IMPORTANT QUESTIONS LIST FROM CHEMISTRY **FOR SSC MARCH 2016**

2. CHEMICAL REACTIONS AND EQUATIONS

1. Balance the following chemical equations?
a) $NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$
b) $Hg(NO_3)_2 + KI \rightarrow HgI_2 + KNO_3$
c) $H_2 + O_2 \rightarrow H_2O$
d) $KClO_3 \rightarrow KCl + O_2$
e) $C_3H_8 + O_2 \rightarrow CO_2 + H_2O$

2. Write the balanced chemical equations for the following reactions.
a) Zinc+Silver nitrate→Zinc nitrate+Silver
b) Aluminium+Copper chloride→ Aluminium chloride+Copper
c) Hydrogen+Chlorine→Hydrogen chloride
d) Ammonium nitrate → Nitrogen + Oxygen + Water

3. What do you mean by precipitate reaction?
4. Name the reactions taking place in the presence of sunlight?
5. What do you mean by corrosion? How can you prevent it?
6. Explain rancidity?
7. A shiny brown coloured element 'X' on heating in air becomes black in colour. Can you predict the Element 'X' and the black coloured substance formed? How do you support your predictions?
8. Why do we apply paint on iron articles?
9. What is the use of keeping food in air tight containers?
10. How many types of chemical reactions are there? Explain with examples.
11. Draw a neat labeled diagram that shows the electrolysis of water.
12. Explain chemical displacement reaction with an activity.

4. ACIDS, BASES AND SALTS

1. What is a neutralization reaction? Give two examples?
2. Acid should be added to water but not water to the acid. why?
3. Why does not distilled water conduct electricity?
4. Plaster of Paris should be stored in moisture-proof container. Explain. Why?
5. Fresh milk has a pH of 6. Explain why the pH changes as it turns into curd?
6. What is baking powder? How does it make the cake soft and spongy?
7. Give two important uses of washing soda and baking soda.
8. What is p^H? How can we differ acids, bases according to the values of p^H.
9. Write the uses of Plaster of Paris.
10. Draw a neat diagram showing acid solution in water conducts electricity.
11. Compounds such as alcohols and glucose contain hydrogen but are not categorized as acids. Describe an activity to prove it.
12. What is meant by "water of crystallization" of a substance? Describe an activity to show the water of crystallization.

8. STRUCTURE OF ATOM

1. Rainbow is an example for continuous spectrum – explain.
2. What is an orbital? How is it different from Bohr's orbit?
3. What is nl^x method? How it is useful?
4. What is emission spectrum? and absorption spectrum ?
5. Write Pauli's principle.
6. Write the electronic configurations of the following elements.
(i) Nitrogen (ii) Magnesium
(iii) Copper (iv) Chromium
7. Explain Hund's rule of maximum multiplicity with an example.
8. Explain Aufbau's principle.
9. Draw Moelleur's diagram.
10. Explain the significance of three Quantum numbers in predicting the positions of an electron in an atom.
11. Draw the neat diagrams of s, p orbitals.
12. Draw the neat diagrams of 'd' orbitals.

9. CLASSIFICATION OF ELEMENTS

1. Given below is the electronic configuration of elements A, B, C, D.
A.$1s^2\ 2s^2$ B.$1s^2\ 2s^2\ 2p^6\ 3s^2$
C.$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^3$ D.$1s^2\ 2s^2\ 2p^6$
Now answer the following.
1. Which are the elements coming with in the same period ?
2. Which are the ones coming with in the same group?
3. Which are the noble gas elements?
4. To which group and period does the Elements 'C ' belong?

2. Write down the characteristics of the elements having atomic number 17.
(a) Electronic configuration
(b) Period number
(c) Group number (d) Element family
(e) No. of valence electrons (f) Valency
(g) Metal or non-metal

3. On the basis of atomic numbers predict to which block the elements with atomic number 9, 37, 46 and 64 belongs to?

4. What are inert gases? Write their general electronic configuration.
5. Write about Dobereiner triods.
6. How do you appreciate the role of electronic configuration of the atoms of elements in periodic classification?
7. Comment on the position of hydrogen in periodic table.
8. Define the modern periodic Law. Discuss the construction of the long form of the periodic table.
9. Explain how the elements are classified into s, p, d and f- block elements in the periodic table and give the advantage of this kind of classification.
10. What is a periodic property? How do the following properties change in a group and period? Explain.
    (a) Atomic radius (b) Ionization energy
    (c) Electron affinity (d) Electro negativity.
11. Using the periodic table, predict the formula of compound formed between and element X of group 13 and another element Y of group 16.
12. What are the limitations of Mendeleeff's periodic table?

10. CHEMICAL BONDING

1. Why do only valence electrons involve in bond formation? Why not electron of inner shells? Explain.
2. Explain the formation of sodium Chloride.
3. How bond energies and bond lengths of molecule helps us in predicting their chemical properties? Explain with examples.
4. Predict the reasons for low melting point for covalent compounds when compared with ionic compound.
5. Represent the molecule H_2O and NH_3 using Lewis notation.
6. What is octet rule? How do you appreciate role of the 'octet rule' in explaining the chemical properties of elements?
7. Explain the formation of the following molecules using valence bond theory
    a) N_2 molecule b) O_2 molecule
8. What is hybridisation? Explain the formation of the following molecules using hybridisation
    a) $BeCl_2$ b) BF_3

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13. PRINCIPLES OF METALLURGY

1. List three metals that are found in nature as Oxide ores.
2. All minerals are not ores. But all ore are minerals. Explain with examples.
3. Write the names of any two ores of iron?
4. Mention two methods which produce very pure metals?
5. Write a note on dressing of ore in metallurgy?
6. Write short notes on froth floatation process? Draw diagram.
7. Write short notes on each of the following : i)Roasting ii) Calcination
8. Define the terms i) gangue ii) slag.
9. What is thermite process? Mention its applications in daily life?
10. Where do we use handpicking and washing methods in our daily life? Give examples. How do you correlate these examples with enrichment of ore?
11. Write short notes on Magnetic separation process? Draw diagram.
12. Draw a neat diagram of Reverboratory furnace and label it neatly?

14. CARBON AND ITS COMPOUNDS

1. Name the simplest hydrocarbon.
2. What are the general molecular formulae of alkanes, alkenes and alkynes.
3. A mixture of oxygen and ethyne is burnt for welding; can you tell why a mixture of ethyne and air is not used?
4. Name the simplest ketone and write its molecular formula.
5. What happens when a small piece of sodium is dropped into ethanol?
6. Write the chemical equation representing the reaction of preparation of ethanol from ethane.
7. Define homologous series of carbon compounds; Mention any two characteristics of homologous series.
8. Give the names of functional groups
    (i) -CHO (ii) -C=0.
9. Why does carbon form compounds mainly by covalent bonding?
10. Explain how sodium ethoxide is obtained from ethanol? Give chemical equations.
11. Distinguish between esterification and saponification reactions of organic compounds.
12. How do you appreciate the role of esters in everyday life.