

**Z-24-A**

Roll No.....

Total No. of Questions : 27]

[Total No. of Printed Pages : 7

11<sup>th</sup> SZARJD22

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 ?

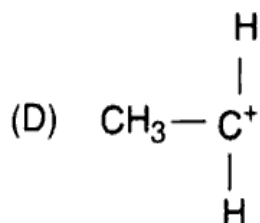
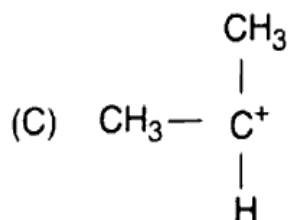
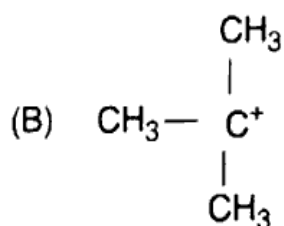
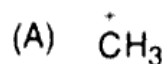
11<sup>th</sup> SZARJD22 - 6424-A

**Z-24-A**

Turn Over

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

5. Which of the following carbocations is most stable ?



**(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  $\text{O}_2$  and  $\text{O}_2^+$ .

9. Calculate the pH value of a solution having hydrogen ion concentration equal to  $3 \times 10^{-5}$  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)  $\text{CH}_3\text{—CN}$
  - (ii)  $\text{OHC—CH}_2\text{—CH}_2\text{—CHO}$
  - (iii)  $\text{CH}_3\text{—CH}_2\text{—CH} = \text{CH}_2$

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*

Turn Over

- (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)  $\text{H}_2\text{SO}_4$

Or

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

- (i) Atomic size  $\uparrow$
- (ii) Ionisation enthalpy  $\downarrow$
- (iii) Oxidation states  $\uparrow$
- (iv) Metallic character
- (v) Catenation  $\downarrow$

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