …… reaction.
a) displacement b) double displacement c) redox d) reduction.

43) The unit of electrical power is ….
a) Volt b) Watt c) Joule d) Ampere

44) The 'live' and the 'neutral' wires have potential differences of ……
a) 110 V b) 202V c) 201 V d) 220 V

45) In an electric bulb coil of ……..metal is used.
a) copper b) tungsten c) aluminium d) iron

46) The electricity bill specifies the usage in ……..
a) kilowatt b) Joule c) Volt d) Unit

47) The frequency of AC is ……. Hz
a) 20Hz b) 50Hz c) 25Hz d)75Hz

48) These days when current in the circuit suddenly increases……..switches are used.
a) MCA b) MCC c) MCD d) MCB

49) A coil of an alloy……..is used in an electric heater cooker as a resistor.

a) Stainless steel b) Nichrome c) Copper d) Bronze

50) The right-hand thumb rule is also called ……. rule.

a) Newton's law of motion b) Newland's law of Octave

c) Mendeleev's periodic law d) Maxwell's cork- screw

51) ……..is used for electrical measurements.

a) Thermometer b) Galvanometer c) Voltmeter d) Electric meter

52) Which of the following scientists invented the rule of electromagnetic induction?

a) Newton b) Kepler c) Mendeleev d) Michael Faraday

53) The unit of intensity of the magnetic field is …….

a) Volt b) Faraday c) Newton d) Oersted

54) Which of the following substances contracts on heating?

a) Lukewarm water b) Ice c) Iron d) Mercury

55) If pressure increases the melting point of a substance …….

a) does not change b) decreases c) increases d) remains constant

56) The vapour content in the air is measured by …….

a) relative humidity b) dew point c) absolute humidity d) none of these

57) Humid and dry nature of air depends on the……

a) amount of vapour in the air b) amount of vapour to make the air saturated

c) temperature of the air d) volume of the air

58) Vapours in air condenses to form…….

a) fog b) snowfall c) rainfall d) b and c

59) When the temperature of water decreases below 4^0C its volume …….

a) decreases b) increases c) remains same d) none of these

60) In a region with a cold climate the aquatic animals can survive at 4^0C, because……..

a) Ice floating on water is insulator b) the heat from water cannot transfer to the atmosphere

c) anomalous behaviour of water d) all the above

61) From the options given below the specific heat of……is maximum.

a) copper b) silver c) iron d) mercury

62) Ice-ball is prepared from shredded ice again. This is the example of ……

a) melting b) condensation c) regelation d) freezing

63) The SI unit of specific heat is …….

a) Kcal b) Cal c) Cal/g^0c d) J/Kg^0c

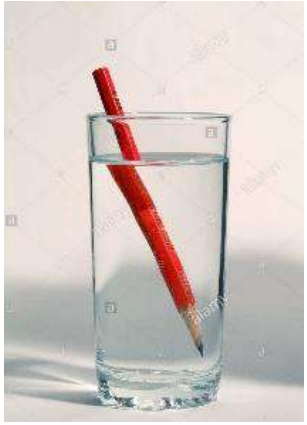
64) ……. apparatus is used to study the anomalous behaviour of water.

a) calorimeter b) Joule's apparatus c) Hope's apparatus d) Thermos flask

65) ……. heat is necessary to raise 1 Kg of water from 14.5^0 C to 15.5^0 C.

a) 4180 Joule b)1 kJoule c) calorie d) 4180 calories

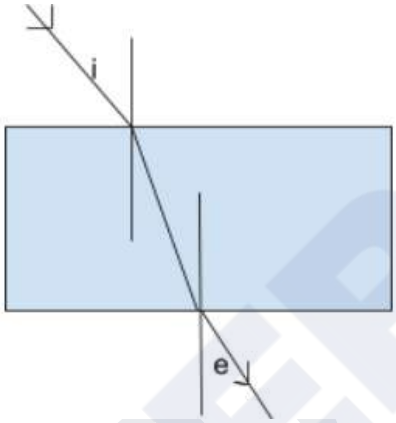
66) Due to …….. pencil looks bent in water in the given experiment.



a) refraction of light b) dispersion of light

c) internal reflection of light d) reflection of light

67) In the following diagram if ∠ i = 40^0, then ∠ e = … ^{0}?



a) 50 b) 40 c) 60 d) 90

68) A ray of light strikes the glass slab at an angle 40^0 with the surface of the slab. Then the angle of incidence will be…….^{0}

a) 50 b) 40 c) 60 d) 90

69) We see the sun even after it goes below the horizon, because…..

a) refraction of light b) dispersion of light

c) partial reflection of light d) reflection of light

70) ……this is the unit of refractive index.

a) cm b) m c) degree d) refractive index has no unit

71) n =……this law is also called Snell's Law.

a) $\frac{sinr}{sin\,i}$ b) $\frac{sin\,r}{sin\,e}$ c) $\frac{sin\,e}{sin\,r}$ d) $\frac{sin\,i}{sin\,r}$

72) Lights of different colours are used as signals for safety transport. From these the wavelength of red light is ……nm.

a) 400 b)500 c) 600 d) 700

73) If the refractive index of air with respect to glass is 2/3 .What is the refractive index of glass with respect to air ?

a) 2/3 b) 3/2 c) 1/3 d) ½

74) The process of separation of light into its component colours while passing through a medium is called …….

a) reflection of light b) refraction of light

c) dispersion of light d) absorption of light

75) Light changes its direction when going from one transparent medium to another transparent medium. This is called ……

a) reflection of light b) refraction of light

c) dispersion of light d) absorption of light

76) A ray of light gets refracted ……while entering the lens.

a) once b) twice c) thrice d) doesn't happen

77) The point inside the lens on the principal axis through which light rays pass without changing their path is called ……

a) Centre of curvature b) optical Centre c) principal focus d) axiom point

78) Virtual image is formed if an object is placed ……..

a) at infinity b) at 2F1 c) at focus F1 d) between F1 and O

79) In the convex lens if an object is placed at 2F1, the image is formed at……

a) F1 b)2F1 c) beyond 2F1 d) On the same side of the lens as the object

80) All distances parallel to the principal axis are measured from the……

a) optical centre b) centre of curvature c) principal focus d) infinity

81) A small hole of changing diameter at the centre if Iris is called ……..

a) optic nerves b) cornea c) optic disc d) pupil

82) 79)For a normal human eye the near point is at……

a) 2.1cm b) 2.5cm c) 25cm d) 5cm

83) The image formed by ……. lens is always virtual and small.

a) plane convex b) biconvex c) biconcave d) bifocal

84) In a relaxed state, the focal length of healthy eyes is ……..

a) 2cm b) 2.5cm c) 25cm d) 5cm

85) For a specific glass lens f=0.5. This is the only Information given to the student. Which type of lens is given to him and what is its power?

a) power 2D ; convex lens b) power 1D ; concave lens

c) power -0.5; concave lens d) power -0.25 D ; convex lens

86) In Myopia the human eye….

a) cannot see nearby objects distinctly

b) cannot see distant objects clearly

c) cannot see nearby as well as distant objects clearly

d) can see nearby as well as distant objects clearly

87) Due to elongation of…….and increase in curvature of the eye lens, a person cannot see distant objects clearly.

a) eyeball b) pupil c) eyelid d) cornea

88) In hypermetropia the human eye …….

a) can see distant objects clearly

b) can see nearby objects distinctly

c) cannot see nearby as well as distant objects clearly

d) can't see nearby as well as distant objects clearly

89) Bifocal lens is required to correct ……defect.

a) myopia b) hypermetropia c) presbyopia d) none of these

90) ……. times larger images can be obtained by using a simple microscope.

a) 5 b) 10 c) 20 d) 60

91) …… is a combination of two convex lenses with a small focal length.

a) simple microscope b) compound microscope

c) telescope d) none of these

92) Bronze is an alloy of…….

a) copper and tin b) copper and zinc c) copper and iron d) iron and nickel

93) ……..is an alloy made from iron, nickel and chromium.

a) brass b) bronze c) stainless steel d) amalgam

94) ……is basic oxide .

a) CO_2 b) K_2O c) SO_2 d) Al_2O_3

95) In electrolytic reduction of alumina ……is used as a cathode.

a) Sulphur b) graphite c) platinum d) aluminium

96) Iron is…….

a) more reactive than zinc b) more reactive than aluminium

c) less reactive than copper d) less reactive than aluminium

97) If Cu, Fe, Zn, Al elements are arranged in increasing order of their reactivity. Then the correct order would be which of the following?

a) Cu, Fe, Zn, Al b) Al, Cu, Fe, Zn c) Zn, Al, Cu, Fe d) Fe, Zn, Al, Cu

98) Which of the following method is used to prevent the accumulation of greenish layer on brass due to corrosion

a) electroplating b) anodization c) tinning d) alloying

99) In Wilfley table method to separate particles of gangue …….method is used.

a) Magnetic b) Froth floatation c) Leaching d) gravitation

100) Aluminium oxide is …….oxide .

a) acidic b) basic c) neutral d) amphoteric

101) Atomic number of aluminium is … and its electronic configuration is……

a) 13, (2, 8, 3) b) 12 (2, 8, 2) c) 13, (3, 10) d) 12, (2, 10)

102) The chemical formula of zinc blend is…..

a) $ZnSO_4$ b) ZnS c) $ZnCO_3$ d) ZnO

103) Extraction of moderately reactive elements is done by …… and ……. method.

a) roasting and calcination b) roasting and reduction

c) separation and calcination d) none of these

104) Corrosion of silver causes a black layer of ……

a) Silver nitrate b) silver oxide c) silver sulphide d) silver carbonate

105) To prevent corrosion of iron and steel ……. method is used .

a) electroplating b) anodization c) tinning d) galvanising

106) In preparation of Aqua regia hydrochloric acid and……acid are mixed.

a) sulphuric acid b) nitric acid c) carbonic acid d) phosphoric acid

107) The sound of one metal colliding with another makes a noise, this property is called as ……

a) good conductors b) ductility c) sonority d) malleability

108) …… exist in a liquid state at room temperature.

a) Chlorine b) Bromine c) Iodine d) Fluorine

109) Ionic compounds are electrically ……..

a) positively charged b) negatively charged c) neutral d) conductor

110) ……..is a good conductor of heat but a bad conductor of electricity.

a) graphite b) diamond c) coal d) iodine

111) ……is the least reactive metal.

a) silver b) sodium c) zinc d) gold

112) ……. forms a green colour in the water.

a) $CuSO_4$ b) $FeSO_4$ c) NaCl d) all the above

113) Tin is an alloy of …….

a) copper b) tin c) zinc d) silver

114) When one of the metals in an alloy is mercury the alloy is called……..

a) amalgam b) sodium amalgam c) zinc amalgam d) all the above

115) The minerals from which the metal can be separated economically are called ……

a) minerals b) ores c) gangue d) alloy

116) Generally the melting and boiling point of carbon compounds are found to be less than …….^{0}c

a) 300 b) 100 c) 200 d)150

117) Number of valence electrons in a carbon atom is…….

a) 4 b) 5 c) 1 d) 3

118) The bond between two oxygen atoms is ……bond .

a) double b) triple c) single d) none of these

119) 116)The molecule mass of a carbon compound is spread over a range of …..

a)10^{12} b) 10^{14} c) 10^{10} d) 10^{13}

120) The unsaturated hydrocarbons containing a carbon- carbon double bond are called….

a) Alkenes b) Alkanes c) Alkynes d) Alcohol

121) The unsaturated hydrocarbons whose structures contain a carbon -carbon triple bond are called …….

a) Alkenes b) Alkanes c) Alkynes d) Alcohol

122) The phenomenon in which compounds having different structural formulae have the same molecular formula is called ……

a) structural isomerism b) catenation c) homologous d) functional group

123) From the following hydrocarbon ……is the cyclic hydrocarbon.

a) isobutane b) propyne c) benzene d) isobutylene

124) While going in an increasing order of the length there is a rise in the molecular mass of the members by…….

a) 14 u b) 15u c) 16 u d) 17u

125) The general molecular formula for the homologous series of alkynes is ……

a) C_nH_{2n} b) $C_nH_{2n} + 2$ c) $C_nH_{2n} - 2$ d) $C_nH_{2n} - 1$

126) …….is one of the combustible components of L.P.G.

a) Methane b) Ethane c) Propane d) Butane

127) At room temperature ethanol is ……

a) solid b) gas c) plasma d) liquid

128) Generally, ……is called spirit.

a) methanol b) ethanol c) propanol d) butanol

129) Due to……. we can gather information about worldwide events sitting at home.

a) world wide web b) internet c) artificial satellite d) natural satellite

130) The first person to step on the moon is …….

a) Neil Armstrong b) Rakesh Sharma c) Kalpana Chawla d) Sunita Williams

131) The first artificial satellite ……was sent to space by the Soviet Union in 1957.

a) Apollo b) Chandrayaan c) Sputnik d) Luna 2

132) If a spacecraft is to be sent to travel to outer space.it must have minimum velocity of ……

a) 11.2 km/s b)11.6km/s c)13.2km/s d)1.4m/s

133) A group of students from COEP Pune sent a small satellite ……. through ISRO in 2016.

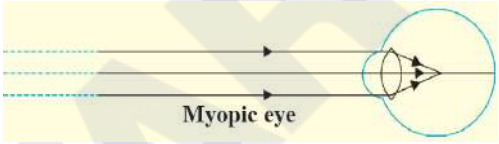
a) Luna 6 b) Apollo 6 c) Swayam d) Param

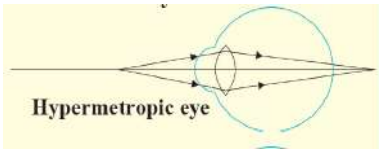
134) The astronomical object closest to us is the ……

a) Moon b) Mars c) Saturn d) Mercury

Que. 1 B) I. Find the correlation

1. Eka boron : Scandium :: Eka Aluminum : ……..
2. Mendeleev's periodic table : atomic mass :: Modern periodic table :……..
3. Group 1 and 2 : S block :: group 13 and 18 : …..
4. Group 13 and 18 : P block :: …… D block
5. Two elements in the same position : demerit of Newland's octaves :: place for Isotopes :……..
6. Beryllium : alkaline earth metal :: sodium: ……
7. Cl : halogen group :: Ar : ……
8. Iodine : solid :: bromine : …….

9. Electric motor : converts electrical energy into mechanical energy :: electric generator: ……
10. Fleming's left hand rule : electric current :: Fleming's right hand rule :……
11. Alternating current : oscillatory :: Direct current:…….
12. When ice is converted into water : constant temperature :: before the water evaporates : ……
13. Relative humidity greater than 60% : saturated air :: relative humidity less than 60% :: ……
14. While studying anomalous behaviour of water in Hope's apparatus, the upper temperature of the thermometer : 0°C :: lower temperature of the thermometer : ::……
15. The density of water is high at 4°C : anomalous behaviour of water :: shredded ice converted into solid ice balls : ……
16. Specific latent heat of vapourisation : J/Kg :: specific heat : ……
17. 2 n 1 : Refractive index of medium 1 with respect to medium 2 :: 1 n 2: ……
18. Refractive index of air : 1.0003 :: refractive index of water : ……
19. Convex lens : converging :: concave lens :----------
20. Nearsightedness: elongated eyeball :: farsightedness:----------
21. Object at 2F1 of a convex lens : Image at 2F2 :: Object at F1 :-------
22. Nearsightedness : concave lense :: farsightedness :----------
23. Simple microscope : Number of convex lens one :: compound microscope :-------
24. Focal length : metre :: power of lens :---------
25. Brass : Aluminium and zinc : : Bronze : ----------
26. Pressure cooker : Anodizing : : Silver plated spoons : ----------
27. In Electrolytic reduction of alumina -> Anode : ------- : : Cathode : Graphite lining
28. 

: Concave lens :: 

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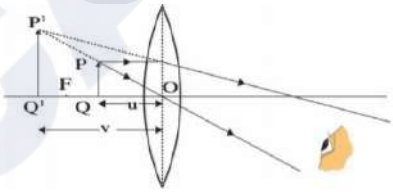
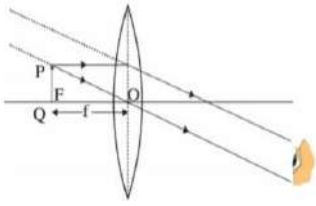
29. 

: Object near the lens:: :---- 

30. Sulphide ores : Roasting : : Oxide ores : ----------
31. Bauxite : Aluminium ore : : Cassiterite : ----------
32. Metal sheets : Malleable : : Electric wires : ----------
33. Zinc sulphide : Roasting : : zinc carbonate : ----------
34. Rusting of iron : Fe : : corrosion of copper : ----------
35. Diamond : electric insulator : :---------- : electric conductor.

36. Soft metal : Na : : hard metal :------
37. Aluminium:----------: gold : : electric insulator
38. Bronze :--------:: Tin : Cu+Zn.
39. Solid : iodine ::---------: bromine
40. CH_3-CH_2-CHO : propane :: CH_3- COOH : .....
41. Kotone : -CO- :: Ester : .....
42. Cyclohexane : Cyclic hydrocarbon :: Isobutylene : .....
43. Saturated hydrocarbon : Single bond :: Unsaturated hydrocarbon : .....
44. Saturated carbon compounds : blue flame :: Unsaturated carbon compounds : .....

Que 1 B) II. Find an odd one out and give its explanation.

1. F , K , Cl , I
2. Lithium, Sodium, Magnesium, Potassium
3. Beryllium, Helium, Neon, Argon
4. Gallium, Scandium, Germanium, Calcium
5. Boron, Arsenic, Germanium, Gallium
6. Dobereiner, Newland, Mendeleev, Moseley
7. Fluorine, Boron, Bromine, Chlorine
8. Carbon, Calcium, Oxygen, Neon
9. Potassium, Magnesium, Calcium, Beryllium
10. Beryllium, Magnesium, Carbon, Oxygen
11. Voltmeter, Ammeter, Galvanometer, Electric motor
12. Loud speaker, Magnet, Microphone, Electric motor
13. Fuse wire, bad conductor, Rubber gloves, Generator
14. Tungsten, Nichrome, Aluminium, Iron
15. Boiler, Electric stove, Electric bulb, Electric bell
16. Temperature, Conduction, Convection, Radiation
17. cal/g, cal/g°C, Kcal/Kg°C, erg/g°C
18. Joule, erg, Calorie, Newton
19. Rainbow, Earthquake, Sunset, Sunrise
20. Focal length, Radius of curvature, Image distance, Size of Image
21. Simple Microscope, Compound microscope, Telescope, Prism
22. Eye lens, Retina, Cerebellum, cornea
23. Object distance, Image distance, focal length, principal axis
24. Eye piece, Magnifier, Kaleidoscope, Telescope
25. Sodium, Potassium, Silver, Sulphur
26. Boron, Chlorine, Bromine, Fluorine
27. Copper, Iron, Mercury, Brass
28. Brass, Bronze, Phosphorous, Steel
29. Tinning, Alloying, Anodization, Froth floatation

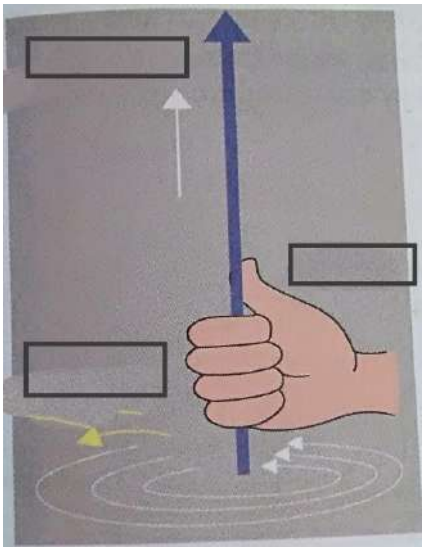
30. Zinc coating, Tinning, Electroplating, Calcination
31. Na, K, Cu, Li
32. Ethylene, Styrene, Propylene, Teflon
33. Butane, Methane, Benzene, Ozone
34. CH_4, C_2H_6, C_5H_{12}, $CaCO_3$
35. C_2H_2, C_3H_8, C_2H_6, CH_4
36. C_2H_4, C_4H_{10}, C_3H_8, CH_4
37. Sputnik, Moon, Swayam, Chandrayaan

Que 1 B) III. Answer the following questions in one sentence.

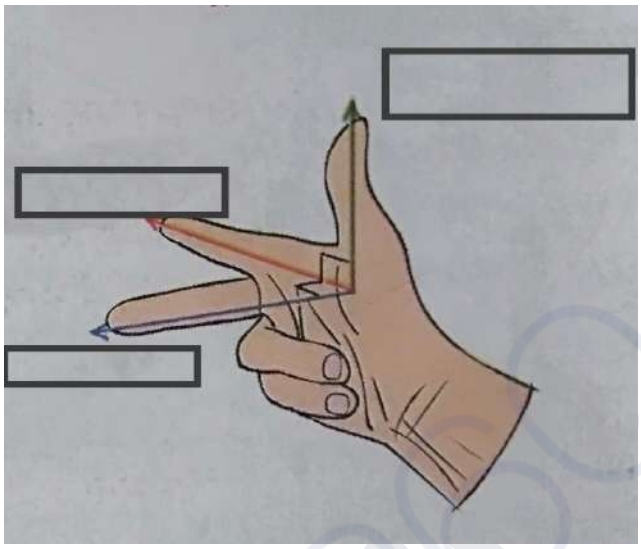
1. Elements A and B follow Newland's octaves rule. How many elements are there in between A and B?
2. Write the characteristic of Dobereiner's triads?
3. To which element does Newland's octave rule apply?
4. Write the molecular formula of the oxide of any one of the elements in Mendeleev's periodic table.
5. Write the name of noble gas having 2 electrons in its valence shell.
6. Write the name of an element having electronic configuration 2, 8, 2.
7. Which two elements show an ambiguity regarding their sequence in Mendeleev's periodic table?
8. The elements beryllium, magnesium and calcium are in group 2. What will be their valency?
9. The modern periodic table is divided into which blocks?
10. What determines the chemical reactivity of elements?
11. Write a chemical formula for rust.
12. Complete the given chemical reaction.

    $CuSO_4$ (aq)+ Fe(s) → ..... + ...
13. Which oxidant is used for purification of drinking water?
14. What is the heating effect of electric current?
15. Which metal used to make the filament of an electric bulb?
16. What is a short circuit?
17. What is the potential difference
18. How much Volts potential difference between live and neutral wires?
19. What is used to turn off the sudden increase in current in the electrical circuit of the house nowadays?
20. Write two devices based on the heating effect of electric current.
21. Write Fleming's right hand thumb rule.
22. Write Fleming's left hand rule.
23. Write Fleming's right hand rule.
24. What is a solenoid?
25. Label the following diagram.

a) Right hand thumb rule.

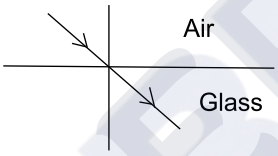


b) Fleming's right hand rule.

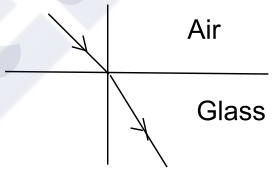


26. Define the boiling point of a liquid.
27. What is meant by regelation?
28. How fog is formed?
29. What is a dew point temperature?
30. What does the existence of drops of water on the leaves of a tree in the morning indicate?
31. Which temperature segment is chosen when determining the unit of heat? Why?
32. Identify the wrong figure from the following.

A.



B.



33. Write the molecular formula of the given compound.

    1. Ethyl ethanoate 2. Sodium ethanoate 3. Sodium ethoxide
    4. Stearic acid 5. Oleic acid 6. Palmitic acid

34. Write the molecular formula of the given compound.

    1. Ethylene 2. Benzene 3. Acetic acid 4.Propylene
    5. Acetylene 6. Ethyl alcohol 7. Acetone 8. Propene
    9. Ethanol 10. Ethanoic acid 11. Isobutane

35. Draw electron dot structure and line structure for given molecules.

    1. Hydrogen 2. Oxygen 3. Methane 4. Nitrogen 5. Ethene

Que 1 B) IV. Match the columns.

1)

	Column A	Column B
1)	Eka-aluminium	a) Scandium
2)	Eka-Silicon	b) Gallium
3)	Eka- boron	c) Germanium
		d) Beryllium

2)

	Column A	Column B
1)	Triads	a) Mendeleev
2)	Octave	b) Dobereiner
3)	Atomic number	c) Thomson
4)	Atomic mass number	d) Moseley
		e) Newland

3)

	Column A	Column B
1)	s -block	a) Lanthanides and actinides
2)	p-block	b) Group 3 to 18
3)	d-block	c) Group 1, 2
4)	f-block	d) Group 13 to 18
		e) Zero group

4)

	Column A Electronic configuration	Column B Valency
1)	2, 2	a) 1
2)	2, 8, 1	b) 2
3)	2, 5	c) 3
		d) 5

5)

	Column A	Column B
1)	Alkaline earth metals	a) Group 18
2)	Alkali metals	b) Group 17
3)	Halogen	c) Group 2
4)	Noble gas	d) Group 1
		e) Group 14

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6)

	Column A	Column B
1)	Direct current	a) Oscillatory
2)	Alternating current	b) Non oscillatory

7)

	Column A	Column B
1)	Specific latent heat of fusion	a) Air saturated with vapour
2)	Specific latent heat of vaporization	b) Solid converts into liquid
3)	Dew point temperature	c) liquid converts into gas

8)

	Column A	Column B
1)	Absolute humidity	a) J/cal
2)	Latent heat	b) J/Kg° C
3)	Specific heat capacity	c) KJ/Kg
4)	Heat	d) no unit
		e) Kg/m^3

9)

	Column A	Column B
1)	Dry air	a) 4°C
2)	Humid air	b) Relative humidity 100%
3)	Saturated air/Dew point temperature	c) Relative humidity below 60%
4)	Maximum density of water	d) Relative humidity above 60%
		e) -4°C

10)

	Substance	Property
1)	KBr	a) Combustible
2)	Neon	b) Soluble in water
3)	Gold	c) No chemical reaction
4)	Sulphur	d) High ductility

11)

	Group A	Group B
1)	Bauxite	a) Mercury
2)	Cassiterite	b) Aluminium
3)	Cinnabar	c) Tin

12)

	Group A	Group B
1)	ZnS	a) Copper Sulphide
2)	HgS	b) Bauxite
		c) Cinnabar
		d) Zinc blend

13)

	Group A	Group B
1)	Copper and Zinc	a) Brass
2)	Copper and Tin	b) Steel
		c) Stainless steel

14)

	Group A	Group B
1)	Electroplating	a) Pressure cooker
2)	Anodising	b) Silver plated spoons
		c) Coating of tin on copper
		d) Coating of Zinc on iron

15)

	Group A	Group B
1)	Making sheets of metals	a) Sonority
2)	Making metal utensils	b) Malleability
3)	Making Copper wires	c) Good conductor of heat
4)	Making bells from metal	d) Ductility

16)

	Group A	**Group B**
1)	C_2H_6	a) Unsaturated hydrocarbons
2)	C_2H_2	b) Molecular formula of one alcohol
3)	CH_4O	c) Saturated hydrocarbons
4)	C_3H_6	d) Triple bond

17)

	Group A	**Group B**
1)	Straight chain hydrocarbon	a) Benzene
2)	Branched chain hydrocarbon	b) Propyne
3)	Cyclic hydrocarbon	c) Isobutylene

18)

	Group A	Group B
1)	Ether	a) –OH
2)	Kitone	b) -O-
3)	Ester	c) -CO-
4)	Alcohol	d) -COO-

Que 1 B) V. Complete the incomplete sentence.

1. According to Newland's octave rule, chlorine shows similarity with fluorine. Because, chlorine is ……
2. According to Mendeleev's periodic law properties of elements are ……
3. The number of electrons in the outermost shell of an atom determines the …….
4. Electropositivity means …….
5. According to Dobereiner's triads rule, three elements in an increasing order of atomic mass shows ……

Que.1B) VI. Write the name:

1. The atom having the biggest atomic size from period 2
2. The atom having the smallest atomic radius from zero group.
3. The family of group 1 elements
4. Highest reactive non metal
5. The element has stable electron configuration from the third period.
6. A halogen from period 4
7. The family of elements having zero valency
8. Two elements having two orbits
9. Highest electronegative element
10. Highest electropositive element
11. The atom having smallest atomic radius from group 1
12. The group of elements having electronic configuration 2, 2
13. Product obtained when sugar is heated.
14. The phase in which solid substances are converted into liquid -
15. The amount of heat absorbed at constant temperature by unit mass of a liquid to convert into gaseous phase -
16. Conversion of ice into liquid due to applied pressure and the reconverts to ice once the pressure is removed -
17. The instrument used to study anomalous behaviour of water -
18. The instrument used to measure the specific heat capacity of a substance using mixture method -
19. The distance between focus and optical centre -

20. The part of human eye that transmits electrical signals to the brain -
21. The lens used in simple microscope -
22. The ability of lens to adjust the focal length as per need is –
23. The defect of eye occurring due to ageing –
24. The fleshy screen behind cornea –
25. The screen with light sensitive cells in human eye –
26. The sensation on the retina persists for a while is –
27. The persons which are unable to distinguish between different colours -
28. The imaginary line passing through two optical centres of lens -
29. The molecular formula of main ore of aluminium –
30. The ore is produced by using -
31. Nonmetals which are good conductors –
32. The reagent which dissolves noble metals
33. Metals which are amphoteric in nature –
34. An alloy of copper and zinc –
35. Two highly reactive metals –
36. Strongly heating carbonate ores in insufficient air –
37. Extraction of aluminium from alumina-
38. Method used to present corrosion of copper –
39. Flammable substances in LPG -
40. Astronauts of Indian origin -
41. 41.India's first satellite launching Centre -
42. First artificial satellite launched by India -
43. Rocket Launching Centers in India -

Question 1 . B) Right or wrong sentence.

1. If the distance between two masses is doubled, the gravitational force between them becomes less than the previous force.
2. The CGS unit of G is dyne.cm^2/g^2.
3. The value of gravitational acceleration with the centre of the earth is zero.
4. The value of g is highest at the equator.
5. The value of G varies from place to place.
6. As it rises above the earth's surface, its value increases.
7. The speed of release of an object does not depend on the mass of the object.
8. Mass is a qualitative measure of the inertia of an object.
9. The similarity between the properties of the first and eighth elements is called the octave rule.
10. In Dobreiner's triangles, three elements appear to be arranged in ascending order of their atoms.

11. While designing the periodic table, Mendeleev considered the chemical and physical properties of the elements.
12. The modern periodic table has 1 to 7 cycles.
13. The modern periodic table shows the molecular values of the elements in each frame.
14. P-segment is composed of groups 1 and 2.
15. To the left of the serpentine line in the periodic table are the metal elements.
16. The compound of the elements in group 2 is 1.
17. Nanometers use these units to measure atoms.
18. Moving from left to right, the size of the atom decreases.
19. All the elements in the halogen family are gases.
20. The elements lithium and beryllium are in the same cycle because their compounds are similar.
21. Beryllium and calcium are alkaline soil metals.
22. The K and L shells of the elements Na and Mg contain electrons.
23. The number of shields decreases as the calculation goes down from top to bottom.
24. The metal properties of the element decrease as the spiral moves from left to right.
25. The size of an atom depends on the number of compound electrons.
26. Silicon is a metallic element.
27. The properties of the metal increase as it goes down in the calculation.
28. Electrical negativity is the metallic property of an element.
29. If edible oil is kept well for a long time, it will get sour.
30. The alternating current is a vibrating current.
31. Electrical wires and neutral wires have a 220 V potential difference.
32. Increasing the current passing through the wire decreases the magnetic field intensity.
33. Use galvanometers for electrical measurements.
34. The frequency of the alternating current is 50Hz.
35. Electrochemicals are devices that convert electrical energy into mechanical energy.
36. The dew point temperature does not depend on the amount of vapour in the air.
37. The specific heat capacity of water is 1 cal / g ^{0}C.
38. The invisible heat of evaporation is called the conversion of gas into liquid.
39. Use calorimeters to study the inconsistent behaviour of water.
40. During reheating, ice is converted to water at a temperature of 0°C.
41. 1 kg of dry air at a temperature of 40 °C can hold a maximum of 49 g of water vapour.
42. Calorimeters are used to measure specific calorific value.
43. All metals have the same specific heat capacity.
44. Humidity relative to dew point temperature is 100%.
45. The unit of absolute humidity is Kg / m^3.
46. 1 calorie is 4.81 joules
47. The incident rays and refracted rays are on opposite sides of the column.
48. Purple has the lowest refractive index.

49. The speed of light varies in different media.
50. Convex magnifying glass is called divergent magnifying glass and concave magnifying glass is called converging magnifying glass.
51. The image of the object in the human eye is formed on the cross screen.
52. This defect of vision can be remedied by using endoscopic magnifying glass with proper focal length.
53. If the incident ray is parallel to the main axis, then the refracted ray passes through the main navel.
54. The image of an object at an infinite distance is obtained in a real and smooth form through a convex magnifying glass.
55. The power of the magnifying glass depends on the distance of the magnifying glass.
56. The lens of the eye is flattened when looking at nearby objects.
57. For a healthy human eye the distant point is infinite distance.
58. Vision defects increase the distance between the lens of the eye and the retina of the eye. There are defects in myopia.
59. The virtual shape of the object seen by the eye depends on the angle held by the object with the eye.
60. Electrolysis is used to obtain pure metal from impure metal.
61. Ionic compounds are soluble in kerosene.
62. Stable ionic compounds conduct electricity.
63. Mercury, silver and gold are highly reactive metals.
64. In the electrolytic method, a layer of highly active metal is applied to a less active metal.
65. In the electrolytic dissipation method of alumina, the lining of graphite acts as an anode.
66. The electrolysis of alumina combines fluorspar and cryolite to increase the solubility in the precipitation method.
67. Cassiteite is a copper metal.
68. Diamond is a hard substance.
69. Gold and silver are active metals.
70. Halogen reacts with acid.
71. Baux reacts with sodium hydroxide in the Bayer process.
72. The number of electrons in the compound shell of a carbon atom is 4.
73. Your body is made up of carbon.
74. Carbon compounds contain only free chains of carbon atoms.
75. Two carbon atoms can always form one or two covalent bonds.
76. In general, saturated compounds are more reactive than unsaturated compounds.
77. Benzene is a coated unsaturated hydrocarbon.
78. Cyclohexane is a branched chain type of hydrocarbon.
79. As one ascends in any homogeneous category, physical properties change in one direction.

80. There are different common molecules for all members of the homologous range.
81. LPG Butane is a flammable element in.
82. Substances that can give oxygen to other substances are called particulate matter.
83. Potassium permanganate is an oxidising compound in regular use.
84. Colourless ethanol is in liquid state at room temperature.
85. Ethanol is all soluble in water.
86. Easter is a sweet-smelling dish.
87. The speed of liberation on the moon is less than the speed of liberation on earth.
88. India is the first country to discover the existence of water on the moon.
89. The function of a satellite launcher is based on Newton's second law of motion.

Question 1 (B) VIII. Write an explanation.

1. Group
2. Period
3. Atomic radius
4. Electropositivity
5. Electronegativity
6. Balanced equations
7. Endothermic reaction
8. Critical angle
9. Center of curvature of the lens
10. The optical center of the lens
11. Principal focus
12. Focal length
13. Principal axis
14. Minimum Distance of distinct vision
15. Farthest Distance of distinct vision
16. Magnification
17. Power of accommodation
18. Persistence of vision
19. Alkane
20. Alkene
21. Alkyne
22. Polymers
23. monomer
24. Regelation
25. electrolytic reduction.
26. near point of the eye
27. Homopolymer
28. Snell's law

Q1B IX. Identify who I am!

1. Carbon aberrations ----------
2. Mutual oxide forming metal ---------
3. Ores of Aluminum ----------
4. Metal in Liquid state ----------

Question 2 (A) Write Scientific reasons. (2 marks each)

1. The value of acceleration g is greater at the pole than at the equator.
2. The value of gravitational acceleration (g) decreases as we go above the Earth's surface.
3. The value of gravitational acceleration (g) decreases as we go deep inside the earth.

4. When we drop a feather and a stone at the same time from a height the stone reaches the earth faster than a feather.
5. The weight of an object varies on different planets.
6. The value of gravitational acceleration (g) is taken to be -g when studying the motion of an object thrown upwards in a straight line.
7. The value of g at the center of the earth is zero.
8. Mendeleev kept vacant places in the periodic table.
9. There was ambiguity about the correct position of hydrogen in Mendeleev's periodic table.
10. Boron and oxygen elements are placed in the second period in the periodic table.
11. There was no definitive place for isotope in Mendeleev's periodic table.
12. Lithium and sodium are included in the same group in the periodic table.
13. In the same period boron and oxygen elements have different atomic sizes.
14. The metallic character of elements increases while going down the groups.
15. The non-metallic character increases while going from left to right in a period.
16. In a group, the size of the atom increases as it goes down from the top.
17. In group 2, beryllium and calcium elements, calcium is the most electropositive element than beryllium.
18. Elements belonging to the same group have the same valency.
19. Always Paint doors and windows before using their nets.
20. It is recommended to use an air tight container for storing oil for a long time.
21. When the gas formed heating the limestone is passed through the freshly prepared lime water, the lime water turns milky.
22. It takes time for pieces of Shahabadi tile to disappear in HCl but its powder disappears rapidly.
23. In practice the unit of kWh is used for the measurement of electrical energy, rather than Joule.
24. Tungsten metal is used to make a solenoid type coil in an electric bulb.
25. For electric power transmission, Copper or aluminium wires are used.
26. Nowadays MCBs are used in homes, to stop the current in the circuit which suddenly increases.
27. A coil made up of alloy Nichrome is used in the electric heater-cooker as a resistor.
28. It is beneficial to carry electrical energy in reverse form as it is carried over long distances.
29. In cold regions, in winter the pipes for water supply breaks .
30. Even if boiling water is constantly heated, its temperature does not rise.
31. Use a pressure cooker to cook food in cold air.
32. In the cold regions, snow falls in winter.
33. The bottom of some steel utensils used for cooking is copper.

34. Drops of water can be seen accumulating on the glass of vehicles in the early hours of winter.
35. During the winter season, we may have observed a white trail at the back of flying high in the clear sky or sometimes it may not have formed.
36. Fish can survive even in frozen ponds in cold regions.
37. Placing a plastic bottle filled with water in the freezing compartment in the freezer can cause the bottle to explode.
38. Even if the wire moves through the ice slab, the ice slab does not break.
39. While determining the unit of heat we select a specific temperature range of 14.5^0C to 15.5^0C.
40. The sun appears on the western horizon for some time after sunset.
41. It looks like a sack that is enclosed with a drawstring.
42. The stars twinkle but we don't see the twinkling of planets .
43. The coin in the disappeared to have been seen from a specific location. But as soon as the water is poured into the pot to a certain level, the coin appears.
44. A pencil appears to be broken near the surface of the water .
45. A convex lens is called a converging lens.
46. Nearsightedness, this defect can be corrected by using spectacles with concave lenses.
47. Farsightedness, this defect can be corrected by using convex lenses.
48. Adults need bifocal lens spectacle.
49. Presbyopia effect is more common in people over 40 years of age.
50. Simple microscope is used for watch repairs.
51. One can sense colours only in bright light.
52. The movie cannot be enjoyed if it is too close to the screen in the cinema.
53. We can not clearly see an object kept at a distance less than 25 cm from the eye.
54. Sodium is always kept in kerosene.
55. Pine oil is used in froth formation.
56. Lemon or tamarind is used for cleaning copper vessels turned greenish.
57. Anodes need to be replaced from time to time during the electrolysis of alumina.
58. Generally the ionic compounds have high melting points.
59. Adding zinc particles to a solution of copper sulphate makes the blue solution colourless.
60. Anodization method is useful for prevention of the corrosion of the aluminium.
61. On exposure to air , silver articles turn blackish after some time.
62. Magnetic separation method is used to separate the magnetic ingredients in the ores.
63. Coins are made from metals and alloys.
64. Meena's mother uses lemon or tamarind for cleaning copper vessels turned greenish.
65. In the laboratory, sodium is immersed in kerosene.
66. Ethylene is an unsaturated hydrocarbon.
67. The flame appears yellow in the ignition of naphthalene.
68. The colour of iodine disappears in the reaction between vegetable oil and tincture iodine.

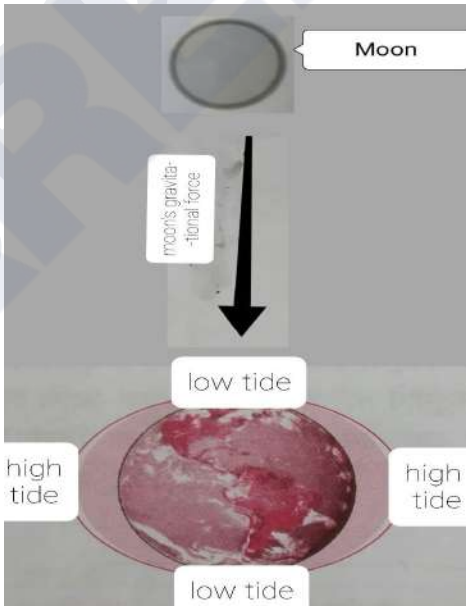
69. Vegetable ghee is formed from the hydrogenation of vegetable oil in presence of nickel catalyst.
70. Carbon has the property of forming many compounds.
71. Benzene compounds are called aromatic compounds.
72. The velocity at the earth's surface must be greater than the escape velocity of the earth.
73. Space debris can be harmful to the artificial satellites.
74. Satellite launch vehicles are used to place satellites in their specific orbits.
75. The launch vehicles are very costly.

Q.2 (B) Solve the following Questions. (Each 2 Marks)

1. Complete the following chart regarding the weight and mass of an object.

Object	On Earth	On moon
Mass	X	.....
Weight	.....	Y

2. State Newton's Universal Law of Gravitation.
3. Define acceleration due to gravity. Write its value on the surface of Earth.
4. If a person weighs 750 N on Earth, what will be the weight of the person on the moon? (The mass of moon is $\frac{1}{81}$ times the mass earth and its radius are $\frac{1}{3.7}$ times that of earth.)
5. Mahendra and Virat are sitting at a distance of 1m from each other. Their masses are 75 Kg and 80 Kg respectively. What is the gravitational force between them?
   ($G = 6.67 \times 10^{-11}\ Nm^2/kg^2$)
6. Identify the mistake in the given diagram and draw it again.

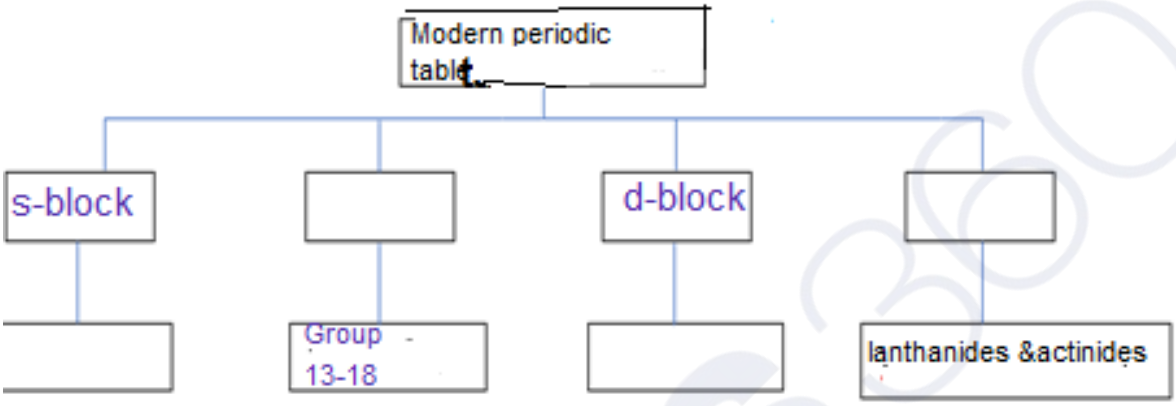


7. The mass of planet 'X" is four times that of the earth and its radius is double the radius of the earth. The escape velocity of a body from the earth is 11.2×10^3 m/s. Find the escape velocity of a body from the planet 'X'.

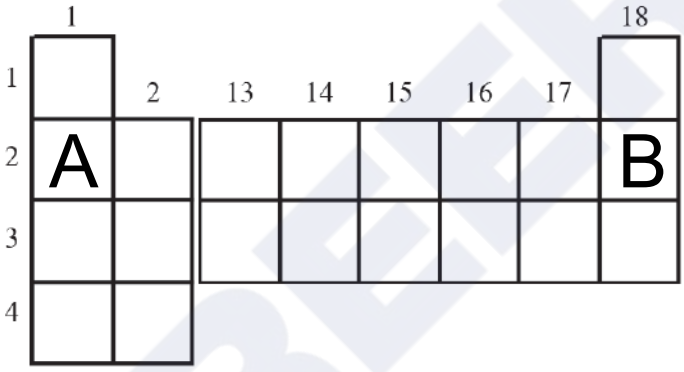
8. If a stone and a piece of wood are dropped simultaneously from a height in vacuum, which object will reach the ground first? Why?
9. Will the mass and weight of an object on Earth be the same on Mars? Why?
10. State the following.

    a) Doberenier's law of Triads
    b) Newland's Law of Octaves
    c) Mendeleev's Periodic Law
    d) Modern Periodic Law

11. Complete the following flow chart.



12. In the modern periodic table, the positions of 1 to 20 elements are shown here. Identify the elements A and B. Write their atomic number.



13. Some elements and their atomic radii are given here. Arrange them in a decreasing order of their atomic radii. Identify which of the above elements is the biggest atom and which is smallest?

Element	K	Na	Rb	Cs	Li
Atomic radius(pm)	231	186	244	262	151

14. Complete the following chart.

Shell	n	$2n^2$	Electron Holding Capacity
K		2×1^2	2
L	2		8
	3	2×3^2	18
N	4	2×4^2	

15. Find the period in which these elements can be placed.

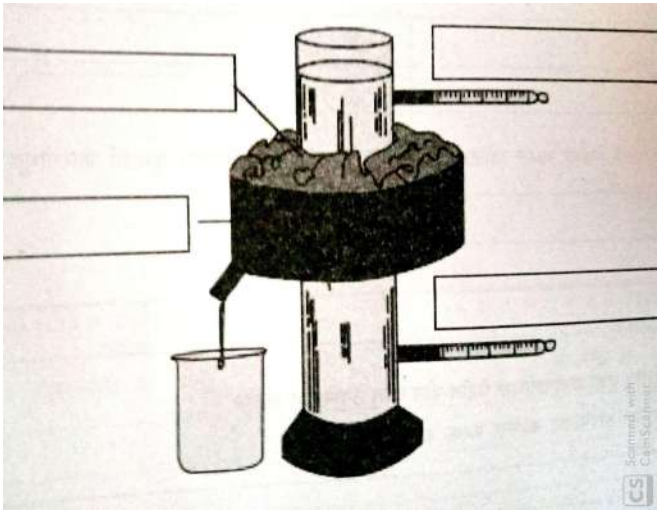
$_{4}Be$, $_{17}Cl$, $_{2}He$, $_{13}Al$

16. Electronic configuration of element A is 2,8,1. Answer the following questions based on this information.
    a) What is the atomic number of element A?
    b) Find the group to which this element belongs.
17. Classify the following elements into Metals and Nonmetals.
18. S, Mg, Al, P, N, Na.
19. Explain the factors affecting the rate of chemical reaction with examples.
20. What are reactants and products? Explain with the help of examples.
21. Explain the following reaction with their balanced chemical equation .
    a) Ammonia gas reacts with hydrogen chloride.
    b) hydrogen sulphide reacts with sulphur dioxide.
22. Classify the following reactions into Exothermic and Endothermic reactions.
    a) Magnesium ribbon when burned in air, it forms magnesium oxide.
    b) $HCl + NaOH \rightarrow NaCl + H_2O$ + Heat
    c) $2KClO_{3(s)} \xrightarrow{\Delta} 2KCl_{(s)} + 3O_2$
    d) $CaO + H_2O \rightarrow Ca(OH)_2$ + Heat
    e) $CaCO_{3(s)} \xrightarrow{\Delta} CaO_{(s)} + CO_2$
23. Identify which is the oxidising agent and reducing agent in the following reaction.

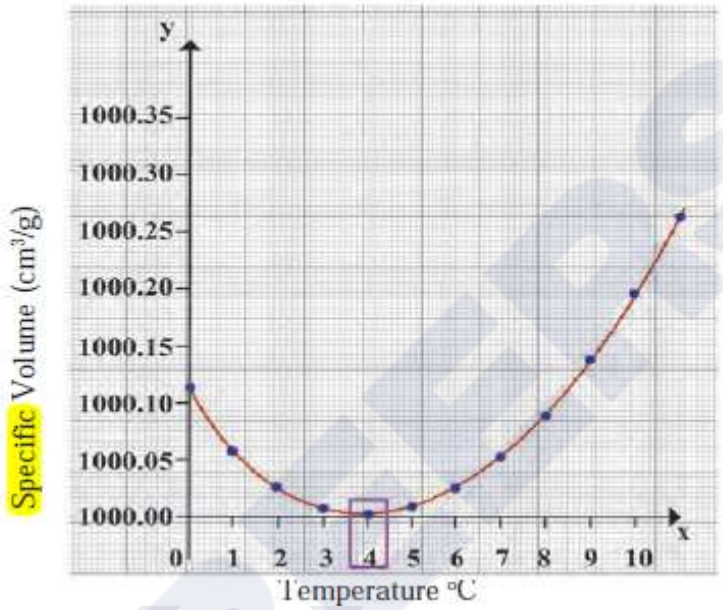
$$2H_2S + SO_2 \longrightarrow 3S\downarrow + 2H_2O$$

24. Write the similarities and differences between the reactions of NaOH in water and CaO in water.
25. Distinguish between Direct current and alternating current.
26. How does the short circuit form? What is its effect?
27. Write Fleming's Right hand rule and Left-hand rule.
28. What is an electric motor? In which appliances do we use it?
29. Name any two appliances which work on the phenomenon of magnetic effect of electric current.
30. Name any two appliances which work on the phenomenon of heating effect of electric current.
31. Explain the Right-hand thumb rule with the help of a diagram.
32. Explain the importance of fuse wire. (Uses)
33. Draw a neat and labelled diagram of Hope's apparatus.
34. How much heat will be required to raise the temperature of 5kg of water from 20℃to100℃?
35. Find the amount of heat needed to raise the temperature of a silver container of mass 100g by 10℃.(c=0.056cal/g℃)
36. If water of mass 60g and temperature 60℃is mixed with water of mass 60g and temperature 40℃, what will be the maximum temperature of the mixture?

37. Label the following diagram appropriately.



38. Observe the following diagram and write the answers to the questions given below.



a) Which process does the graph represent?

b) What is the range of temperature responsible for the behaviour?

39. Find the amount of needed to raise the temperature of a piece of iron of mass 500gby 20℃.(c=0.110cal/g.℃)

40. If the absolute refractive index of water is 1.36, find the speed of light in water.(Speed of light in vacuum=3×10^8 m/s.

41. If the absolute refractive index of glass and water are 3/2 and 4/3 respectively, what is the refractive index of glass with respect to water?

42. Velocity of light in first medium, $V_1=3\times10^8$ m/s and in second medium, $V_2 = 2\times10^8$m/s, Then ${}_2n_1$ = ?

43. Draw a neat and labelled diagram for Dispersion of light.

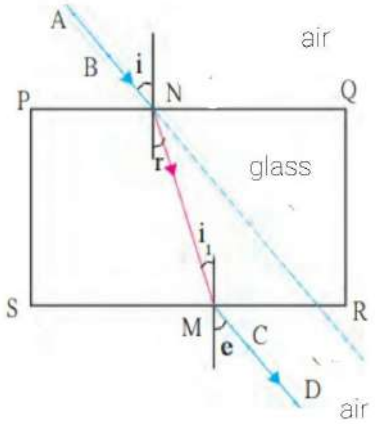
44. What is refraction of light? Explain with the help of example.

45. What is meant by dispersion of light?

46. State the laws of refraction of light.

47. If the speed of light in a medium is 1.5×10^{8} m/s, what is the absolute refractive index of the medium?

48. Observe the given figure and name the following.



Ray AB	
Ray NM	
Ray MD	
∠ r	

49. When a copper coin is dipped in the solution of silver nitrate, it shows a lustre on its surface.explain this process with the help of a chemical equation.

50. Electronic configuration of metal A is 2,8,1. Electronic configuration of Metal B is 2,8,8,2.Which of the above metals is more reactive?Explain with reason.

51. Classify the following metals based on their reactivity.

52. Cu, Zn, Ca, Mg, Fe, Na, Li, Hg

More reactive	Moderately reactive	Less reactive

53. Write the molecular formulas of the following compounds.
    a)Cryolite
    b)Fluorspar
    c)Sodium aluminate
    d)Copper pyrite
    e)Stannic oxide
    f)Ferrous tungstate

54. Explain the concept of Roasting and Calcination.

55. a)What is an alloy?
    b)Give two examples of alloy.

56. Explain Bayer's process.

57. Differentiate between Calcination and Roasting.

58. Draw a neat and labelled diagram for the Froth Floatation Process.

59. Explain the reactions of nonmetals with water with the help of examples.
60. Explain the characteristics of Ionic compounds.
61. What are amphoteric oxides ? Explain with the examples.
62. Explain the Catenation power.
63. Explain the characteristics of covalent bonds.
64. Explain the term Structural isomerism with an example.
65. Explain the following terms with an example.
66. a) Oxidising agent b) Reduction
    Explain the concept of heteroatoms with the help of examples.
67. Explain the following reactions with examples.
    a) Addition reaction b) Substitution reaction c) Esterification d) Saponification
68. What are catalysts? Give a chemical reaction in which a catalyst is used.
69. Write the characteristics of Ethanol.
70. What are vinegar and gasoline? What are their uses?
71. Write the uses of ethanol.
72. Write the characteristics of ethanoic acid.
73. What is meant by space debris? Suggest the ways to manage space debris.
74. Bring out the contribution of India's space missions.
75. What is Medium Earth Orbit?
76. Calculate the critical velocity of the satellite to be located at 35780 Km above the surface of earth.

Question 2 b) II. Distinguish between:

1. Universal gravitational constant - Gravitational acceleration of the earth
2. Weight and mass
3. Group - Period
4. s-block - p- block
5. Group 17 - group 18
6. Mendeleev's periodic table - Modern periodic table
7. Concave lens - Convex lens
8. Farsightedness- Nearsightedness
9. Myopia - Presbyopia
10. Metals - Nonmetals (physical characteristics)
11. Roasting - Calcination
12. Froth floatation - Leaching
13. Saturated hydrocarbons - Unsaturated hydrocarbons
14. Open chain hydrocarbons - closed chain hydrocarbons
15. Alkane - Alkene
16. High Earth orbit - Medium Earth orbit.

Que 2B) III. write short notes. (2m each)

1. Escape Velocity
2. Free Fall
3. Anomalous behaviour
4. Specific capacity
5. dew point temperature
6. regelation
7. Aqua Regia
8. catenation power
9. characteristics of carbon
10. functional group carbon compounds
11. Homologous series
12. aromatic hydrocarbons
13. Macromolecules
14. Alcohol - a fuel
15. Mars missions
16. moon missions
17. Need and importance of space missions

Que 2B) IV. Explain the following reactions with the balanced equations. (2 marks each).

1. sodium burns in air
2. reaction of aluminium with oxygen
3. magnesium reacts with dil. HCl
4. aluminium reacts with dil. hydrochloric acid
5. reaction of zinc with dil. hydrochloric acid
6. Sulphur burns in air
7. chlorine dissolved in water
8. sodium aluminate reacts with water
9. ferrous dissolved in aqueous solution copper sulphate.
10. Ferric oxide is reacted with aluminium.
11. electrolysis of alumina is done.
12. dry aluminium hydroxide is ignited in at 1000°c
13. zinc oxide is heated strongly in excess of air
14. zinc carbonate is heated strongly in limited supply of air
15. zinc oxide is treated with carbon

Que 2 B) V. Explain concepts with examples / explain with the help of a balanced equation. (Each 2 m)

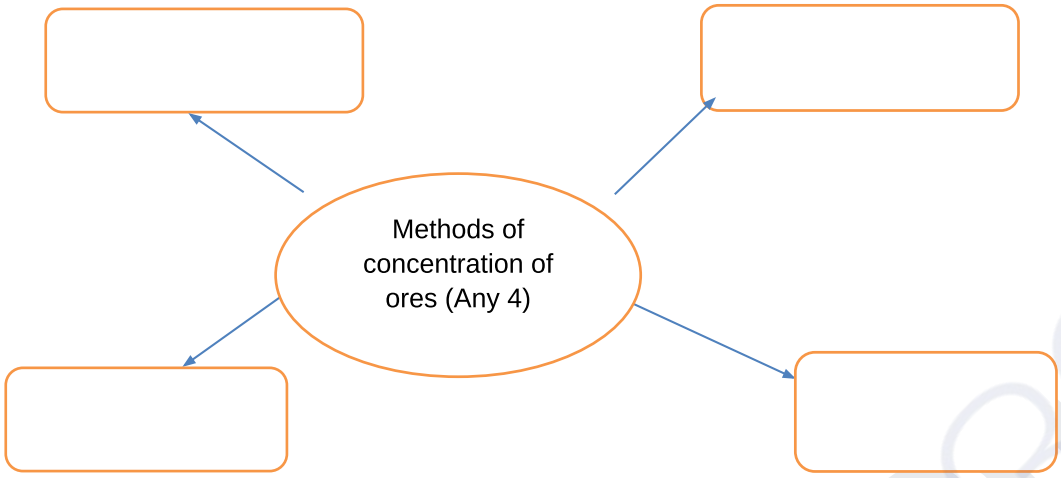
1. ionic bond and ionic compounds
2. ganauge
3. Ores
4. Roasting and calcination
5. corrosion
6. Minerals

Que.2 B) VI. Draw a neat labelled diagram. (2m each)

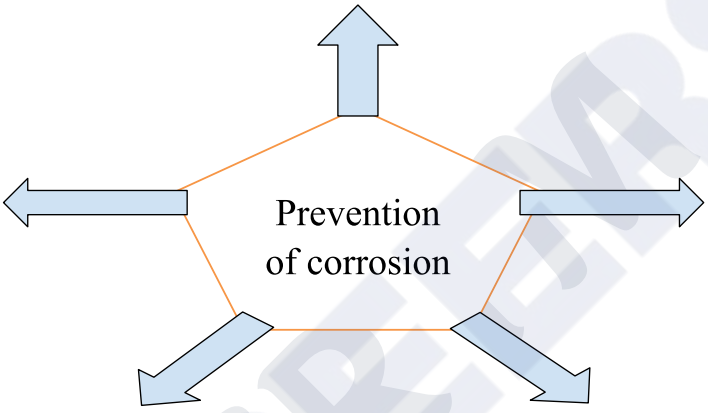
1. Magnetic separation method
2. Froth flotation
3. Electrolysis reduction of alumina
4. Hydraulic separation method
5. electrolysis
6. anodizing

Que 2 B) VII. Complete flow chart given below (2m each)

1)



2.



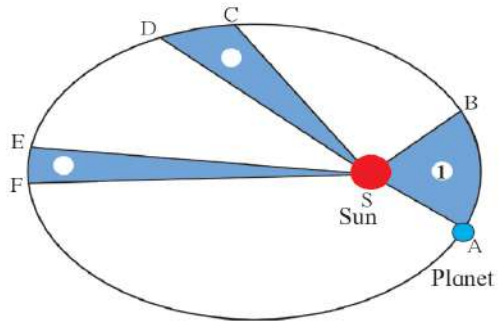
3) Symbol : ---------- Valency : ----------

Atomic Number: ---------- Electronic configuration: --------

SCBEEMS Pune

Q.3: Answer the Following. (3m each)

1) Observe the given figure and answer these following questions.



1.4 The orbit of a planet moving around the Sun.

a) What is the conclusion about the orbit of a planet?

b) What is the relation between velocity of the planet and distance from the sun.

c) ASB, CSD and ESF relation between areas explain.

1. Write Kepler's law.

2) State Newton's universal law of gravitation. Express it with the mathematical form of force of gravitation?
3) 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?
4) The radius of planet A is half the radius of planet B. If the mass of A is MA, what must be the mass of B so that the value of g on B is half that of its value on A?
5) The mass and weight of an object on earth are 5 kg and 49 N respectively. What will be their values on the moon? Assume that the acceleration due to gravity on the moon is 1/6th of that on the earth.
6) 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? Assume g = 10
7) A ball falls off a table and reaches the ground in 1 s. Assuming g = 10 m/s^2, calculate its speed on reaching the ground and the height of the table?
8) The masses of the earth and moon are 6×10^{24} kg and 7.4×10^{22} kg, respectively. The distance between them is 3.84×10^5 km. Calculate the gravitational force of attraction between the two? (Use $G = 6.7 \times 10^{-11}$ N m^2/kg^2)
9) The mass of the earth is 6×10^{24} kg. The distance between the earth and the Sun is 1.5×10^{11} m. If the gravitational force between the two is 3.5×10^{22} N, what is the mass of the Sun? Use $G = 6.7 \times 10^{-11}$ N m^2kg^{-2}.
10) A tennis ball is thrown up and reaches a height of 4.05 m before coming down. What was its initial velocity? How much total time will it take to come down? Assume g = 10 m/s^2?

a) State mendeleev's periodic law. On which basis mendeleev organised periodic law?

b) State limitations of Dobereiner's law of triads?

c) Describe the merits of Mendeleev's periodic table?

d) What are the demerits of Mendeleev's periodic table?

e) Write name of elements, symbol, atomic number, electronic configuration of second period in modern periodic tables?

11) Write information about the given atomic number in the table.

Atomic Number	Electronic configuration	Groups	Periods	Elements
10				
20				
7				

12) An X element with atomic number 11 and Y element with atomic number 13 belong to the third period in the modern periodic table with this information given in the answers of the below question.

a) Which elements are more metallic characters from these two elements?

b) what is the valency of X व Y elements?

c) atoms size of Y element is smaller than atoms size of X element? explain?

13) Identify periods of elements and blocks of elements from given electronic configuration.?

a) 2, 8, 2 b) 2, 8, 7 c) 2, 1

14) Position of A, B and C three elements is given in the table from the modern periodic table. Answer the following questions?

Periods	Group 2	Group 17
2	------	A
3	B	-------
4	-------	C

a) What is an element metal or nonmetals?

b) Which is the outermost orbit of element B ?

c) Identify the C element and its physical state?

15) 3, 1, 2 electrons are in the valence shell of X , Y , Z elements resp. From this information write the name of the groups it belongs to and its valency.

16) Match the columns.

	Reactants	Products	Types of chemical reaction
a)			
b)	MgH_2 →	$Mg + H_2$	Endothermic
c)	$2H_2S + SO_2$ →	$3S + 2H_2O$	Oxidation
d)	$CaO + H_2O$ →	$Ca(OH)_2$ + heat	Exothermic
			Redox

17) Write three steps of writing chemical equations with an example?

18) Identify the following reactions the reactants undergo oxidation and reduction.and write it?

a) $2Ag_2O \rightarrow 4Ag + O_2$

b) $2Mg + O_2 \rightarrow 2MgO$

c) $NiO + H_2 \rightarrow Ni + H_2O$

19) Answer the following questions

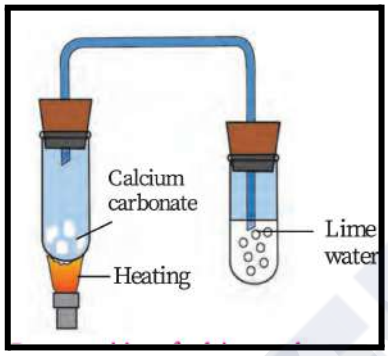
a) What is corrosion?

b) What is Electrolysis?

c)which changes occur during chemical changes?

d) what is called the reaction which involves oxidation and reductions simultaneously? explain with one example?

20) Explain the reaction given in figure?



21) Write the properties of Groups and Period.

22) Write the electron configuration and determine the valency of the beryllium -atomic number 4 and oxygen - atomic number 8.

23) Name any three appliances based on the heating effect of electric current.

24) Name any three appliances based on the magnetic effect of electric current Write laws

a. Fleming right hand rule

b. Fleming left hand rule

c. Right hand thumb rule

25) An electrical iron 1100 wt is operated for 2 hours daily what will be the electrical expenses for that in the month of April (the electrical charges 5 Rs. per unit of energy)

26) What is overloading? When does it occur? What does it cause? How can overloading be avoided?

27) Explain the construction and working of electric motors in short.

28) Write a short note on the galvanometer.

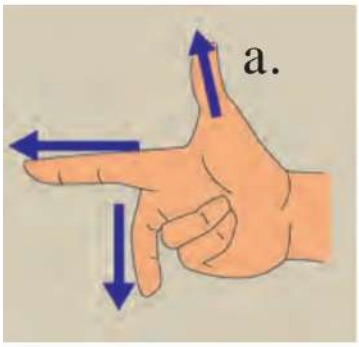
29) "Rate of reaction is also important from an environmental point of view." Illustrate this statement with an example.

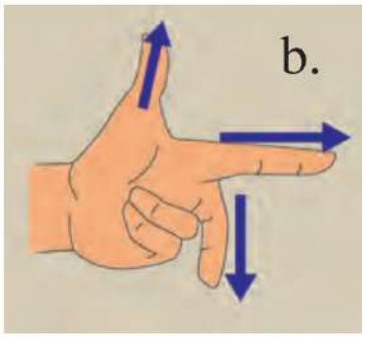
30) What is the use of earthing wire?

31) Explain the application of the heating effect of electric current in an electric bulb with a diagram.

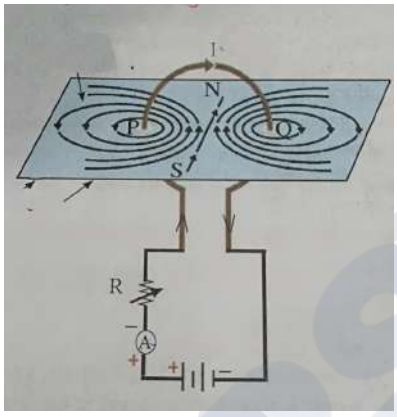
32) Draw a neat labelled diagram to show the magnetic effect of electric current.

33) Name the following diagrams and explain the concept behind them.





34) Identify the given figure, write the labels of it.



35) Who will spend more electrical energy? 500 W TV Set in 30 mins, or 600 W heater in 20 mins?

36) Which principle is used to measure the specific heat capacity of a substance?

37) decide the unit for specific heat capacity.

38) In cold regions in winter, the rocks crack due to anomalous expansion of water Explain term.

39) Explain how the heat capacity of a solid can be determined by the method of mixture.

40) What is meant by latent heat? How will the state of matter transform if latent heat is given off?

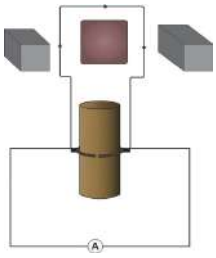
41) What is the role of anomalous behaviour of water in preserving aquatic life in regions of cold climate?

42) How can you relate the formation of water droplets on the outer surface of a bottle taken out of the refrigerator with formation of dew?

43) Identify diagrams and explain their uses.

a.

b.

c. 

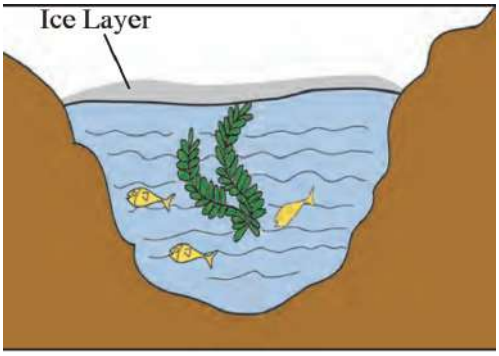
44) 'Geeta observed white trail at the back of the aeroplane in a clear sky to answer the question from this incident given below.

i) what will be the effect of relative humidity of the air surrounding the plane?

ii) what will be the effect of relative humidity if the air surrounding the plane is low?

iii) when the air is dry and humid?

45) Observe the given picture and answer the following questions.



a) Which property do you understand in this picture?

b) what is the temperature of the water at the surface?

c) what is the temperature below the layer of ice on the surface?

46) Read this activity and answer the following questions.

1) Take three spheres of iron, copper and lead of equal mass.

2) Put all the three spheres in boiling water in the beaker for some time.

3) Take the three spheres out of the water.

4) All the spheres will be at temperature 100°C

5) Put them immediately on the thick slab of wax

6) Note, the depth that each of the sphere goes into the wax

Que:

a) which property is determined from this activity?

b) give name to that property.

c) explain the term Principal of heat exchange with the help of this activity.

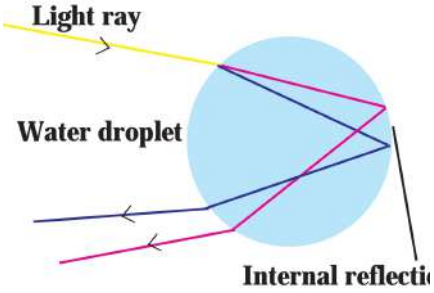
47) The cold object the hot object enclosed in a one box of heat resistant material

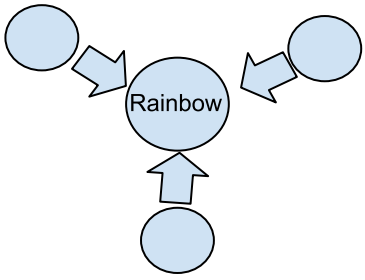
a) what changes will occur in the two objects when temperature flows from those objects ?

b)which principle can show that the energy exchange takes place between two objects only?

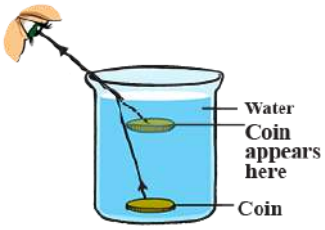
48) Rainbow is a beautiful natural phenomenon. It is the combined effect of a natural three processes together produced by light.write it into the circle.

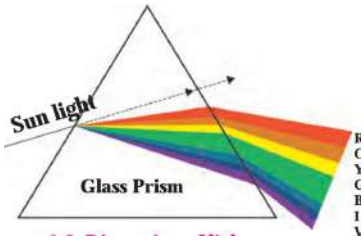
49)



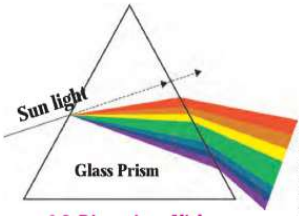


50) Observe the given figure and write appropriate phenomena of light in the box.





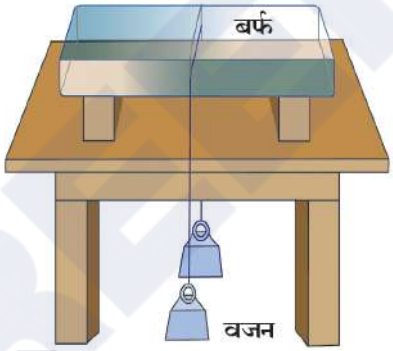
51) Observe the given figure and answer the following questions.



a. Which colour light rays bends most?
b. Which colour light rays bends least.
c. What is the wavelength of violet light rays?

52) Find the power of a convex lense of focal length of + 25 c.m

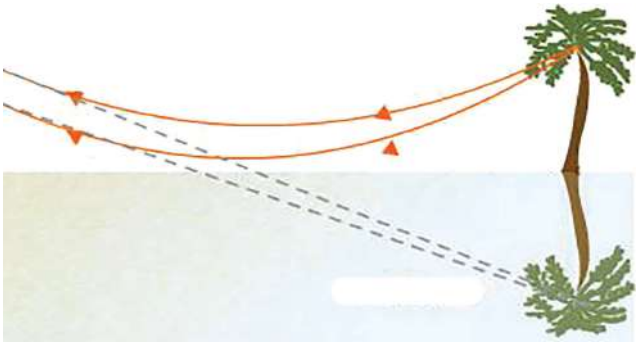
53) Identify the process shown in the diagram and explain in brief.



54) If a convex lens focal length is 20 c.m at what is the power of the lens?

55) If each two concave lenses of focal length 30 c.m are kept in contact with each other what will be the power of combination.

56) Write the name of the phenomenon shown in the diagram and briefly explain it.



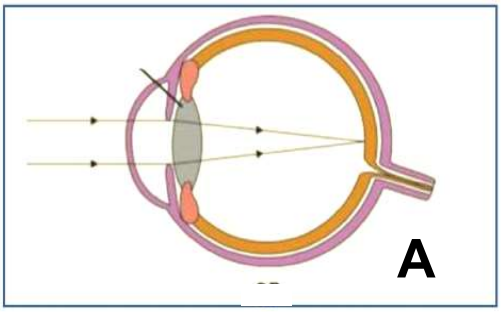
57) An object is placed at a distance of 10 c.m a convex lens of focal length 12 c.m found at what distance the object placed from the lens. position and nature of image

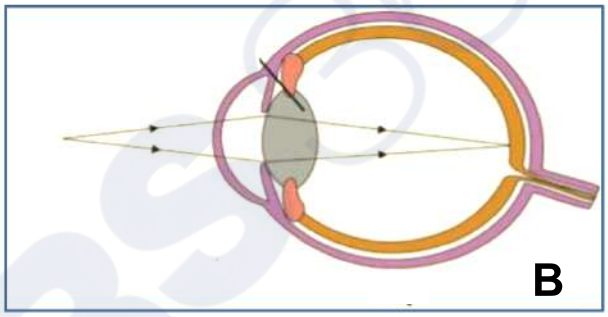
58) A 5 cm high object is placed at a distance of 20 cm from a converging lens of focal length of 10 cm. Determine the position, size and type of the image.

59) An object is placed vertically at a distance of 20 cm from a convex lens. If the height of the object is 5 cm and the focal length of the lens is 10 cm, what will be the position, size and nature of the image? how much bigger as compared to the object?

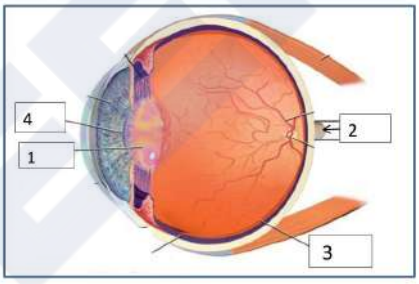
60) Two convex lenses of focal length 30 c.m and 10 c.m each are kept in contact with each other. Find the power of their combination.

61) In the following figure the change in the shape of the lens while seeing distant and nearby objects completes the figure by correctly labelled diagram .

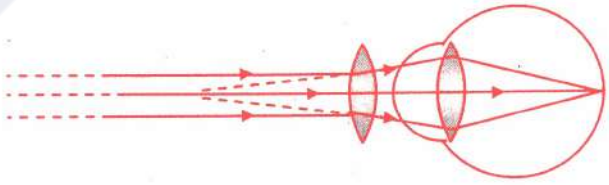




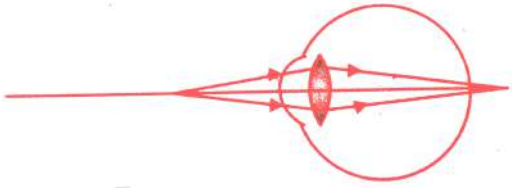
62) Write the function of the human eye and label parts of the figure given below.



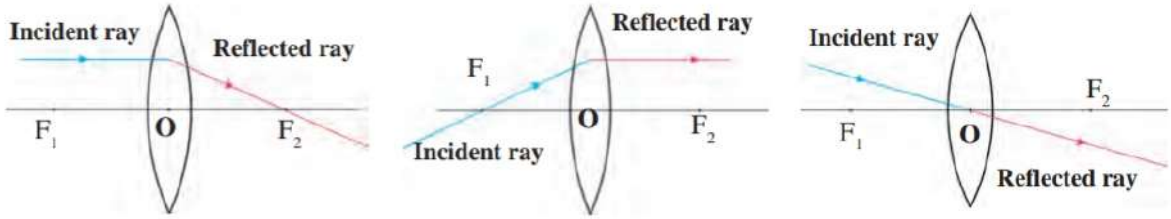
63) Observe the given below figure, correct it and explain and write about what is your concept about this figure.



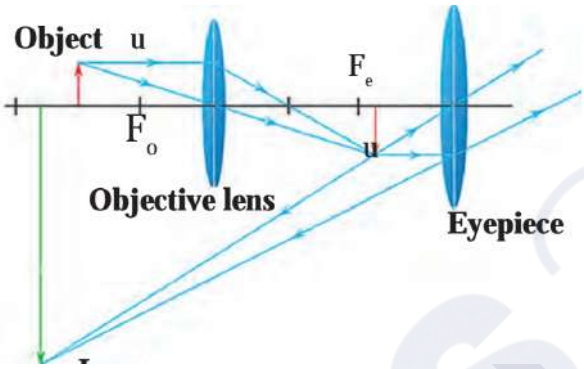
64) Given below is Diagram showing a defect of vision.name the defect of vision and draw an accurate labelled diagram to correct this defect.



65) Write laws in given figure.



66) Observe the given figure and answer the following questions.



a) Where are the above types of lens construction used?

b) What type of image is formed by an objective lens?

e) What happens instead of placing at Fo if the object is placed in between O and FO?

67) Identify and Explain concepts given in this Diagram?

68) Complete paragraph by choosing the right options given below.

(Minimum, near point, 25 cm, farthest, farthest distance)

The …… distance of an object from a normal eye, at which it is clearly visible without stress on the eye, is called the minimum distance of distinct vision. The position of the object at this distance is called the …… of the eye, for a normal human eye, the near point is at ……. The ……. distance of an object from a human eye, at which it is clearly visible without stress on the eye is called …… of distinct vision. The position of the object at this distance is called the …… of the eye.

69) Choose the correct option from the bracket and complete the stanza.

(Colour blind, actual, conical, light sensitive, rodlike, colours)

The retina in our eyes is made up of many --------- cells. These cells are shaped like a rod and like a cone.The ------- cells respond to the intensity of light and give information about the brightness or dimness of the object to the brain.The

---------- cells respond to the colour and give information about the colour of the object to the brain.Brain processes all the information received and we see the ------ image of the object.Rod like cells respond to the faint light also but ------ cells do not.Some people lack conical cells responding to certain colours. These persons can not recognize those colours or can not distinguish between different ---------.These persons are said to be --------.

A) What is corrosion ?

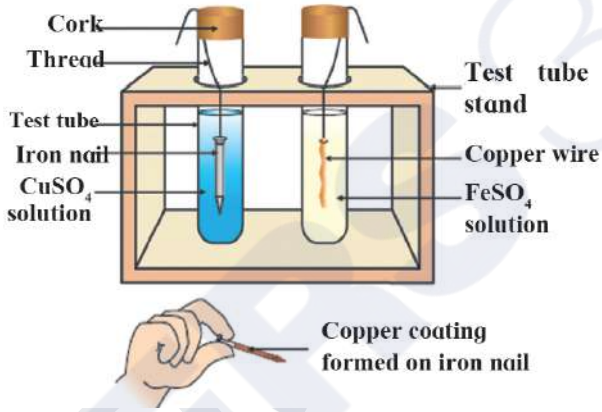
B) Write the chemical name of Corrosion.

C) Write a molecular formula for corrosion.

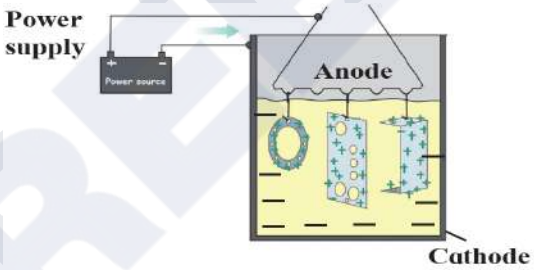
70) Explain the Cartesian sign convention used for the lens.

71) Write the uses of concave lenses.

72) Observe the following diagram and identify the type of reaction and write observation.



73) Observe the following diagram and give answers.



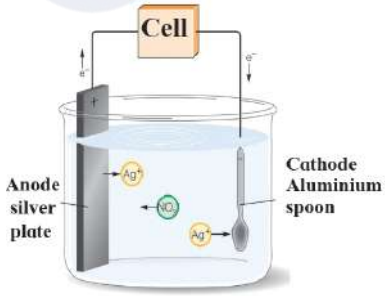
A) Name the method of prevention of corrosion.

B) For prevention of which metal this method is used?

C) What is used as Anode in this method?

74) Explain the Hydraulic separation method with a neat labelled diagram.

75) Observe the following diagram and write answers.

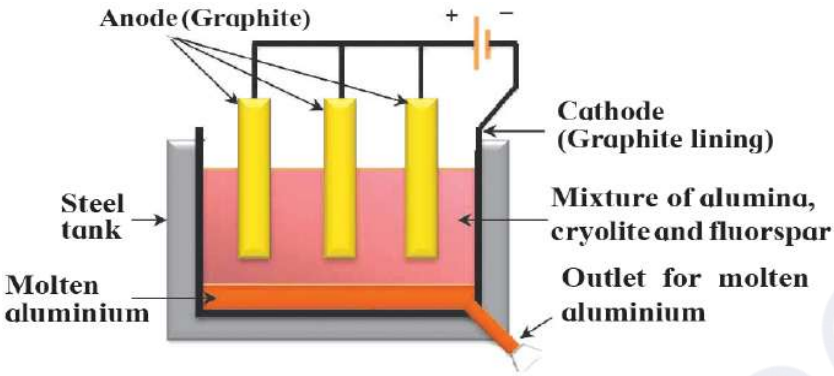


A) Name the method :----------

B) Explain the method .

C) Give two examples of this method.

76) Observe the following diagram and write answers.

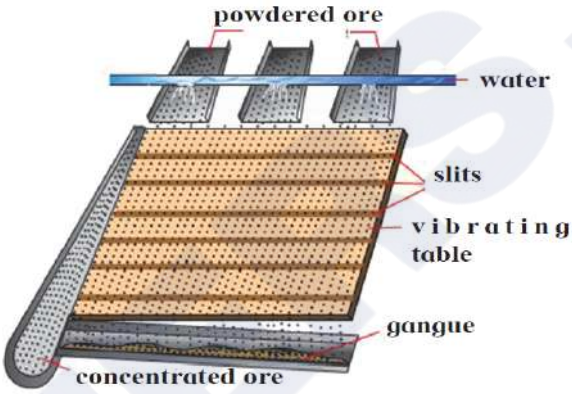


A) Name the method :----------

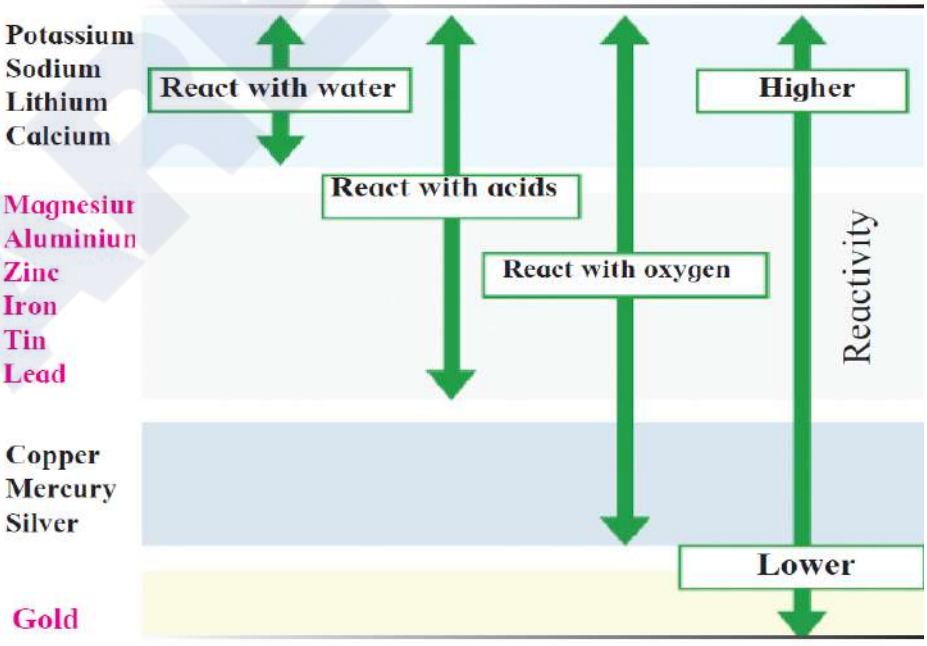
B) Write Anode reaction and Cathode reaction .

C) Why are fluorspar and cryolite added in the mixture ?

77) Identify the following method of concentration of ores and explain briefly .



78) Observe the following diagram and write answers.



A) Write the name of two metals which react with water.

B) Write the name of two moderately reactive metals .

C) Which is highly reactive and less reactive metal?

79) Explain the Froth floatation method with a neat labelled diagram.

80) Read the following passage and answer the questions.

According to the reactivity series Zinc is more reactive than Iron, Iron is more reactive than silver. During study of this a student deeped the iron nails in silver nitrate solution.

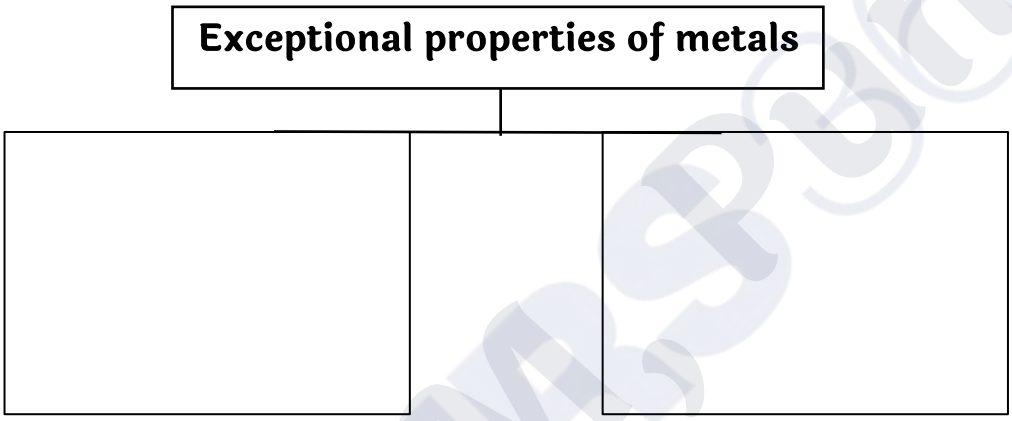
A. What is reactivity ?

B. What will happen when iron nails are dipped in silver nitrate solution ?

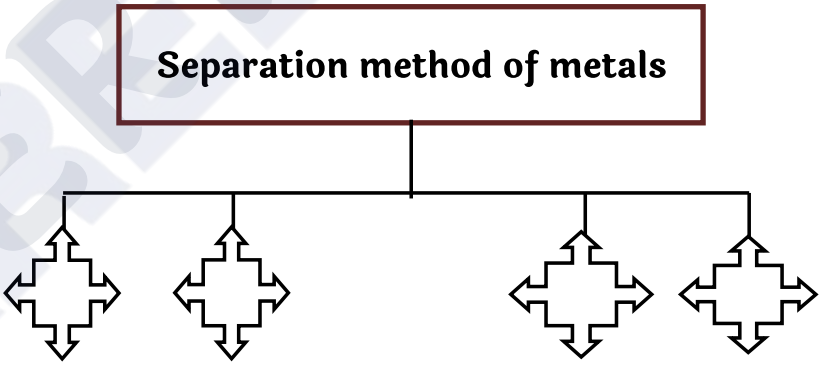
C. Which type of reaction happens when iron metal reacts with silver nitrate solution ?

D. What will happen if a Zinc rod is used other than Iron nail ?

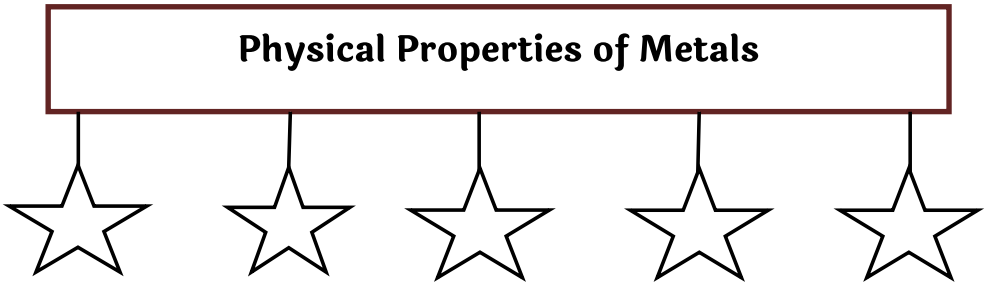
81) Complete the following flowchart.



82) Complete the following flowchart.



83) Complete the following flowchart.



SCERT MS Pune

84) Homologous series of Alkanes.

Name	Molecular formula	Condensed Structural formula	Number of carbon atoms	Number of $-CH_2-$ units	Boiling point ^0C
Methane	CH_4	CH_4	1	1	- 162
Ethane	C_2H_6	CH_3-CH_3	2	2	- 88.5
Propane	C_3H_8	$CH_3-CH_2-CH_3$	3	3	- 42
Butane	C_4H_{10}	$CH_3-CH_2-CH_2-CH_3$	...	...	0
Pentane	C_5H_{12}	$CH_3-CH_2-CH_2-CH_2-CH_3$	...	...	36
Hexane	C_6H_{14}	$CH_3-CH_2-CH_2-CH_2-CH_2-CH_3$	...	...	69

85) Homologous series of Alcohols

Name	Molecular formula	Condensed Structural formula	Number of carbon atoms	Number of $-CH_2-$ units	Boiling point ^0C
Methanol	CH_4O	CH_3-OH	1	1	63
Ethanol	C_2H_6O	CH_3-CH_2-OH	2	2	78
Propanol	C_3H_8O	$CH_3-CH_2-CH_2-OH$	...	...	97
Butanol	$C_4H_{10}O$	$CH_3-CH_2-CH_2-CH_2-OH$	...	...	118

86) Homologous series of Alkenes

Name	Molecular formula	Condensed Structural formula	Number of carbon atoms	Number of $-CH_2-$ units	Boiling point ^0C
Ethene	C_2H_4	$CH_2= CH_2$	2	0	- 102
Propene	C_3H_6	$CH_3-CH=CH_2$	3	1	- 48
1-Butene	C_4H_8	$CH_3-CH_2-CH=CH_2$	...	...	- 6.5
1-Pentene	C_5H_{10}	$CH_3-CH_2-CH_2-CH=CH_2$	...	...	30

87) Complete the given chart with writing the correct functional group of carbon compounds. (Ester, Aldehyde, Ketone, Carboxylic acid, Alcohol,Ether)

	-O-H
	$-\overset{O}{\overset{\|\|}{C}}-H$
	$-\overset{O}{\overset{\|\|}{C}}-$
	$-\overset{O}{\overset{\|\|}{C}}-O-H$
	- O-
	$-\overset{O}{\overset{\|\|}{C}}-O-$
	$-\underset{\underset{H}{\|}}{N}-H$

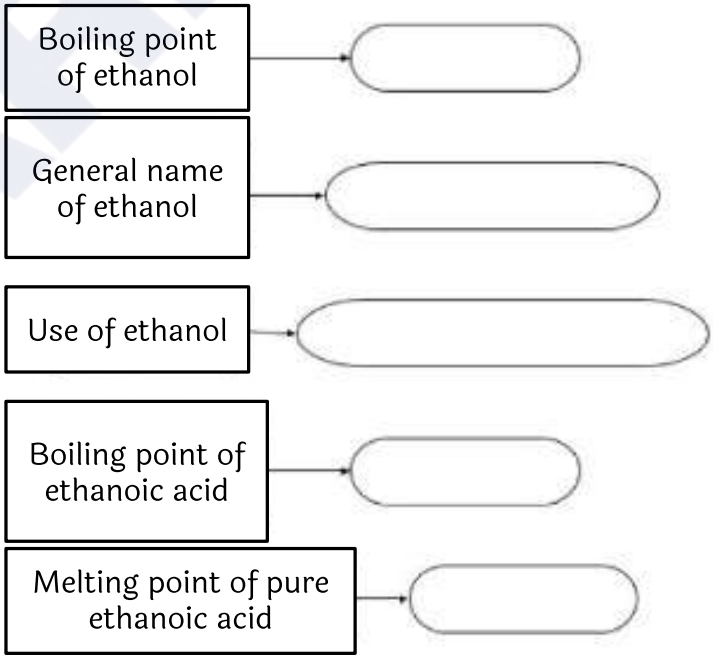
88) Complete the following table with writing correct structural formula and molecular formula.

Straight chain of carbon atoms	Structural formula	Molecular formula	Name
C - C	…….	…….	Ethane
C - C - C - C	…….	…….	Butane
C - C - C - C- C- C- C	…….	C_7H_{16}	…….
C - C - C - C- C- C- C - C	…….	C_8H_{18}	…….

89) Complete the following table with writing IUPAC name of carbon compound.

Sr. No.	Common name	Structural formula	IUPAC Name
1	ethylene	$CH_2=CH_2$	
2	acetylene	$HC\equiv CH$	
3	acetic acid	CH_3-COOH	
4	methyl alcohol	CH_3-OH	
5	ethyl alcohol	CH_3-CH_2-OH	
6	acetaldehyde	CH_3-CHO	
7	acetone	CH_3-CO-CH_3	
8	ethyl methyl ketone	CH_3-CO-CH_2- CH_3	
9	ethyl amine	CH_3-CH_2-NH_2	
10	n-propyl chloride	CH_3- CH-CH_2-Cl	

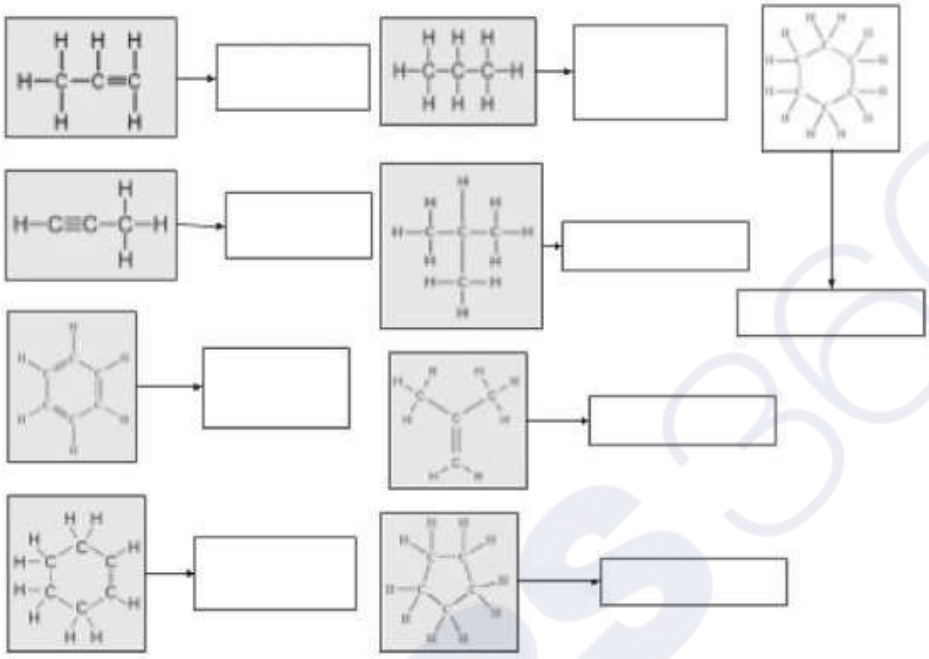
90) Complete the following activity.



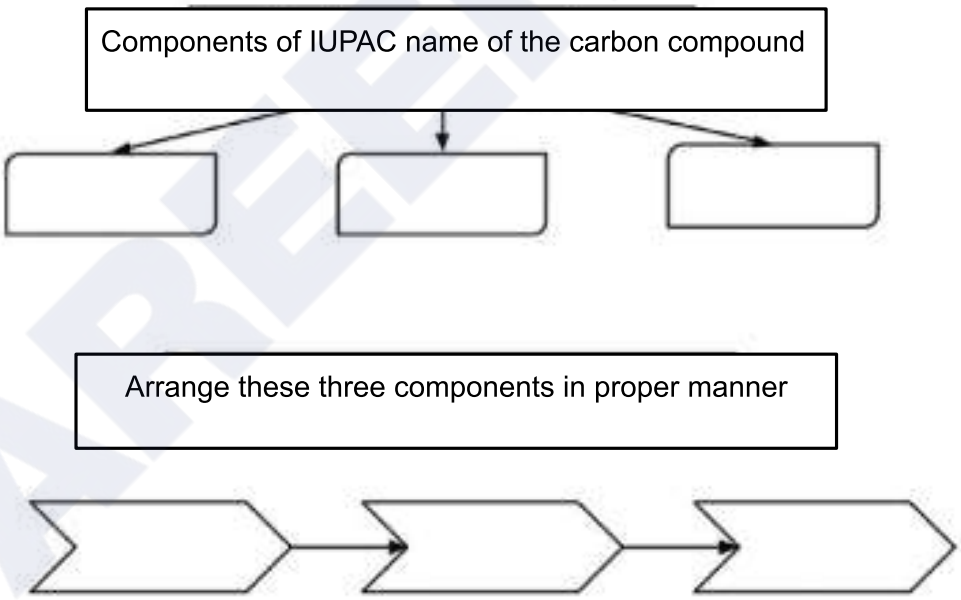
91) Complete the following activity.

Write the names of the hydrocarbons for the following structural formula.

(Isobutylene, cyclohexane, propene, cyclohexene, cyclopentane, benzene, propyne, isobutane, propene)

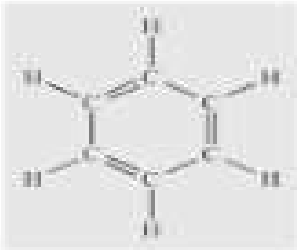


92) Complete the following activity.



93) Observe the structural formula and answer the following questions.

1. Write the name of the given hydrocarbon.
2. The given hydrocarbon included in which type of hydrocarbon?
3. What kind of compounds with the above characteristic structure are called?



94) Complete the following chart by using examples given in brackets.
(isobutylene, cyclohexane, propene, cyclohexene, cyclopentane, benzene, propyne, isobutane, propene)

Straight Chain Hydrocarbons	Branched chain Hydrocarbons	Cyclic Hydrocarbon

95) Write the properties of Ionic compounds.
96) The molecular formula of chlorine is Cl_2. Draw the electron-dot structure and line structure of a chlorine molecule.
97) Molecular formula of water is H_2O. Draw the electron-dot structure and line structure of this triatomic molecule. (Use dots for electrons in oxygen atoms and cross for electrons in hydrogen atoms.)
98) The molecular formula of ammonia is NH_3. Draw the electron-dot structure and line structure for ammonia.
99) Draw the electron-dot structure of cyclohexane.
100) Name three natural polynomials and write where they are found and from which monomer they are made.
101) What is vinegar and gasoline? What are their uses?
Observe the figure and write the answers.

A) Name the outer orbit.
B) Which satellites revolve in low earth orbits?
C) Which various orbits are given in the figure?
D) Give an example of a launch vehicle based on Newton's third law.

102) Explain why spacecraft take longer to reach the moon than light?

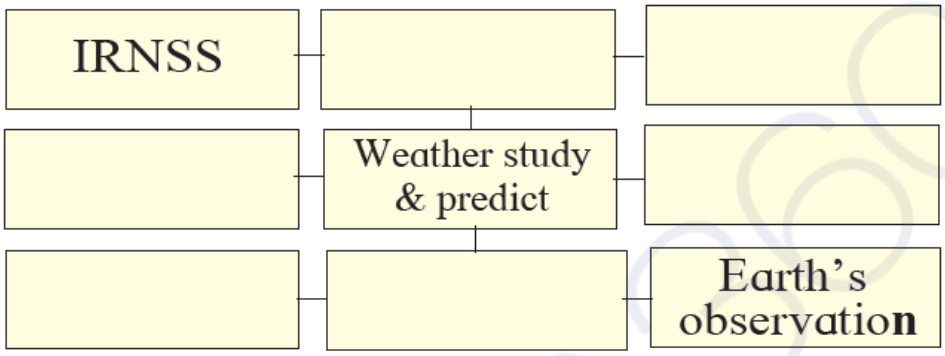
103) Write functions of Military satellite and Navigational satellite.

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.

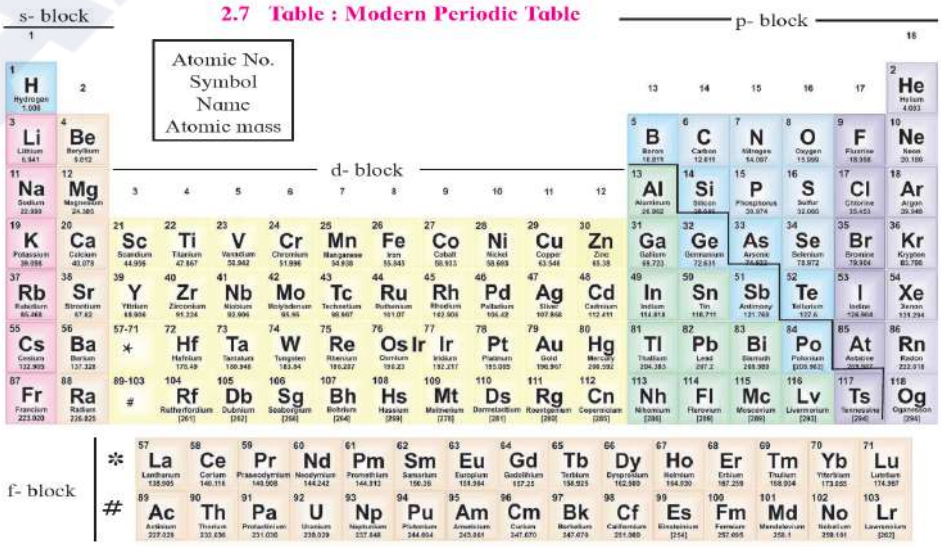
A) Determine the position of the element X and Y in the modern periodic table. 1 mark

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.

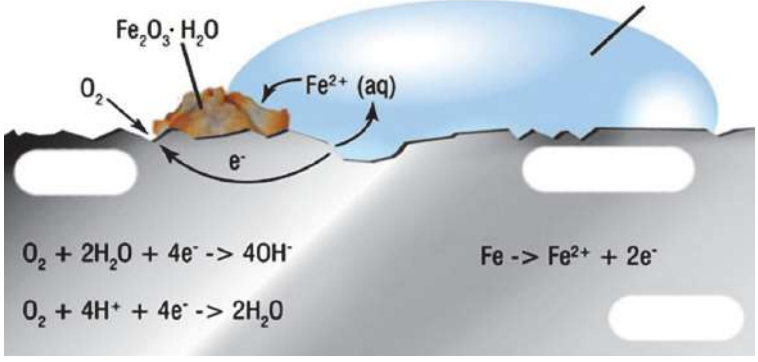
B) Make a list of the elements in the chemical equation.

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.

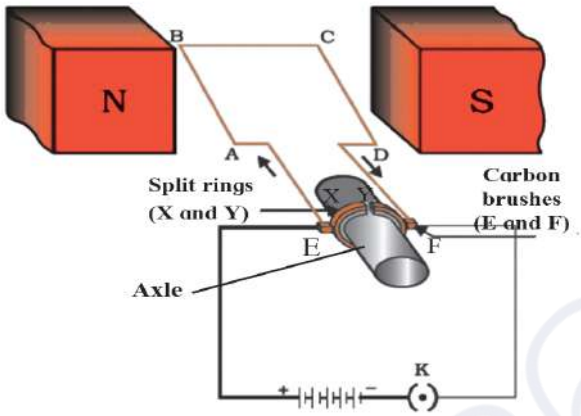
C) Write the reactions on anode and cathode.

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.

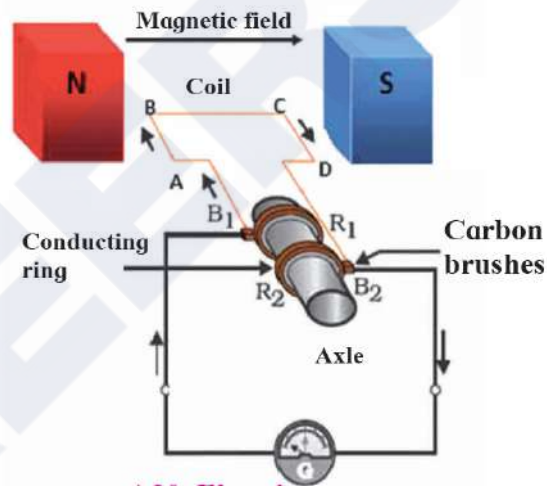


A) The structure shown in the figure is of which device?

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'.

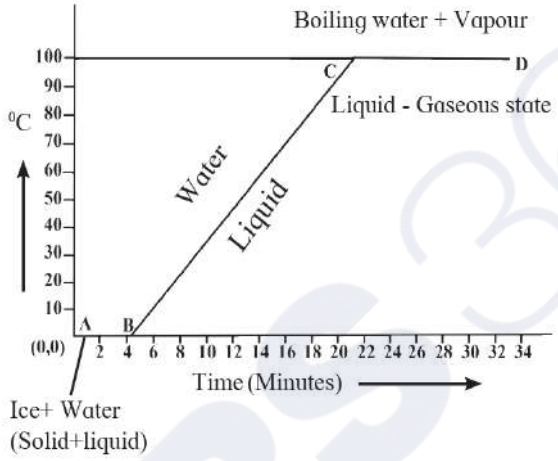
A) Where does heat transfer take place?

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

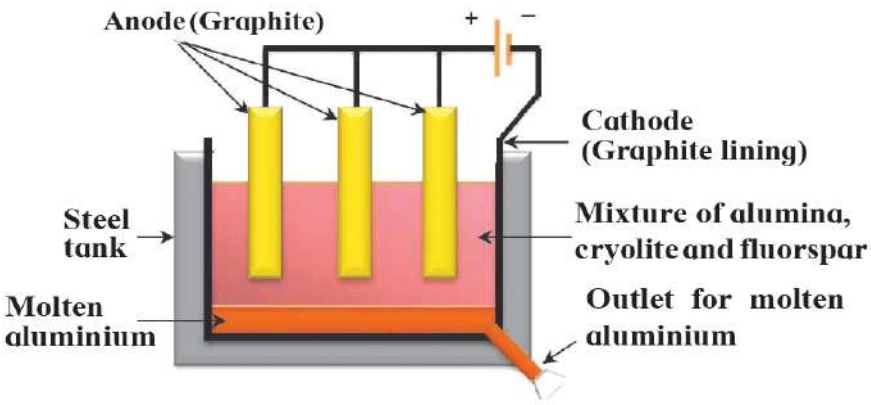
F) An object is in between F1 and O

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.

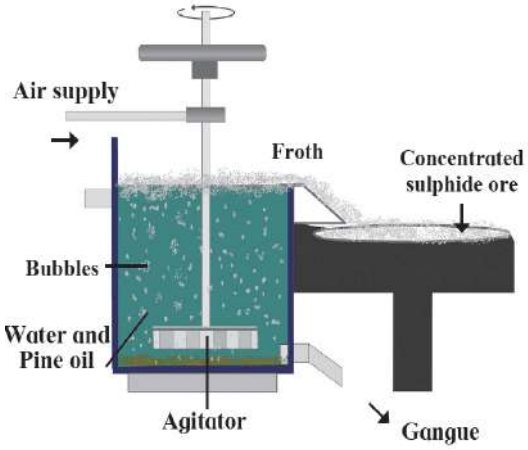
23) Observe the figure and answer the following.



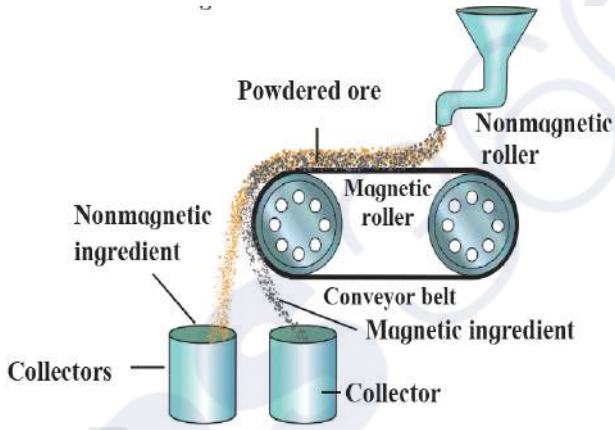
A) Write the name of the method.
B) What is used as anode and cathode in this method?
C) Write molecular formula and use of cryolite.
D) Write anode reaction.
E) Write cathode reaction.

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.

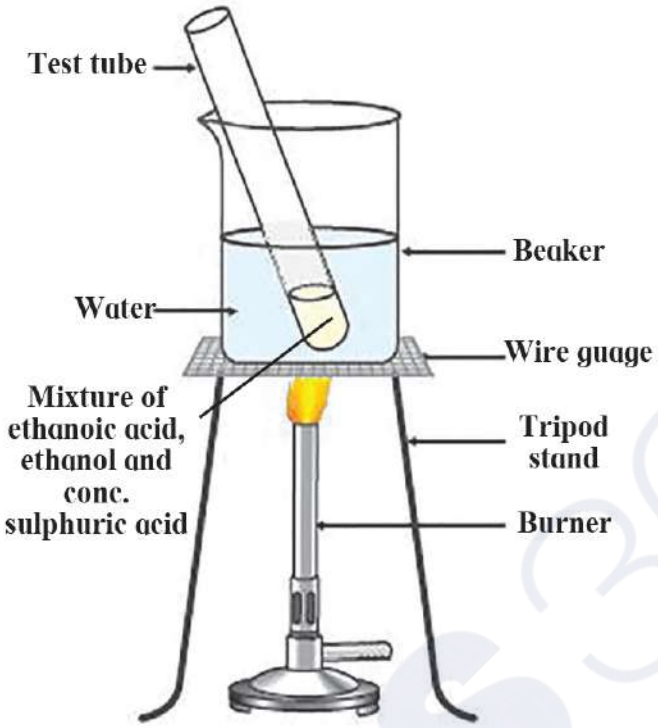
Most metals being reactive do not occur in nature in free state but are found in combined state as their salts such as oxides, carbonates, sulphides and nitrates.however, the most unreactive metals that are not affected by air,water and other natural factors like silver,gold,platinum,generally occur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



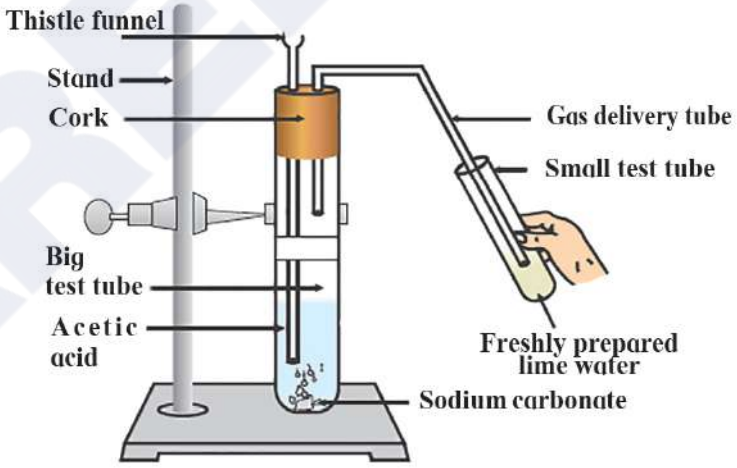
A) Write the name of the reaction shown in the following figure.

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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SCERT MS Pune