

**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)  $6.673 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$             b)  $6.673 \times 10^{11} \text{ Nm}/\text{kg}$   
c)  $9.673 \times 10^{-11} \text{ Nm}/\text{kg}$             d)  $9.673 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$
- 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)  $9.78 \text{ m/s}^2$     b)  $9.832 \text{ m/s}^2$     c)  $9.8 \text{ m/s}^2$     d)  $6.67 \text{ m/s}^2$
- 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) Inner 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

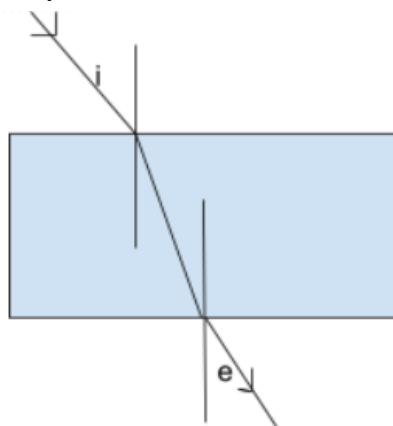
- 49) A coil of an alloy.....is used in an electric heater cooker as a resistor.  
 a) Stainless steel      b) Nichrome      c) Copper      d) Bronze
- 50) The right-hand thumb rule is also called ..... rule.  
 a) Newton's law of motion    b) Newland's law of Octave  
 c) Mendeleev's periodic law      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  $4^{\circ}\text{C}$  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  $4^{\circ}\text{C}$ , 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)  $\text{Cal/g}^{\circ}\text{c}$       d)  $\text{J/Kg}^{\circ}\text{c}$
- 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  $14.5^{\circ}\text{C}$  to  $15.5^{\circ}\text{C}$ .  
 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  $\angle i = 40^\circ$ , then  $\angle e = \dots^\circ$ ?



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

68) A ray of light strikes the glass slab at an angle  $40^\circ$  with the surface of the slab. Then the angle of incidence will be..... $^\circ$

- 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)  $n = \dots\dots\dots$ this law is also called Snell's Law.

- a)  $\frac{\sin r}{\sin i}$                       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)  $1/2$

- 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  $2F_1$     c) at focus  $F_1$     d) between  $F_1$  and O
- 79) In the convex lens if an object is placed at  $2F_1$ , the image is formed at.....
- a)  $F_1$     b)  $2F_1$     c) beyond  $2F_1$     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 of 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 .....
- can see distant objects clearly
  - can see nearby objects distinctly
  - cannot see nearby as well as distant objects clearly
  - can't see nearby as well as distant objects clearly
- 89) Bifocal lens is required to correct .....defect.
- myopia
  - hypermetropia
  - presbyopia
  - none of these
- 90) ..... times larger images can be obtained by using a simple microscope.
- 5
  - 10
  - 20
  - 60
- 91) ..... is a combination of two convex lenses with a small focal length.
- simple microscope
  - compound microscope
  - telescope
  - none of these
- 92) Bronze is an alloy of.....
- copper and tin
  - copper and zinc
  - copper and iron
  - iron and nickel
- 93) .....is an alloy made from iron, nickel and chromium.
- brass
  - bronze
  - stainless steel
  - amalgam
- 94) .....is basic oxide .
- $\text{CO}_2$
  - $\text{K}_2\text{O}$
  - $\text{SO}_2$
  - $\text{Al}_2\text{O}_3$
- 95) In electrolytic reduction of alumina .....is used as a cathode.
- Sulphur
  - graphite
  - platinum
  - aluminium
- 96) Iron is.....
- more reactive than zinc
  - more reactive than aluminium
  - less reactive than copper
  - 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?
- Cu, Fe, Zn, Al
  - Al, Cu, Fe, Zn
  - Zn, Al, Cu, Fe
  - Fe, Zn, Al, Cu
- 98) Which of the following method is used to prevent the accumulation of greenish layer on brass due to corrosion
- electroplating
  - anodization
  - tinning
  - alloying
- 99) In Wilfley table method to separate particles of gangue .....method is used.
- Magnetic
  - Froth floatation
  - Leaching
  - gravitation
- 100) Aluminium oxide is .....oxide .
- acidic
  - basic
  - neutral
  - amphoteric
- 101) Atomic number of aluminium is ... and its electronic configuration is.....
- 13, ( 2, 8, 3)
  - 12 ( 2, 8, 2)
  - 13, (3, 10)
  - 12, (2, 10)
- 102) The chemical formula of zinc blend is.....
- $\text{ZnSO}_4$
  - $\text{ZnS}$
  - $\text{ZnCO}_3$
  - $\text{ZnO}$
- 103) Extraction of moderately reactive elements is done by ..... and ..... method.
- roasting and calcination
  - roasting and reduction
  - separation and calcination
  - 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)  $\text{CuSO}_4$     b)  $\text{FeSO}_4$     c)  $\text{NaCl}$     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 ..... $^{\circ}\text{C}$
- 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

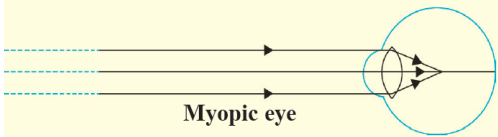
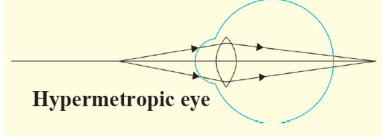


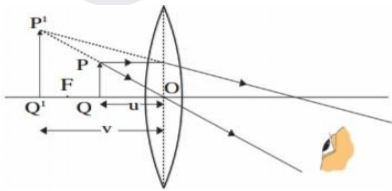
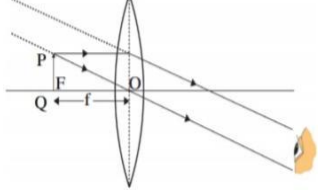
- 122) The phenomenon in which compounds having different structural formulae have the same molecular formula is called .....
- a) structural isomerism b) catenation c) homologous d) functional group
- 123) From the following hydrocarbon .....is the cyclic hydrocarbon.
- a) isobutane b) propyne c) benzene 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**

- Eka boron : Scandium :: Eka Aluminum : .....
- Mendeleev's periodic table : atomic mass :: Modern periodic table : .....
- Group 1 and 2 : S block :: group 13 and 18 : .....
- Group 13 and 18 : P block :: ..... D block
- Two elements in the same position : demerit of Newland's octaves :: place for Isotopes : .....
- Beryllium : alkaline earth metal :: sodium: .....
- Cl : halogen group :: Ar : .....
- 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 :  $0^{\circ}\text{C}$  :: lower temperature of the thermometer : ::.....
15. The density of water is high at  $4^{\circ}\text{C}$  : anomalous behaviour of water :: shredded ice converted into solid ice balls : .....
16. Specific latent heat of vapourisation : J/Kg :: specific heat : .....
17.  $n_1$  : Refractive index of medium 1 with respect to medium 2 ::  $n_2$  : .....
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  $2F_1$  of a convex lens : Image at  $2F_2$  :: Object at  $F_1$  :-----
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  $\rightarrow$  Anode : ----- : : Cathode : Graphite lining

28.  Myopic eye : Concave lens ::  Hypermetropic eye :-----

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.  $\text{CH}_3\text{-CH}_2\text{-CHO}$  : propane ::  $\text{CH}_3\text{-COOH}$  : .....
41. Ketone :  $\text{-CO-}$  :: 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

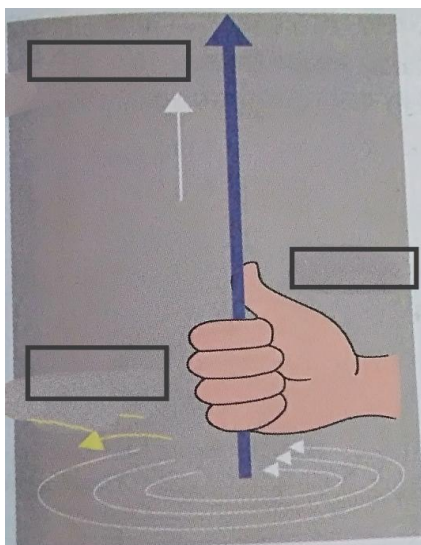
30. Zinc coating, Tinning, Electroplating, Calcination
31. Na, K, Cu, Li
32. Ethylene, Styrene, Propylene, Teflon
33. Butane, Methane, Benzene, Ozone
34.  $\text{CH}_4$ ,  $\text{C}_2\text{H}_6$ ,  $\text{C}_5\text{H}_{12}$ ,  $\text{CaCO}_3$
35.  $\text{C}_2\text{H}_2$ ,  $\text{C}_3\text{H}_8$ ,  $\text{C}_2\text{H}_6$ ,  $\text{CH}_4$
36.  $\text{C}_2\text{H}_4$ ,  $\text{C}_4\text{H}_{10}$ ,  $\text{C}_3\text{H}_8$ ,  $\text{CH}_4$
37. Sputnik, Moon, Swayam, Chandrayaan

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

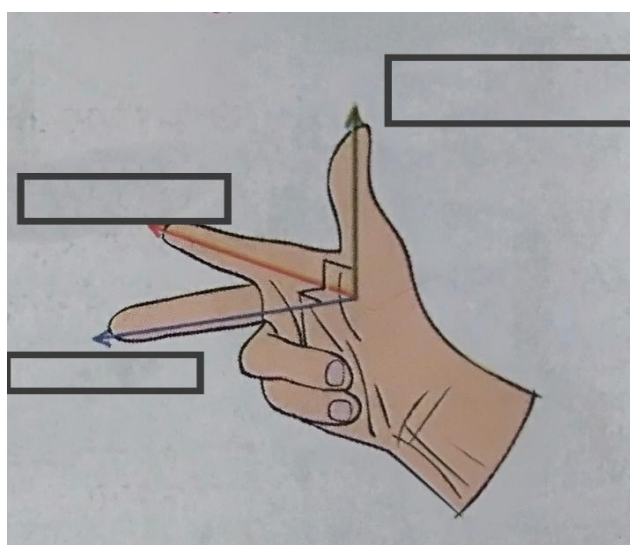
1. Elements A and B follow Newland's octaves rule. How many elements are there in between A and B?
2. Write the characteristic of Dobereiner's triads?
3. To which element does Newland's octave rule apply?
4. Write the molecular formula of the oxide of any one of the elements in Mendeleev's periodic table.
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.  

$$\text{CuSO}_4 (\text{aq}) + \text{Fe}(\text{s}) \rightarrow \dots + \dots$$
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?

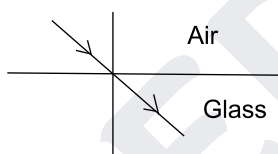
29. What is a dew point temperature?

30. What does the existence of drops of water on the leaves of a tree in the morning indicate?

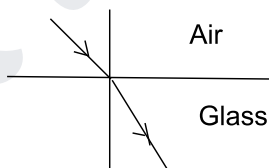
31. Which temperature segment is chosen when determining the unit of heat? Why?

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)

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

2)

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

3)

	<b>Column A</b>	<b>Column B</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)

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

5)

	<b>Column A</b>	<b>Column B</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

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 <sup>3</sup>

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)

	<b>Group A</b>	<b>Group B</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 prevent corrosion of copper -
39. Flammable substances in LPG -
40. Astronauts of Indian origin -
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  $\text{dyne.cm}^2/\text{g}^2$ .
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  $1 \text{ cal} / \text{g}^{\circ}\text{C}$ .
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  $0^{\circ}\text{C}$ .
41. 1 kg of dry air at a temperature of  $40^{\circ}\text{C}$  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  $\text{Kg} / \text{m}^3$ .
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                                | 15. Farthest Distance of distinct vision |
| 2. Period                               | 16. Magnification                        |
| 3. Atomic radius                        | 17. Power of accommodation               |
| 4. Electropositivity                    | 18. Persistence of vision                |
| 5. Electronegativity                    | 19. Alkane                               |
| 6. Balanced equations                   | 20. Alkene                               |
| 7. Endothermic reaction                 | 21. Alkyne                               |
| 8. Critical angle                       | 22. Polymers                             |
| 9. Center of curvature of the lens      | 23. monomer                              |
| 10. The optical center of the lens      | 24. Regelation                           |
| 11. Principal focus                     | 25. electrolytic reduction.              |
| 12. Focal length                        | 26. near point of the eye                |
| 13. Principal axis                      | 27. Homopolymer                          |
| 14. Minimum Distance of distinct vision | 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  $14.5^{\circ}\text{C}$  to  $15.5^{\circ}\text{C}$ .
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.

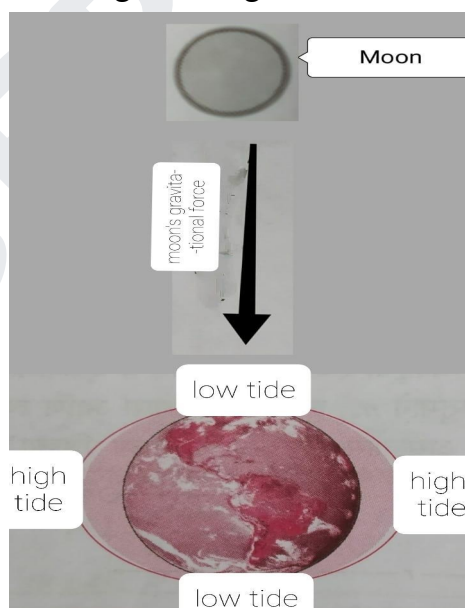
69. Vegetable ghee is formed from the hydrogenation of vegetable oil in presence of nickel catalyst.
70. Carbon has the property of forming many compounds.
71. Benzene compounds are called aromatic compounds.
72. The velocity at the earth's surface must be greater than the escape velocity of the earth.
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?  
( $G = 6.67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$ )
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  $11.2 \times 10^3 \text{ m/s}$ . Find the escape velocity of a body from the planet 'X'.