
Metals and Non-Metals

Q. 1. Answer the following questions:

- a. Metal that is found in liquid state at room temperature.
- b. The best conductor of heat.
- c. The metal showing least conductivity of heat.
- d. The best conductor of electricity.
- e. The metal having maximum resistance in the conduction of electricity.
- f. Metals, which are cut with a knife at room temperature.
- g. The most ductile metal.
- h. The most malleable metal.

Q. 2. Explain why;

- a. Zinc is coated over iron sheets?
- b. Copper is used to prepare electrical wires.
- c. Sodium is not found in free state in nature.

Q. 3. On the basis of electronic structure, define metals and non-metals giving suitable example.

Q. 4. Write the equation for the reaction, which takes place when sodium oxide reacts with water. How will this solution behave towards phenolphthalein and red litmus paper?

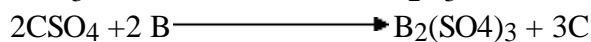
Q. 5. You are given samples of three metals: sodium, magnesium and copper. Suggest any two activities to arrange them in order of their decreasing reactivity.

Q. 6. Why some metals are more reactive and some are less reactive? Explain.

Q. 7. What will happen if a strip of copper is kept immersed in a solution of silver nitrate (AgNO_3)?

Q. 8. An iron knife kept dipped in a blue copper sulphate solution turns the blue solution light green. Why?

Q. 9. A, B and C are three elements which undergo chemical changes according to the following equations:



Q. 10. Write the name of the most reactive and the least reactive elements.

Q. 11. What is meant by the term metallurgy? Name its three steps.

Q. 12. What is meant by ore concentration? Name any two common processes of ore concentration.

Q. 13. Write short note on the following methods for the concentration of ores:
Froth floatation method and leaching process

Q. 14. What is the difference between roasting and calcinations? Which one of them is used for

sulphide ores?

Q. 15. How reduction of metal oxides is carried to convert them into metals? How reactivity series is helpful in carrying the reduction of the metals?

Q. 16. Explain how the following metals are obtained from their compounds by the reduction process:

- Metal x, which is low in the reactivity series.
- Metal y, which is in middle the reactivity series.
- Metal z, which is high up in the reactivity series.

Q. 17. Describe the methods used for the refining of impure metals.

Q. 18. Give the differences between

- Liquation and hydraulic washing.
- Electrolytic reduction and reduction with carbon.

Q. 19. Describe the extraction of (a) Al and (b) Fe, giving the following details.(i). Ore, (ii) Concentration, (iii) Conversion of ore into oxide of metal, (iv) Refining of metal.

Q. 20. Metal M occurs in the earth's crust as its oxide M_2O_3 . An alloy of this metal is used in making aircraft. Name the ore of this metal containing M_2O_3 . Explain the steps taken to obtain this metal in a pure form from this ore and draw a labeled diagram for the process.

Q. 21. Most of the iron ore that we use today is iron oxide mixed with silicon dioxide. How is iron oxide mixed with silicon dioxide? How is iron obtained from it? Write the chemical reactions involved. Name the furnace in which this chemical process takes place. Draw a labeled diagram of the furnace.

Q. 22. Why is limestone added to the blast furnace in the extraction of iron from haematite?

Q. 23. State the difference between (i) iron and steel and (ii) stainless steel and steel.

Q. 24. Describe the methods used for obtaining metals of very high purity.

Q. 25. An ore gives CO_2 on treatment with dilute acid. Identify the ore and name the process that should be used to concentrate this ore. Outline two steps that should be taken to convert such a concentrated ore into free metal.

Q. 26. A woman stored her utensils made up of copper in a room. After some months she found that the copper utensils had lost their luster due to formation of greenish layer on them. State two reasons for this change.

Q. 27. M is an element, which is one amongst copper, zinc aluminum and iron. It shows the following properties;

- One of its ores is rich in M_2O_3 .
- M_2O_3 is not affected by water.
- It forms two chlorides MCl_2 and MCl_3 .

Name the element and give justification in support of your answer.

Q. 28. Element E has electronic configuration 2,8,3 and occurs in earth crust as its oxide E_2O_3 . It is more reactive than Zinc. Answer the following:

- What is the name of element?
- Name the ore from which element E is extracted.
- Write two important uses of E.

Q. 29. Explain why

- Aluminum cannot be extracted by reduction of its ores by carbon.
- Does aluminium not react with cold water under ordinary conditions?
- Concentrated sodium hydroxide solution cannot be stored in aluminium containers.

Q. 30. What is rusting of iron? Write any two common methods to prevent rusting.

Q. 31. Compare the properties of metals and non-metals.

Q. 32. Write the reactions of the following on non-metals:

O_2 (ii) Acids (iii) Cl_2 (iv) H_2

Q. 33. Why are metals reducing agents whereas non-metals are oxidizing agents?

Q. 34. Write the methods of preparation of Hydrogen.

Q. 35. How H_2 is prepared at large scale?

Q. 36. Describe the preparation of H_2 by Bosch Process.

Q. 37. Write the reactions of NH_3 with metal ions.

Q. 38. Draw a labeled diagram for Frasch process of extraction of sulphur from sulphur beds:

- What is the function of super heated water in this process?
- Why is sulphur pushed out through the middle pipe?

Q. 39. What happens when sulphur reacts with (i) $Con.H_2SO_4$, (ii) $Con.HNO_3$? Write the chemical equations of the reactions.

Q. 40. A non-metal belonging to the sixth group of the periodic table is mined by a special technique based on the fact that it has a comparatively low m.p. Identify the non-metal and explain the process of its extraction.

Q. 41. What is vulcanization of rubber? Name the substance used for this purpose.

Q. 42. Write the use of H_2SO_4 .

Q. 43. Give reasons:

- Metals replace H_2 from dil. Acids whereas non-metals do not.
- Carbonate and sulphides ores are usually converted into oxides.

Q. 44. Ammonia is manufactured from N_2 and H_2 by Haber process. The process is carried out at 200-300 atm and 723-773K.

- Give one reason for not using a very high pressure.

- ii. Give one reason for not using a lower temperature.
- iii. How could ammonia be separated from other two gases?

Q. 45. Define allotropy. Name an allotrope of sulphur, which is stable at room temperature.

Q. 46. What would you observe when sulphur dioxide is passed through (i) lime water, (ii) acidified potassium dichromate solution.

Q. 47. In the contact process for the manufacture of sulphuric acid.

- a. Name the catalyst.
- b. Name the substance in which SO_3 is dissolved.
- c. Name the substance, which is diluted with water.

Electrostatics

Q. 1. What happens if the plates of a charged capacitor suddenly connected by a conducting wire.

Q. 2. sketch the graph to show that the charge Q acquired by a capacitor of capacitance C varies with increase in potential difference b/w its plates.

Q. 3. A spherical shell with radius a and charge Q is expanded to radius b , what is the work done by the electrostatic force in this process ?

Q. 4. two point charges placed at a distance r in air exert a force F on each other. At what distance will these charges experience the same force f in a medium of dielectric constant k .

Q. 5. An infinite number of charges each equal to q are placed along X axis at $x= 1, x=2, x=4, x=8, \dots$ find the electric field at the point $x=0$ due to this set up of charges.

Q. 6. draw the graphs showing the variations of electrostatic potential V and electrostatic field E with distance r from a charge q .

Q. 7. using Gauss's theorem, show that electric field inside a conductor is zero, and that the interior of a conductor can have no excess charge in the static situation.

Q. 8. derive an expression for the capacitance of parallel plate capacitor when a dielectric slab is introduced b/w its plates mention some of its uses also.

Q. 9. two point charges of $+16 \mu\text{C}$ and $-9 \mu\text{C}$ are placed 8 cm apart in air. determine the position of the point at which the resultant field is zero.

Q. 10. Derive an expression for the torque acting on an electric dipole held in a uniform mag. Field and also derive for potential; energy of the dipole also mention the stable and unstable position..

Q. 11. A 600 pF capacitor is charged by a 200 V supply. It is then disconnected from the supply and is connected to another uncharged 600 pF capacitor. How much electrostatic energy is lost in the process ?

Q. 12. find the capacitance of three parallel plates each of area A and separated by d_1 and d_2 metre. The in- b/w spaces are filled with dielectrics of relative permittivity E_1 and E_2 . the

permittivity of free space is ϵ_0 .

Reflektion and Refraction

- Q. 1.** Where will the image be formed when the object is placed between the focus and the pole (infinity, pole) of the convex mirror?
- Q. 2.** With respect to air the refractive index of ice and that of rock salts are 1.31 and 1.54 respectively. Calculate the refractive index of rock salt with respect to ice.
- Q. 3.** With respect to air the refractive index of water and that of benzene are 1.33 and 1.50 respectively. Calculate the refractive index of benzene with respect to water.
- Q. 4.** Wavelength of radiation 850nm falls on a surface. Will this surface be visible or not? Explain.
- Q. 5.** A convex mirror used on a truck has 3m radius of curvature. If a bus is located at 5m from this mirror. Find the position, nature and size of the image.
- Q. 6.** What is the condition under which motion pictures can be clearly seen?
- Q. 7.** What is accommodation? What is the maximum variation in power of accommodation in human eye?
- Q. 8.** An object of size 5cm is placed at a distance of 25cm from the pole of a concave mirror of radius of curvature 30cm. Calculate the distance and size of the image formed. What will be the nature of the image?
- Q. 9.** An object of size 3cm is placed at a distance of 15cm from a convex lens of focal length 10cm. Calculate the distance and size of the image so formed. What will be the nature of image?
- Q. 10.** Light enters from air to glass plate having refractive index 1.50. What is the speed of light if the speed of light in air is m/s?
- Q. 11.** What is dispersion? Which color of light deviates more on passing through a prism? When two prisms are placed together with one inverted and white light is passed, what will be the result?
- Q. 12.** What are the conditions for the formation of rainbow?
- Q. 13.** Why do blue and yellow pigments give green colour on mixing? Explain as clearly as possible and support your answer with a diagram.
- Q. 14.** What are the values for the angle of incidence and angle of reflection for normal incidence?
- Q. 15.** What is the relation between the critical angle and the refractive index for a medium?
- Q. 16.** Explain the phenomenon of mirage in deserts and looming in the seas? Support your answer with diagrams. Why does a diamond glitter more? Which phenomenon does optic fiber work upon?
- Q. 17.** An object is placed 20cm in front of mirrors M1 and M2 separately and image is found to be formed at a distance of 15cm in front of it in case of M1 and behind it in case of M2. Find the focal length and kind of mirror in each case.

Q. 18. Give two differences between real and virtual images.

Q. 19. Derive mirror formula for a concave mirror.

Q. 20. Derive lens formula for a convex lens.

Q. 21. What is the critical angle of incidence? Prove .

Optical Instruments

Q. 1. What will be the colour of the red rose when placed separately in white light and blue light? Give reasons for your answer. Explain the following terms in relation to the defects of vision and corrections provided for them: Myopia (near sightedness), Hypermetropia (Long/far sightedness), Astigmatism, Bifocal lenses.

Q. 2. Describe with the help of a ray diagram how a person with myopic vision can be helped by spectacles.

Q. 3. In what S.I units is the power of lenses stated? A convex lens has a focal length of 50cm. calculate its power.

Q. 4. Explain how we see different colours of an object. Why it is that some people are not able to distinguish between different colours? The chicken wakes up with the sunrise and sleeps with the sunset. How does it manage?

Q. 5. Find the focal length of a concave lens of power -2D.

Q. 6. State two main causes of a person developing Myopia/ Hypermetropia.

Q. 7. The far point of a myopic person is 150cm in front of eye. Calculate the focal length and the power of the lens required to enable him to see distant objects clearly.

Q. 8. How does a convex lens behave as a magnifier? Find the magnification of this lens and suggest a method to improve magnification.

Q. 9. Write the relation between the power and focal length of the convex length and its sign conventions.

Q. 10. What is the function of rod and cone cells in the human eye? Write a note on the defects of human eye.

Q. 11. Draw a labeled diagram of human eye. Write the functions of Cornea, Iris, Pupil, eye lens and retina.

Q. 12. A boy has spectacles of focal length -50cm. Which defect he is suffering from? Compute the power of lens

Nuclear Fusion And Fissions

- Q. 1.** What is the cause of release of usually high energy in nuclear fission reaction? How is the energy per fission calculated?
- Q. 2.** What is a Thermal neutron? Draw a schematic diagram depicting the fission of U-235 nucleus on absorption of thermal neutron.
- Q. 3.** Describe a nuclear chain reaction with an example.
- Q. 4.** What are physical parameters conserved in a nuclear reaction?
- Q. 5.** How many groups of nuclei are generated in the fission reaction of U-235 and what are their characteristics?
- Q. 6.** With the help of labeled diagram explain how nuclear reactor can be used to generate electricity? What is the role of moderator in a nuclear reactor? Name few moderators employed widely.
- Q. 7.** What is nuclear fission reaction? Given that the mass of deuteron and ^4_2He -particle are 2.01471 and 4.00388 amu. Find the energy released in the fusion reaction.
- Q. 8.** Calculate how many beta particles are emitted when the following nuclear transformation is brought about:
- Q. 9.** Write the possible fusion reaction taking place in the Sun. Describe two typical fusion reactions in detail.
- Q. 10.** In a particular nuclear fission reaction a nucleus captures a slow neutron. The fission products are three neutrons, A and a fission product. What is the value of z?
- Q. 11.** The mass number of four different atoms P, Q, R, S are 2, 35, 135, 239 which one of them is suitable for nuclear fusion?
- Q. 12.** Write 1 MeV in terms of Joules.
- Q. 13.** Name the process by which energy is produced in a nuclear reactor.
- Q. 14.** Name two isotopes which readily undergo nuclear fission.
- Q. 15.** Calculate the energy released (in MeV) when 1 kg mass of is completely converted into energy.
- Q. 16.** When uranium undergoes fission 0.1% of the total mass is converted into energy. Calculate the total amount of energy released in joules during an explosion of an atom bomb which contains 5kg of uranium.
- Q. 17.** Draw a schematic diagram showing essential steps in a controlled chain reaction. What is Enriched Uranium? Why is it essential to use enriched uranium for the nuclear fission reaction? Name one more element other than uranium which can readily undergo fission reaction.
- Q. 18.** Describe a nuclear chain reaction with an example.
- Q. 19.** What is meant by nuclear chain reaction? How is this reaction controlled? What happens if this reaction is not controlled?
- Q. 20.** Explain the working of Hydrogen bomb and atom bomb.

- Q. 21.** Distinguish between Delayed, prompt and spontaneous fission of nuclei.
- Q. 22.** How is obtained from . Trace the pathway.
- Q. 23.** What are the conditions under which nuclear fusion reactions can be performed in the laboratories?
- Q. 24.** Why is the energy obtained from fusion preferred to the energy obtained from fission reactions? Give two reasons.
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Electricity

- Q. 1.** Why is Tungsten metal selected for making filaments of incandescent lamp bulbs?
- Q. 2.** A torch bulb is rated at 3V and 600mA. Calculate it's a) Power b) Resistance c) Energy consumed if it is lighted for 4 Hrs.
- Q. 3.** Why pure iron is not used in making permanent magnets. Name materials used for making permanent magnets. Describe how permanent magnets are made electrically? State two examples of electrical appliances which use permanent magnets.
- Q. 4.** Which will offer more resistance a 50W lamp or 25W lamp bulb and how many times?
- Q. 5.** What are magnetic field lines? How is the direction of a magnetic field lines at a point determined?
- Q. 6.** Draw two field lines around a bar magnet along its length on its two sides and mark the field direction on these by arrows.
- Q. 7.** List any three properties of Magnetic lines of force.
- Q. 8.** Should the heating element of an electric iron be made of iron, silver or nichrome wire? Why.
- Q. 9.** A steady current is passed for 30minutes through two voltmeters connected in series: a copper voltmeter [Cu cathode in copper sulphate solution], and a silver voltmeter [Ag cathode in silver nitrate solution]. If the mass of copper deposited in the first voltmeter is 21.17g, Calculate the mass of silver deposited on the cathode in the other voltmeter. Given relative atomic mass of Cu = 63.5 and Ag = 108.
- Q. 10.** State Fleming's left hand rule. With a labeled diagram, describe the working of an electric motor. What is the function of a Split ring commutator in a motor?
- Q. 11.** Find the net power consumed by the two resistors R1 and R2 connected in series to a source of V volts.
- Q. 12.** What is the principle behind the working of an A/C generator? How can we find the direction of the current in the armature of the generator?
- Q. 13.** If a wire is stretched to triple its original length, what happens to its resistivity?
- Q. 14.** In the given fig. current carrying conductor is placed above and below the magnetic needle.

Predict the deflection in the needle in each case.

Q. 15. In a resistance R_1 a current of 1A is passed. What is the amount of electrical energy dissipated in 1second?

Q. 16. Define Electrolysis. State Faraday's laws of electrolysis. Define resistivity of any material.

Q. 17. State the rule to find the direction of magnetic field produced around a current carrying conductor. State the characteristics of magnetic force.

Q. 18. Give differences between magnetic and electric force.

Q. 19. Two identical resistors each of resistance 10 ohm are connected 1) in series 2) in parallel, in line to a battery of 6volts. Calculate the ratio of power consumed in the combination of resistors in the two cases.

Q. 20. What are the factors on which the strength of magnetic field produced by a current carrying solenoid depends?

Q. 21. A bulb is rated at 220V- 100W. What is its resistance? Five such bulbs burn for 4 hrs. What is the energy consumed? Calculate the cost if the rate is 50paise per unit?

Q. 22. Express ohm's law mathematically. Draw a circuit diagram to verify Ohm's law. Present the relationship between the voltage applied across a conductor and the current flowing through it graphically.

Q. 23. State Right hand thumb rule for finding the direction of magnetic field, around a current carrying straight conductor. How will the magnetic field be affected :

- a. On increasing the current
- b. On changing the direction of flow of current.

Q. 24. What type of energy transformations take place in electric motor? Name two devices which use electric motor as necessary component?

Q. 25. Two lamps rated 100W, 220V and 25W, 220V are connected in parallel to 220V supply. Calculate the total current through the circuit.

Q. 26. A metallic coil connected to a 220V supply has a resistance of 110 ohm. How long will it take this coil to heat 1kg water from 20°C to 70°C? Assume whole heat produced by coil is taken up by water. (Specific heat capacity of water = 4186 J/kg°C)

Q. 27. Why is much less heat generated in long electric than in filaments of electric bulb?

Q. 28. In the electroplating process, why is the object to be electroplated is taken as cathode?

Q. 29. Should the heating element of an electric iron be made up of iron, silver or nichrome wire?

Q. 30. For longer operational life why dry cells should be used intermittently?

Q. 31. What is electroplating? Explain the process with a diagram. Give two real life applications of the process.

Q. 32. What is superconductivity? Why is the research in superconductivity very important?

Q. 33. How does the resistance of wire change when 1) Its length is doubled 2) Area is doubled?

Q. 34. Calculate the effective resistance between a) B & C b) A & C.

Q. 35. An electric kettle rated 1000W, 220V is used to bring water at 20 degrees to its boiling point. If the kettle is switched on for 10 minutes. Calculate:

- a. The resistance of the element of kettle
- b. Current flowing through the element
- c. Mass of water in the kettle.

Q. 36. Write two advantages and disadvantages of using dry cells.

Q. 37. A copper wire has a diameter of 0.5mm and resistivity of . How much of this wire is required to make a 10 ohm coil?

Q. 38. A wire of resistance 5ohm is bent in the form of a closed circle. What is the effective resistance between the two points at the end of any diameter of the circle?

Q. 39. If a 24V battery is connected to the arrangement of resistance given below, calculate the total effective resistance and the total current flowing in the circuit.

Q. 40. State Fleming's Left and right hand rules. With a labeled diagram describe the working of an electric motor. What is the function of commutator rings in a motor?

Q. 41. What is the effect on resistivity of a pure metal with the increase in temperature?

Q. 42. What is a fuse? How does it function? Explain the terms: Short Circuiting, Overloading and Van Allen belts.

Q. 43. How are ammeter and voltmeter connected in circuit? What are the ideal resistances for these components?

Q. 44. Define one faraday/ tesla.

Source of Energy

Q. 1. Name three forms in which energy from oceans is made available for use. What are OTEC power plants? How do they operate?

Q. 2. Why is tidal energy not likely to be the potential source of energy?

Q. 3. With the help of labeled diagram explain the principle of working of windmill. Name two places in India where wind energy is being used to generate electricity.

Q. 4. Name the major fuel component of biogas. What are its combustible components? Draw a simple labeled diagram of a fixed dome type biogas plant. What is the use of residual slurry and why?

Q. 5. Why is charcoal considered as better fuel than wood? Give two reasons.

Q. 6. Name two components obtained by fractional distillation of petroleum that are not used as

fuel.

Q. 7. Name the places in our country where fields of natural gas are found. Why is it called a clean fuel? Give two reasons.

Q. 8. How are fossil fuels formed? How these fossil fuels were made?

Q. 9. Define calorific value of a fuel? Why is calorific value of CH₄ higher than that of Butane?

Q. 10. The heat produced on complete combustion of 10g of fuel could raise the temperature of 2Kg of water from 20 °C to 70 °C. Calculate the calorific value of the fuel if the specific heat of water is . Assume that the heat taken by the container is negligible. How is biogas prepared? Give its composition is 40KJ/g. Calculate the amount of biogas required to produce 1000KJ of energy.

Q. 11. One gram of coal on complete combustion produces 30KJ of energy. The chulha used for combustion has an efficiency of 20%. If 5.6gm of coal is used to heat 'W' grams of water from 15 °C to 35 °C. Calculate 'W'. (Specific heat of water 4.2J/g°C)

Q. 12. Write four characteristics for selecting a suitable fuel.

Q. 13. What is a Solar cell? Name two materials mostly used in making solar cell.

Q. 14. For producing electricity the energy from flowing water is preferred to energy obtained from burning coke. State two reasons for it.

Q. 15. With the help of a diagram explain how the design of box type solar cooker ensures minimum loss of heat from its inside.

Q. 16. Electricity generated from windmill/oceans is another form of solar energy. Explain.

Q. 17. One gram of coal on complete combustion gives 18KJ of heat. Calculate the amount of coal required to liberate the same amount of heat that an electric heater 2KW provides in one hour.

Q. 18. Why does it take longer to burn wet wood/ log large in size?

Q. 19. What is meant by refining of petroleum? Draw a labeled diagram petroleum distillation tower. Why CNG is considered an environment friendly fuel?

Q. 20. What do you mean by combustion of methane? List the three essential requirements for any combustion to take place.

Q. 21. What is the main constituent of petroleum gas?

Q. 22. How much solar energy will be received 1m² area in one hour if the solar constant was 1.6 KW/m²?

Q. 23. Describe the construction and working of solar cooker.

Q. 24. When kerosene is used in a stove it produces a blue flame whereas in a kerosene-lantern it produces a yellow flame. Give reasons.

Q. 25. It is very difficult to use hydrogen as a source of energy although its calorific value is quite high. Explain.

Q. 26. Define Solar constant.

Our Universe

- Q. 1.** Describe the method of finding out the exact north-south direction at a place using the direction of sunlight.
- Q. 2.** Define the terms Astronomical unit, light years. Give approximate value of each in SI units.
- Q. 3.** Describe briefly the BIG-Bang theory of origin of universe.
- Q. 4.** What is Photosphere? Why is it that we can see the solar corona only at the time of the total solar eclipse?
- Q. 5.** What was the source of heat for the earth in its early stages? How did it help in the formation of various layers inside the earth?
- Q. 6.** List the conditions that make earth favorable place for survival of life.
- Q. 7.** State the composition of the main layers of earth center outwards.
- Q. 8.** How do we obtain information about the interior of earth?
- Q. 9.** Explain why the number of meteorites striking the moon's surface is quite large where as very few reach the earth's surface.
- Q. 10.** Differentiate between Meteors and meteorites.
- Q. 11.** How is the pole star located in the sky? Why is the pole star so special? How does it give direction more accurately?
- Q. 12.** The mass of a star P is 300 times that of star Q. if the mass of Q is nearly equal to that of the sun. Which one would end up as Supernova? What is the source of light for the White dwarf stars?
- Q. 13.** What keeps planets and satellites moving around the sun? What is the cause for the rise of Hydrogen filled balloon in air?
- Q. 14.** Name the common characteristics of the Jovian and Terrestrial planets?
- Q. 15.** What is the Red spot seen on the surface of Jupiter believed to be?
- Q. 16.** Why should asteroids be watched carefully?

Artificial Satellites

- Q. 1.** Explain the principle behind launching of satellites in detail.
- Q. 2.** Draw a diagram to distinguish between equatorial and polar orbits of artificial satellites.
- Q. 3.** What are the advantages of keeping the satellites in a) Equatorial orbit b) Polar orbit.

Q. 4. What is a geostationary satellite? List four applications of artificial satellites.

Q. 5. What is Remote Sensing? What type of orbit is suitable for these satellites?

Q. 6. What is payload?

Q. 7. What are Multi-stage launch vehicles? Why do we use them?

Q. 8. What are the essential properties of a rocket fuel? What is the composition of liquid and solid fuels?

Q. 9. What are the major activities/achievements of ISRO?