

8).The first transition series is from to

- (a) Sc to Zn (b) Hf to Hg (c) Y to Cd (d) Ac to Lr

9).Which among the following has the highest ionisation energy

- (a) Ne (b) Na (c) K (d) Kr

10).Which among the following statement/s given below is/ are incorrect regarding hydrogen?

1. It is diatomic in nature 2. Has only one electron in the outermost shell
3. Very good oxidizing agent 4. Does not form hydrides easily

- (a) 1,2& 3 (b) only 4 (c) only 3 (d) only 2

11).H₂O₂ acts as

- (a) oxidising agent (b) reducing agent (c) bleaching agent (d) All of these

12).The IUPAC name of element having atomic number 108 is

- (a) Unniloctium (b) Ununoctium (c) Nilniloctium (d) Ununoctinium

13).Lime water turning milky is due to the formation of

- (a) calcium carbonate (b) calcium hydroxide
(c) calcium hydroxide (d) calcium chloride

14).The absolute zero is

- (a) -273°C (b) 273°C (c) OK (d) both a and c

15).Which of the following is a state function?

- (a) q (b) w (c) q + w (d) All of these

PART-B

Answer any six questions. Question no 21 compulsory. Answer any five from the remaining. (6X2=12)

16).What is the empirical formula of the following?

- a) Fructose (C₆H₁₂O₆) found in the honey
b) Caffeine (C₈H₁₀N₄O₂) a substance found in a tea and coffee.

- 17). Calculate the total number of angular nodes and radial nodes present in 3d and 4f orbitals.
- 18). Calculate the energy required for the process
 $\text{He}^+(\text{g}) + \rightarrow \text{He}^{2+}(\text{g}) + \text{e}^-$ the ionisation energy for hydrogen atom in its ground state is -13.6eV/atom
- 19). Why Halogens act as oxidising agent?
- 20). Write a note on water-gas shift reaction.
- 21). Write the preparation of hydrogen peroxide from 2-alkylanthraquinol by auto-oxidation reaction.
- 22). How is plaster of paris is prepared?
- 23). Distinguish between diffusion and effusion.
- 24). Predict the feasibility of a reaction when?
- a) both ΔH and ΔS positive b) both ΔH and ΔS negative
 c) ΔH decreases but ΔS increases

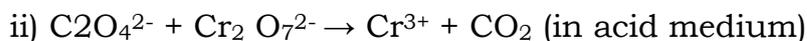
PART - C

Answer any six questions. Question no 32 compulsory. Answer any five from The remaining.(6X3=18)

- 25). Give the electronic configuration of Mn^{2+} , Cr^{3+} , Fe^{2+} .
- 26). Define orbital. What are the n and l values for $3p_x$ and $4d_{x^2-y^2}$ orbital.
- 27). Balance the following equation by oxidation number method.
 $\text{KMnO}_4 + \text{Na}_2\text{CO}_3 \rightarrow \text{MnO}_2 + \text{Na}_2\text{SO}_4 + \text{KOH}$
- 28). Define electronegativity.
- 29). Explain Ionisation potential of N is greater than that of O.
- 30). Why interstitial hydrides have a lower density than the parent metal.
- 31). Write the uses of calcium hydroxide.
- 32). Write the mathematical expressions of the following.
 i) T_c , P_c and V_c ii) vanderwaals constants a and b
- 33). State the third law of thermodynamics.

PART-D**Answer all five questions:****(5X5=25)**

34.a) Balance the following equations by ion electron method.



(OR)

b) A Compound on analysis gave the following percentage composition C=54.5%, H=9.09%, O=36.36%. Determine the empirical formula of the compound.

35.a) Explain the following. i) Principal quantum number, ii) Magnetic quantum number

(OR)

b) What is the de- Broglie wave length of an electron which is accelerated from the rest, through a potential difference of 100V.

36.a) Explain the variation of electron affinity in period and group.

(OR)

b) i) Mention the uses of deuterium,

ii) Why H_2O_2 is used to restore the white colour of the old paintings?

37. a) Explain the removal temporary hardness of water.

(OR)

b) Discuss the similarities between Be and Mg

38.a) Explain the different methods of used for liquefaction of gases

(OR)

b) Derive the relationship between ΔH and ΔU for an ideal gas. Explain the terms involved in the process.

*****ALL THE BEST*****

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