

VGR COACHING CENTER**CLASS XI****CHEMISTRY****MARK-70****PART-A 15×1=15**

1. In an adiabatic process, which of the following is true ?
a) $q = w$ b) $q = 0$ c) $\Delta E = q$ d) $P \Delta V = 0$
2. The intensive property among the quantities below is
a) mass b) volume c) enthalpy d) mass/volume
3. Heat of combustion is always
a) positive b) negative c) zero d) either positive or negative
4. The work done by the liberated gas when 55.85 g of iron (molar mass 55.85 g mol⁻¹) reacts with hydrochloric acid in an open beaker at 250 C
a) - 2.48 kJ b) - 2.22 kJ c) + 2.22 kJ d) + 2.48 kJ
5. Molar heat of vapourisation of a liquid is 4.8 kJ mol⁻¹. If the entropy change is 16 J mol⁻¹ K⁻¹, the boiling point of the liquid is
a) 323 K b) 270 C c) 164 K d) 0.3 K
6. The temperatures at which real gases obey the ideal gas laws over a wide range of pressure is called
a) Critical temperature b) Boyle temperature
b) Inversion temperature d) Reduced temperature
7. The value of universal gas constant depends upon
a) Temperature of the gas b) Volume of the gas
b) Number of moles of the gas d) units of Pressure and volume
8. Use of hot air balloon in sports at meteorological observation is an application of
a) Boyle's law b) Newton's law c) Kelvin's law d) Brown's law
9. If temperature and volume of an ideal gas is increased to twice its values, the initial pressure P becomes
a) 4P b) 2P c) P d) 3P
10. Compressibility factor for CO₂ at 400 K and 71.0 bar is 0.8697. The molar volume of CO₂ under these conditions is
a) 22.04 dm³ b) 2.24 dm³ c) 0.41 dm³ d) 19.5 dm³
11. Carbon forms two oxides, namely carbon monoxide and carbon dioxide. The equivalent mass of which element remains constant?

(a) Carbon (b) oxygen (c) both carbon and oxygen (d) neither carbon nor oxygen

12. The equivalent mass of a trivalent metal element is 9 g eq^{-1} the molar mass of its anhydrous oxide is

(a) 102 g (b) 27 g (c) 270 g (d) 78

13. 7.5 g of a gas occupies a volume of 5.6 litres at 0°C and 1 atm pressure. The gas is

(a) NO (b) N_2O (c) CO (d) CO_2

14. What is the mass of precipitate formed when 50 ml of 8.5 % solution of AgNO_3 is mixed with 100 ml of 1.865 % potassium chloride solution?

(a) 3.59 g (b) 7 g (c) 14 g (d) 28 g

15. The mass of a gas that occupies a volume of 612.5 ml at room temperature and pressure (25°C and 1 atm pressure) is 1.1 g. The molar mass of the gas is

(a) 66.25 g mol^{-1} (b) 44 g mol^{-1} (c) 24.5 g mol^{-1} (d) 662.5 g mol^{-1}

PART-B WRITE ANY 7 Q.NO 24 IS COMPULSORY

16. What are different methods used for liquefaction of gases:

17. Define the calorific value of food. What is the unit of calorific value?

18. Find out the oxidation number of underline elements for the following compounds.

i) H_2O_2 ii) Na_2O iii) $\text{Cr}_2\text{O}_7^{2-}$ iv) KO_2

19. Calculate the molar mass of the following compounds. i) urea $[\text{CO}(\text{NH}_2)_2]$ ii) acetone $[\text{CH}_3\text{COCH}_3]$

20. What is limiting reagents ?

21. Trans isomers are more stable than cis isomer

22. Define molar heat capacity . give its unit

23. What are extensive properties ? Give example

24. Calculate the entropy change during the melting of one mole of ice into water at 100°C and 1 atm pressure . Enthalpy of fusion of ice is 6008 J mol^{-1}

25. What is inversion temperature ?

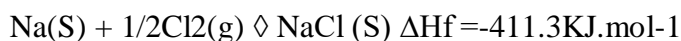
PART-C WRITE ANY 7 Q.NO 24 IS COMPULSORY

26. Explain column chromatography

27. Distinguish between oxidation and reduction.

28. Define the following terms:

- a. isothermal process b. adiabatic process c. isobaric process
29. Calculate the empirical and molecular formula of a compound containing 76.6% carbon, 6.38 % hydrogen and rest oxygen its vapour density is 47
30. Write the condition of optical isomerism
31. In what way real gases differ from ideal gases
32. What are spontaneous reaction ? what are the condition for the spontaneity of a process
33. Derive ideal gas equation
34. .0.30g of a substance gives 0.88g of carbon dioxide and 0.54g of water .calculate the percentage of carbon and hydrogen.
35. Calculate the lattice energy of formation of NaCl from the following data.



Heat of sublimation of Na (s) = 108.7 KJ.mol⁻¹

Ionisation of energy of Na (g) = 495.0 KJ.mol⁻¹

Dissociation energy of Cl₂ (g) = 244 KJ.mol⁻¹ Electron affinity of Cl (g) = -349.0 KJ.mol⁻¹

PART-D WRITE ALL QUESTION

1. Balance the following equation (5)

- I. $\text{KMnO}_4 + \text{Na}_2\text{SO}_3 \rightarrow \text{MnO}_2 + \text{Na}_2\text{SO}_4 + \text{KOH}$ (oxidation number method)
- II. $\text{KMnO}_4 + \text{SnCl}_2 + \text{HCl} \rightarrow \text{MnCl}_2 + \text{SnCl}_4 + \text{H}_2\text{O} + \text{KCl}$ (ion electron method)

OR

- I. Balance the following equation by oxidation number method. $\text{K}_2\text{Cr}_2\text{O}_7 + \text{KI} + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + \text{Cr}_2(\text{SO}_4)_3 + \text{I}_2 + \text{H}_2\text{O}$ 14. (2)
- II. Explain the following reactions. i) Decomposition reaction ii) Displacement reaction (3)

2. Derive the expression of critical constants by using vander vaals constant (5)

OR

- I. Distinguish between diffusion and effusion. (3)
- II. Why is liquid ammonia bottle cooled before opening the seal ? (2)

3. I. State the various statement of second law of thermodynamics (3)
II. Define Third law of thermodynamics (2)

OR

- I. Derive the relation between ΔH and ΔU for an ideal gas. (3)
II. What is lattice energy ? (2)

4. Give the structure and IUPAC of the following compounds (5)

- I. 2-methyl butan-1-ol
II. 3-chlorobutanol
III. 3-cyclohexyl pentan-2-one
IV. CH_3COCH_3
V. $\text{CH}_3\text{-CH}(\text{CH}_3)\text{-CH}(\text{Br})\text{-CH}_3$

OR

- I. Acetaldehyde
II. 3-ethyl-2-methyl-1-pentane
III. $\text{CH}_3\text{-CH}_2\text{-CH}(\text{OH})\text{-CHO}$
IV. $\text{CH}_3\text{-CH}(\text{Cl})\text{-CH}_2\text{-CHO}$
V. $\text{CH}_2=\text{CH-CH=CH}_2$

5. I. Write the characteristic of organic compound. (2)
III. Briefly explain geometrical isomerism in alkene by considering 2-butene as an example (3)

a. OR

- I. Give the structural formula for the following compounds. i) m-dinitrobenzene ii) p-dichlorobenzene (2)
II. calculate amount of moles of hydrogen required to prepare 10 mole ammonia (2)
III. Predict the feasibility of a reaction when a) Both ΔH and ΔS positive b) Both ΔH and ΔS negative (1)

www.Padasalai.Net