

**A-2-A**

Roll No.....

Total No. of Questions : 27]

[Total No. of Printed Pages : 7

**XIARKDD20**  
**2702-A**  
**CHEMISTRY**

**Time : 3 Hours]**

**[Maximum Marks : 70**

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(Very Short Answer Type Questions)

1. For a process to occur under adiabatic conditions, the correct condition is:

(A)  $\Delta T = 0$

(B)  $\Delta p = 0$

(C)  $q=0$

(D)  $w = 0$

2. What is the oxidation number of sulphur in  $H_2SO_4$ ?

3. Define oxidation and reduction in terms of electrons.

4. Give the IUPAC name of  $CH \equiv C - CH = CH_2$ .

5. Out of ethylene and acetylene which is more acidic and why ?

(Short Answer Type Questions—I)

6. Define empirical formula and give its relation with molecular formula.

7. Write the electronic configuration of Fe and  $Fe^{3+}$ .

8. Define atomic radii. How does it vary along a period and down a group ?

9. Explain common ion effect with suitable examples.

10. What are Hydrides ? Name different types of hydrides.

11. Eesh had red eyes. Aashi his sister took him to the doctor. The doctor diagnosed him to be suffering from conjunctivitis. The doctor washed his eyes with some eye lotion.

After reading the above passage, answer the following questions :

(i) What compound does eye lotion contain ?

(ii) What values are expressed by Aashi?

12. What is meant by B.O.D. and C.O.D. ?

Give two examples in which green chemistry has been applied.

(Short Answer Type Questions-II)

13. 1.3375 g of cupric oxide was reduced by heating in a current of hydrogen and the weight of copper remained was 1.098 g. In another experiment, 1.179 g of copper was dissolved in  $\text{HNO}_3$  and resulting copper nitrate converted into  $\text{CuO}$  by ignition. The weight of  $\text{CuO}$  was 1.476 g. Show that these results, illustrates the law of constant composition.

14. State and explain Heisenberg's uncertainty principle.

15. What is Ionization Enthalpy ? Name the factors on which it depends. How does it vary along a period and down a group ?

16. With the help of gas laws, deduce an expression for the ideal gas equation.

17. What is the effect of temperature on :

(A) Density

(B) Surface tension

(C) Viscosity

(D) Vapour pressure of a liquid ?

18. State and explain the First Law of Thermodynamics.

Or

Given that  $\Delta H = 0$  for mixing of two gases. Explain, whether the diffusion of these gases into each other in a container is a spontaneous process or not ?

19. What happens when :

(A) magnesium is burnt in air

(B) quick lime is heated with silica

(C) chlorine react with slaked lime ?

20. Name the elements of group-1 and write their electronic configurations.

21. Why is the temperature maintained around 393 K during the preparation of Plaster of Paris ? <https://www.jkboseonline.com>

22. +2 oxidation state of lead is more stable than +4 oxidation state. Give reasons.

23. Give three points of differences between inductive effect and resonance effect.

24. What effect the branching of an alkane has on its melting point ?

(Long Answer Type Questions)

25. Use the molecular orbital energy level diagram to show that  $N_2$  would be expected to have a triple bond,  $F_2$  a single bond and  $Ne_2$  no bond.

Or

What is an ionic bond ? With two suitable examples, explain the difference between an ionic bond and a covalent bond.

26. Explain the following giving examples :

(i) Functional group

(ii) Homologous series and its characteristics.

Or

How will you detect the presence of carbon and hydrogen in an organic compound ?

27. In the presence of peroxide addition of HBr to propene takes place according to Anti-Markownikov's rule but peroxide effect is not seen in case of HCl and HI. Explain.

OR

Give the following reactions of Benzene:

(i) Halogenation

(ii) Sulphonation

(iii) Nitration

(iv) Friedel-Crafts reactions.