Z–24–A

Roll No.....

Total No. of Questions : **27**]

[*Total No. of Printed Pages* : **7**

11thSZARJD22
6424–A
CHEMISTRY

Time : 2.30 Hours]

[Maximum Marks : 70

(Very Short Answer Type Questions) 1 each

1. Which has maximum molecules ?

   (A) 7 g of N_2

   (B) 2 g of H_2

   (C) 16 g of O_2

   (D) 16 g of NO_2

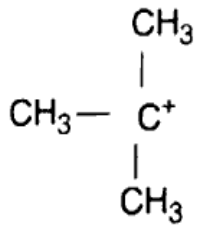
2. What is the relation between vapour density and molecular mass of a gas ?

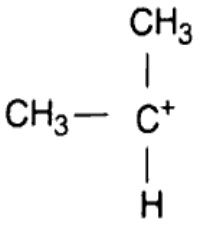
3. What is an adiabatic process ?

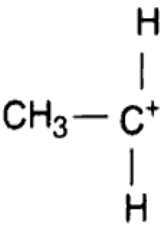
4. Both Mg and Ca do not impart any colour to the flame. (True/False)

5. Which of the following carbocations is most stable ?

(A) $\overset{+}{C}H_3$

(B) 

(C) 

(D) 

(Short Answer Type Questions—I) 2 each

6. Write electronic configuration of Cu and Cr.

7. Why halogens have highest electron gain enthalpies ?

8. What is meant by the term bond order ?

Calculate bond order of O_2 and O_2^+.

9. Calculate the pH value of a solution having hydrogen ion concentration equal to 3×10^{-5} M. Is the solution acidic, basic or neutral ?

10. Define Redox reaction. Give *one* example.

11. Name the isotopes of hydrogen and which isotope is without neutron.

Or

What is heavy water ? What is its importance ?

12. What do you understand by Ozone hole ?

(Short Answer Type Questions—II) 3 each

13. Determine empirical formula of an oxide of iron which has 69.9% iron and 30.1% oxygen by mass. (At. wt. of Fe = 56 and O = 16)

14. Define an atomic orbital. Describe the shapes of S and P orbitals.

15. Define the term ionisation enthalpy. Give reasons for the following :

(i) Ionisation enthalpy of Be is greater than Boron

(ii) Ionisation enthalpy of Nitrogen is greater than Oxygen

16. Give a brief account of VSEPR theory. What are the geometries of the molecules in which central atom has two, three and four pairs of electrons ? Give one example for each.

17. Explain, why do gases deviate from ideal behaviour and under what conditions of temperature and pressure real gases show ideal behaviour ?

18. Define viscosity of a liquid. What is the effect of temperature on the viscosity of a liquid ?

19. State first law of Thermodynamics and derive a mathematical relation for it.

20. Explain the term common ion effect. How does the common ion effect help in the purification of common salt and salting out of soap ?

21. Give IUPAC names of the following organic compounds :

(i) $CH_3—CN$

(ii) $OHC—CH_2—CH_2—CHO$

(iii) $CH_3—CH_2—CH = CH_2$

22. How can you prepare ethene from ethanol ? Give reactions when ethene reacts with :

(i) Baeyer's reagent

(ii) Hydrogen in presence of Ni as catalyst

23. Name two conformations in which ethane exists. Which of the two is more stable and why ?

24. Write notes on the following :

(a) Friedel-Crafts reaction

(b) Sulphonation of benzene

Or

State and explain Markownikoff's rule. Explain it by the addition of HBr to propene.

(Long Answer Type Questions) 5 each

25. Explain the following characteristics of alkaline earth metals :

(i) Action with air oxide

(ii) Action with water

(iii) Tendency to give flame colouration

(iv) Thermal stability of their sulphates

Or

Name alkaline earth metals. Give their electronic configuration. Discuss the trends in the following properties of alkali metals :

(i) Atomic radius

(ii) Ionisation enthalpy

(iii) Basic character of hydroxides

26. Give any *two* methods used to obtain Boron. Write chemical equations for the reaction of Boron with :

(i) Nitrogen

(ii) Oxygen

(iii) Halogens

(iv) Chromium

(v) H_2SO_4

Or

Describe general trends in the following properties of the elements of group 14 :

(i) Atomic size ↑

(ii) Ionisation enthalpy ↓

(iii) Oxidation states ↑

(iv) Metallic character

(v) Catenation ↓

27. What is inductive effect ? What is meant by +I and –I effect ? Why formic acid is stronger than acetic acid ?

Or

Explain the following reactions with *one* example for each :

(i) Elimination reaction

(ii) Electrophilic substitution reaction

(iii) Nucleophilic substitution reaction