

**Guess Paper – 2014**  
**Class – XI**  
**Subject – Chemistry**

General instructions:

*All questions are compulsory.*

*Marks for each question are indicated against it.*

*Questions number 1 to 8 are very short –answer questions, carrying 1 mark each. Answer these in one word or about one sentence each.*

*Questions number 9 to 18 are short –answer questions, carrying 2 marks each. Answer these in about 30 words each.*

*Questions number 19 to 27 are short –answer questions, carrying 3 marks each. Answer these in about 40 words each.*

*Questions number 28 to 30 are long-answer questions of 5 marks each. Answer these in about 70 words each.*

*7 Use log tables if necessary. Use of calculators is not permitted*

**QUESTIONS:**

1. Calculate the equivalent wt. of the compound  $\text{FeC}_2\text{O}_4$  at mass of Fe = 56, C = 12, O = 16
2. How many electrons in Sulphur ( $Z=16$ ) can have  $n + l = 3$ ?
3. Which quantum number determines the size of orbital?
4. Why in the building of the atom, the filling of 4s orbitals takes place before 3d orbital?
5. Write electronic configuration of  $\text{Fe}^{3+}$ . Out of  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$  which is more paramagnetic and why?
6. Define Mendeleev's periodic law.
7. Which element in the second period of the periodic table has largest atomic size and why?
8. Why alkali metals show photoelectric effect?

9. What volume of oxygen at N.T.P is needed to cause the complete combustion of 200 ml of acetylene? Also calculate the volume of carbon dioxide formed.
10. Calculate the molality of 93%  $\text{H}_2\text{SO}_4$ (weight/volume). The density of the solution is 1.84 gm/ml.
11. What is the molarity of the resulting solution obtained by mixing 2.5 litre of 0.5M urea solution and 500 ml of 2M urea solution?
12. (i) An atomic orbital has  $n=3$ . What are the possible values of  $l$  and  $m$ ?  
(ii) List the quantum numbers ( $m$  and  $l$ ) of electrons for  $4f$  orbital.
- 13 Explain why cation has smaller and anion has larger radius as compared to the parent atom?
- 14 What are the properties of solutions obtained by dissolving alkali metals in liquid ammonia? Give reason for their behavior.
- 15 Why is it that on being heated in excess supply of air K,Rb and Cs form superoxides in preference to oxides and peroxides ?
- 16 What are disproportionation reactions? Explain giving suitable example.
- 17 What is green house effect? Explain.
- 18(i) Define oxidation number.  
(ii) Explain why nitric acid acts only as an oxidizing agent while nitrous acid acts as both oxidizing as well as reducing agent.
- 19 Define the following terms?  
(i) Zeeman effect  
(ii) Stark effect  
(iii) Isobars
- 20 If the velocity of the electron in Bohr's orbit is  $2.19 \times 10^8 \text{m/s}$ . Calculate the de Broglie wavelength associated with it.
- 21 Explain the following:

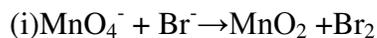
- (i) de-Broglie concept of dual nature of matter    (ii) Heisenberg's uncertainty principle  
(iii) Orbital

22 What is shielding effect? Which property of the element is affected by shielding & penetration effect? Explain giving suitable examples.

23 Give reasons for the following observations:

- (i) Alkali metals impart characteristic colour to the flame.
- (ii) Lithium is the strongest reducing agent.
- (iii) LiCl is soluble in non-polar solvents

24 Balance following equations by using oxidation number method or ion-electron method in acidic medium.



25 Balance the following redox reaction by using oxidation number method or ion electron method in basic medium.



26 Shantanu, who is the student of class XI, read in newspaper that 16 September is observed as world ozone day. So he updated his status on facebook and requested his friends to protect environment and save ozone layer.

- (i) Why ozone layer is to be protected?
- (ii) What is wrong with the ozone layer?
- (iii) What values are shown by Shantanu?

27 A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine. Its molar mass is 98.96g. What are its empirical and molecular formulas?

28 State various rules for writing electronic configuration. Explain why Cr and Cu show exceptional configurations?

OR

- (a) What are quantum numbers?
- (b) What is photoelectric effect?
- (c) What are the postulates of Electromagnetic wave theory?

- 29 (a) The increasing order of reactivity among group 1 elements is  $\text{Li} < \text{Na} < \text{K} < \text{Rb} < \text{Cs}$  whereas among group 17 elements is  $\text{F} > \text{Cl} > \text{Br} > \text{I}$ . Explain.
- (b) Give reasons:
- Electron gain enthalpy of Fluorine is found to be lower than that of chlorine.
  - Ionisation enthalpy decreases on moving down a group.
- (c) What are isoelectronic species?

OR

- What is atomic radius? How it varies in a group and in a period in periodic table?
  - What is diagonal relationship? Explain giving suitable example.
- 30 (a) Give reasons why lithium shows abnormal behavior.
- (b) Write four points of difference between lithium and other members of the family.

OR

Give reasons:

- Lithium forms hydrated salts.
  - Reaction of lithium with water is less vigorous than sodium though Lithium is the strongest reducing agent.
  - Lithium on burning in air form nitrides.
- (c) Define lattice enthalpy. Explain why  $\text{LiF}$  is insoluble in water.

### PRACTICALS RELATED QUESTIONS

- What is qualitative analysis? (1)
- What is the formula of Nessler' reagent? What is the colour of ppt formed when it reacts with ammonia? (1)
- Name an anion which gives carbon dioxide when treated with dilute acid. Write one confirmatory test for the anion. (1)
- Name the cation present in first group. Write one confirmatory test for this cation. (1)
- Name group reagents for 3<sup>rd</sup> group. (1)
- What is the formula of dirty white ppt obtained for Zn? Write one confirmatory test for Zn. (2)

7 Which anions give brown fumes when treated with dilute sulphuric acid and concentrated sulphuric acid respectively? Write confirmatory test for one of them. (2)

8 Which cations give filter ash test? Write the test and colour for those cations. (3)

9 Name the cations present in 5<sup>th</sup> group. Write their flame tests. (3)

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