XIARKDD20
2702-B
CHEMISTRY

Time : 3 Hours]

[Maximum Marks : 70

(Very Short Answer Type Questions)

1 each

1. A thermodynamic state function is a quantity :

    (A) Used to determine heat changes

    (B) Whose value is independent of path

    (C) Used to determine pressure volume work

    (D) Whose value depends on temperature only

2. What is the oxidation number of P in $H_4P_2O_7$?

3. Define Oxidation.

4. Give the IUPAC name of $CH_3CH = CHC \equiv CH$.

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

(Short Answer Type Questions—I) 2 each

6. State the Law of Multiple Proportions.

7. Write the electronic configuration of Copper. Explain, why does it show exceptional E.C. ?

8. What are S-block Elements ? Discuss their oxidation states.

9. What is a Buffer Solution ? Name the types of buffers.

10. Syngas is an important industrial fuel. One day, X, a student of Class XI was reading the manufacture of this gas. Std. X observed that the gas was being produced by coal gasification which produces green house gases and other gases which pollute our environment. It immediately came to her

mind that Syngas could also be produced by biomass gasification. She (X) discussed the idea with her teacher who appreciated her innovative thinking.

After reading the above passage, answer the following questions :

What is Syngas and how is it produced ?

11. Write the molecular formula of borax and boric acid.

12. Acid rain contains some acids. Name these acids and where from they came in rain ?

Or

How is ozone produced in stratosphere ?

(Short Answer Type Questions—II)   3 each

13. Calculate the percentage composition of the various elements in $MgSO_4$.

(At. mass of Mg = 24, S = 32 and O = 16).

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 ?

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)   5 each

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 charactenstics.

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.