CBSE Class 10 Science Question Bank

Q1) What is meant by 'biological magnification'?

Q2) Which natural resource is considered the 'biodiversity hot spots' and why? Suggest what may happen when there is a loss of biodiversity.

Q3) The general formula of the organic compounds 'A', 'B' and 'C' is CnH2n. Their boiling points are – 162 °C, – 42.2 °C and – 0.5 °C respectively. Based on this information answer the following:

(a) Which type of compounds 'A', 'B' and 'C' are and why?
(b) Which of these has maximum number of carbon atoms in the molecule and why?
(c) Write the name and structural formula of the second member of this series.

Q4) (a) Why does menstruation occur?
(b) List in tabular form two distinguishing features between a sperm and an ovum.

Q5) A child has a spherical mirror of focal length 15 cm and he observes an erect and magnified image of his face in the mirror. State the type of mirror used by him and nature of the image he observes. What should be the range of distance of the mirror from his face ? Draw ray diagram to justify your answer.

Q6) Write two points of difference between saturated and unsaturated hydrocarbons giving one example of each. Write the general formula of alkyne series. Write the name and structure of second member of this series.

Q7) Two lenses 'A' and 'B' of focal length +15 cm and – 15 cm respectively were given to a student. He fixed these lenses on separate optical benches and placed a burning candle in front of each at a distance of 20 cm from the optical centre of each lens. He adjusted the screen placed on other side of each lens to obtain the image of the flame. What will he observe on the screen in each case? Give reason for your answer. Explain with the help of ray diagrams for each.

Q8) The radius of curvature of a convex mirror used to see the rear view in a car is 2.0 m. If a bus is located at a distance of 3.0 m from this mirror, find position and nature of the image seen in the mirror.

Q9) A student is given a permanent slide showing binary fission in Amoeba. Write two steps to focus the slide under microscope. Draw diagram and label the parts.

Q10) In an experiment to study the properties of acetic acid, answer the following questions:

(i) What happens when some water is added to the test tube containing acetic acid and shaken vigorously?

(ii) Blue and red litmus papers are put in the test tube containing a acid one after the

other.

Q11) The absolute refractive index of Ruby is 1·7. Find the speed of light in Ruby. The speed of light in vacuum is 3×10^8 m/s.

Q12) What are amphoteric oxides? Give an example. Write balanced chemical equations to justify your answer.

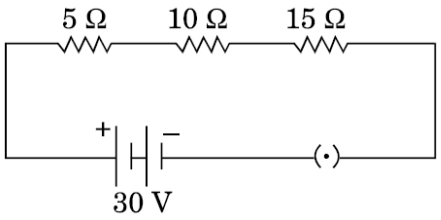
Q13) What is transpiration? List its two functions.

Q14) A 10 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 12 cm. The distance of the object from the lens is 18 cm. Find the nature, position and size of the image formed.

Q15) Why is the use of iodised salt advisable? Name the disease caused due to deficiency of iodine in our diet and state its one symptom.

Q16) How do nerve impulses travel in the body? Explain.

Q17) Consider the given circuit and find the current flowing in the circuit and potential difference across the 15 Ω resistor when the circuit is closed.



Q18) What would a student report nearly after 30 minutes of placing duly cleaned strips of aluminium, copper, iron and zinc in freshly prepared iron sulphate solution taken in four beakers ?

Q19) What is observed when a pinch of sodium hydrogen carbonate is added to 2 mL of acetic acid taken in a test tube? Write chemical equation for the reaction involved in this case.

Q20) Why is the colour of the clear sky blue.

Q21) “Atomic number of an element is considered to be a more appropriate parameter than its atomic mass for a chemist.” Take the example of the element X (atomic number 13) to justify this statement.

Q22) List in tabular form three distinguishing features between cerebrum and cerebellum.

Q23) Name two energy sources that you would consider to be renewable. Give justification for your choices. Can these energy sources be pollution free? List two reasons in support of your answer.

Q24) What is a double displacement reaction? Explain with an example.

Q25) A 5 cm tall object is placed at a distance of 20 cm from a concave mirror of focal length 30 cm. Use mirror formula to determine the position and size of the image formed.

Q26) Two identical resistors of 12Ω each are connected to a battery of 3 V. Calculate the ratio of the power consumed by the resulting combinations with minimum resistance and maximum resistance.

Q27) Draw a labelled diagram of an electric motor.

Q29) List four precautions in proper sequence which we observe while preparing a temporary mount of a leaf peel.

Q30) A student has to trace the path of a ray of light passing through a rectangular glass slab for four different values of angle of incidence.

(a) Write two important precautions for this experiment.
(b) List two conclusions the student will draw based on his experiment.

Q31) Draw magnetic field lines in and around a current carrying straight solenoid.

Q32) State laws of refraction of light.

Q33) Define the term evolution. "Evolution cannot be equated with progress." Give examples to justify this statement.

Q34) Write one function each of the following enzymes:
(i) Pepsin
(ii) Lipase

Q35) Classify the following reactions into different types:

(i) $AgNO_3$ (aq) + NaCl (aq) $\longrightarrow$ AgCl (s) + $NaNO_3$ (aq)
(ii) CaO (s) + H_2O (*l*) $\longrightarrow$ $Ca(OH)_2$ (aq)
(iii) $2KClO_3$ (s) $\longrightarrow$ 2KCl (aq) + $3O_2$ (g)
(iv) Zn + $CuSO_4$ $\longrightarrow$ $ZnSO_4$ + Cu

Q36) What is scattering of light? Use this phenomenon to explain why (i) the Sun appears reddish at sun-rise, and (ii) the clear sky appears blue.

Q37) How is ozone formed in the upper atmosphere? State its importance. What is responsible for its depletion? Write one harmful effect of ozone depletion.

Q38) What are homologous structures? Give an example. Is it necessary that homologous structures always have common ancestors?

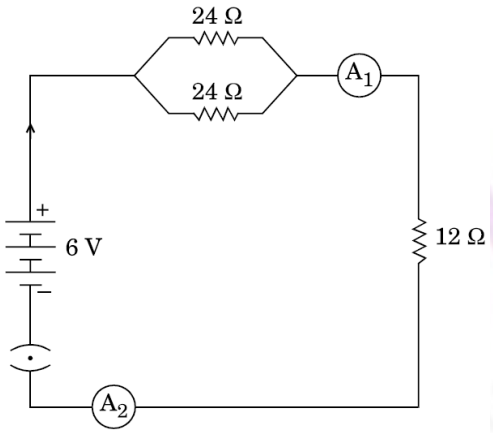
Q39) What is contraception? List its four different methods. State four reasons for adopting contraceptive methods.

Q40) Write the electronic configuration of two elements A and B whose atomic numbers are 20 and 17 respectively. Write the molecular formula of the compound formed when element A reacts with element B. State whether this compound is acidic, basic or neutral. Give reason to justify your answer.

Q41) Study the following circuit and find out:

(i) Current in 12 Ω resistor.

(ii) Difference in the readings of A1 and A2, if any.



Q42) Arrange the following metals in the increasing order of their reactivity's:

Copper, Zinc, Aluminium and Iron

Q43) A solution 'X' gives orange colour when a drop of it falls on pH paper, while another solution 'Y' gives bluish colour when a drop of it falls on PH paper. What is the nature of both the solutions? Determine the pH of solutions 'X' and 'Y'.

Q44) An ore on treatment with dilute hydrochloric acid produces brisk effervescence. Name the type of ore with one example. What steps will be required to obtain metal from the enriched ore? Also write the chemical equations for the reactions involved in the process.

Q45) Draw labelled diagram of a pistil showing the following parts:

Stigma, Style, Ovary, Female germ cell

Q46) Does the occurrence of diversity of animals on Earth suggest their diverse ancestry also ? Discuss this point in the light of evolution.

Q47) A 5 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 30 cm. Find the position, nature and size of the image formed.

Q48) Answer the following questions in one sentence.

(a) Name the element with smallest atomic radius.
(b) Name the element which shows maximum valency.
(c) Name the element which is a metalloid.
(d) Name the element which is most electropositive.
(e) Write the chemical formula of the compound formed when the elements of atomic number 6 and 8 react together.

Q49) Define the term 'isomer'.

Q50) Draw labelled diagram to show the following parts in an embryo of a pea seed:
Cotyledon, Plumule, Radical

Q51) A student is performing an experiment to study the properties of acetic acid. Answer the following questions:

(i) Name the substance he must add to acetic acid to produce carbon dioxide.
(ii) Give the relevant chemical equation for the reaction.
(iii) How would he test CO_2 gas in the laboratory?

Q52) Why does the sky appear dark instead of blue to an astronaut?

Q53) What are decomposers? State their role in our biotic environment.

Q54) What is a homologous series of carbon compounds? Write its two characteristics. Giving reason select two compounds from the following which belong to the same homologous series:
C_2H_2, C_2H_4, C_2H_6, C_3H_4, C_4H_5, C_6H_6

Q55) Name the hormone secreted by thyroid glands and state its main functions.

Q56) What are fossils? Write in brief any two methods of determining the age of fossils.

Q57) State the principle of an electric motor and write the role of split rings in it. Write the energy transformations that takes place when an electric motor works.

Q58) Distinguish between metals and non-metals on the basis of
(i) two physical properties and (ii) three chemical properties

Q59) Why do fishes die when taken out of water?

Q60) If a plant is releasing CO_2 and taking in O_2 during the day, does it mean that there is no photosynthesis occurring? Give reason for your answer.

Q61) Describe in brief the role of the following parts in human male reproductive system:

(i) Testis
(ii) Seminal vesicle
(iii) Vas deferens

(iv) Urethra
(v) Prostate glands

Q62) Derive an expression for the equivalent resistance of three resistors of resistance R1, R2 and R3 connected in series.

Q63) What happens when you add few drops of acetic acid to a test tube containing powder of sodium hydrogen carbonate? List two observations. Write the name of the gas evolved and the method of its testing.

Q64) The range of a milliammeter is 0-500 mA. There are 20 divisions between 0 and 100 mA mark on its scale. During an experiment a student observes ammeter's pointer at 3rd graduation mark after zero mark when the key is off and the pointer at 15th graduation mark after 300 mA mark when the key is inserted into the plug. Find

(i) the least count
(ii) the zero error with proper sign and
(iii) the value of current drawn from the battery.

Q65) Write the energy conversion that takes place in a hydropower plant.

Q66) A compound 'X' on heating with excess conc. sulphuric acid at 443 K gives an unsaturated compound 'Y'. 'X' also reacts with sodium metal to evolve a colourless gas 'Z'. Identify 'X', 'Y' and 'Z'. Write the equation of the chemical reaction of formation of 'Y' and also write the role of sulphuric acid in the reaction.

Q67) Show how would you join three resistors, each of resistance 9 · so that the equivalent resistance of the combination is (i) 13.5 Ω (ii) 6 Ω?

Q68) What is meant by power of a lens? Write its SI unit. A student uses a lens of focal length 40 cm and another of –20 cm. Write the nature and power of each lens.

Q69) Why are most carbon compounds poor conductors of electricity?

Q70) 2 mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. When the contents are warmed, a gas evolves which is bubbled through a soap solution before testing. Write the equation of the chemical reaction involved and the test to detect the gas. Name the gas which will be evolved when the same metal reacts with dilute solution of a strong acid.

Q71) Answer the questions below:

(a) Mention any two components of blood.
(b) Trace the movement of oxygenated blood in the body.
(c) Write the function of valves present in between atria and ventricles.
(d) Write one structural difference between the composition of artery and veins.

Q72) Explain the function of the following parts of an electric motor.

(i) Armature (ii) Brushes (iii) Split ring

Q73) The modern periodic table has been evolved through the early attempts of Dobereiner, Newland and Mendeleev. List one advantage and one limitation of all the three attempts.

Q74) State Modern periodic law.

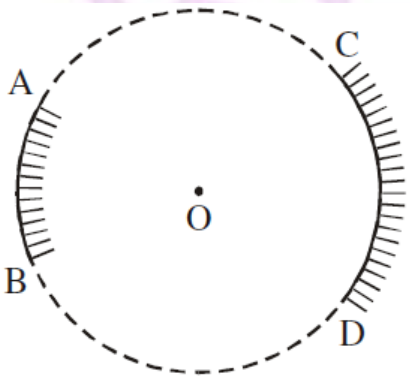
Q75) The values of current (I) flowing through a given resistor of resistance (R), for the corresponding values of potential difference (V) across the resistor are as given below:

V (Volts)	0.5	1	1.5	2	2.5	3	4	5
A (Amperes)	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1

Q76) What is observed when a solution of sodium sulphate is added to a solution of barium chloride taken in a test tube? Write equation for the chemical reaction involved and name the type of reaction in this case.

Q78) Name the method by which hydra reproduces. Is this method sexual or asexual?

Q79) AB and CD, two spherical mirrors, form parts of a hollow spherical ball with its centre at O as shown in the diagram. If arc AB = $\frac{1}{2}$ arc CD, what is the ratio of their focal lengths? State which of the two mirrors will always form virtual image of an object placed in front of it and why.



Q80) List four causes of damage to forests.

Q81) An element 'X' (Atomic number = 20) burns in the presence of oxygen to form a basic oxide.

(a) Identify the element and write its electronic configuration.
(b) State its group number and period number in the Modern Periodic Table.
(c) Write a balanced chemical equation for the reaction when this oxide is dissolved in water.

Q82) What is sexual reproduction? List its four significances.

Q83) List three factors that provide evidences in favour of evolution in organisms and state the role of each in brief.

Q84) Explain in brief the reason for each of the following:

(a) Advanced sun-rise
(b) Delayed sun-set
(c) Twinkling of stars

Q85) You have three unlabelled test tubes containing ethanol, ethanoic acid and soap solution. Explain the method you would use to identify the compounds in different test tubes by chemical tests using litmus paper and sodium metal.

Q86) At what distance from a concave lens of focal length 20 cm a 6 cm tall object be placed so as to obtain its image at 15 cm from the lens ? Also calculate the size of the image formed. Draw a ray diagram to justify your answer for the above situation and label it.

Q87) What is an oxidising agent? What happens when an oxidising agent is added to propanol? Explain with the help of a chemical equation.

Q88) An element 'M' with electronic configuration (2, 8, 2) combines separately with 2 3 4 **$(NO_3)^-$, $(SO_4)^{2-}$ and $(PO_4)^{3-}$** radicals. Write the formula of the three compounds so formed. To which group and period of the Modern Periodic Table does the elements 'M' belong? Will 'M' form covalent or ionic compounds? Give reason to justify your answer.

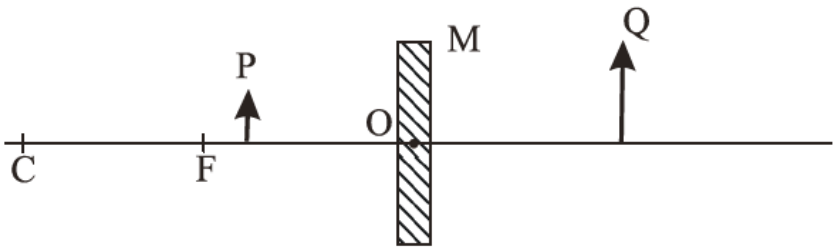
Q89) What is multiple fission? How does it occur in an organism? Explain briefly. Name one organism which exhibits this type of reproduction.

Q90) Give reason to justify the following:

(a) The existence of decomposers is essential in a biosphere.
(b) Flow of energy in a food chain is unidirectional.

Q91) Why is reaction between methane and chlorine in the presence of sunlight considered a substitution reaction?

Q92) Consider the following diagram in which M is a mirror and P is an object and Q is its magnified image formed by the mirror.



Q93) Write the function of each of the following parts of human eye:

i. Cornea
ii. Iris
iii. Crystalline lens
iv. Ciliary muscles

Q94) The atomic number of an element M is 19.

(a) Write electronic configuration and valency of this element.
(b) Is 'M' a metal or a non-metal? Give reason in support of your answer.
(c) Write the formula and nature (acidic/basic) of the oxide of M.

Q95) Write the functions of the following parts of human female reproductive system:
(i) Ovary
(ii) Fallopian tubes
(iii) Uterus

Q96) Define the term magnification as referred to spherical mirrors. If a concave mirror forms a real image 40 cm from the mirror, when the object is placed at a distance of 20 cm from its pole, find the focal length of the mirror.

Q97) A person is unable to see distinctly the words printed on a newspaper. Name the defect of vision he is suffering from. Draw ray diagram to illustrate this defect. List its two possible causes. Draw a ray diagram to show how this defect may be corrected using a lens of appropriate focal length.

Q98) What is water harvesting? List its four benefits.

Q99) What is ethanol? What happens when it is heated with excess Conc. H_2SO_4 at 443 K? Write the role of Conc. H2SO4 in this reaction.

Q100) Draw labelled ray diagrams for each of the following cases to show the position, nature and size of the image formed by a convex lens when the object is placed
(i) between its optical centre (O) and principal focus (F)
(ii) between F and 2F