

CLASS 12<sup>TH</sup>VGR COACHING CENTER  
CHEMISTRY

MARK-70

CHOOSE THE CORRECT ANSWER

**PART-A 15×1=15**

- Which is true regarding nitrogen?
  - least electronegative element
  - has low ionisation enthalpy than oxygen
  - d-orbitals available
  - ability to form p p  $\pi$   $\pi$  – bonds with itself
- Among the following, which is the strongest oxidizing agent?
  - Cl<sub>2</sub>
  - F<sub>2</sub>
  - B<sub>2</sub>
  - I<sub>2</sub>
- Most easily liquefiable gas is
  - Ar
  - Ne
  - He
  - Kr
- The magnetic moment of Mn<sup>2+</sup> ion is
  - 5.92BM
  - 2.80BM
  - 8.95BM
  - 3.90BM
- How many moles of I<sub>2</sub> are liberated when 1 mole of potassium dichromate react with potassium iodide?
  - 1
  - 2
  - 3
  - 4
- The actinoid elements which show the highest oxidation state of +7 are
  - Np, Pu, Am
  - U, Fm, Th
  - U, Th, Md
  - Es, No, Lr
- Assertion: rate of reaction doubles when the concentration of the reactant is doubles if it is a first order reaction.  
Reason: rate constant also doubles
  - Both assertion and reason are true and reason is the correct explanation of assertion.
  - Both assertion and reason are true but reason is not the correct explanation of assertion.
  - Assertion is true but reason is false.
  - Both assertion and reason are false.
- If 75% of a first order reaction was completed in 60 minutes, 50% of the same reaction under the same conditions would be completed in
  - 20 minutes
  - 30 minutes
  - 35 minutes
  - 75 minutes

9. If the initial concentration of the reactant is doubled, the time for half reaction is also doubled. Then the order of the reaction is  
a) Zero b) one c) Fraction d) none
10. Which of these is not likely to act as Lewis base?  
a)  $\text{BF}_3$  b)  $\text{PF}_3$  c)  $\text{CO}$  d)  $\text{F}^-$
11. What is the pH of the resulting solution when equal volumes of 0.1M NaOH and 0.01M HCl are mixed?  
a) 2.0 b) 3 c) 7.0 d) 12.65
12. The pH of an aqueous solution is Zero. The solution is  
a) slightly acidic b) strongly acidic c) neutral d) basic
13. Benzoic acid reacts with  $\text{NH}_4\text{NaOBr}$  to form  
a) anilinium chloride b) o-nitro aniline c) benzene diazonium chloride d) m-nitro benzoic acid
14. Which one of the following undergoes reaction with 50% sodium hydroxide solution to give the corresponding alcohol and acid  
a) Phenylmethanal b) ethanal c) ethanol d) methanol
15. In which of the following reactions new carbon-carbon bond is not formed?  
a) Aldol condensation b) Friedel craft reaction c) Kolbe's reaction d) Wolf kishner reduction

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

16. Give the oxidation state of halogen in the following.  
a)  $\text{O}_2\text{F}_2$  b)  $\text{Cl}_2\text{O}_3$
17. What is inert pair effect?
18. What are interstitial compounds?
19. Which is more stable?  $\text{Fe}^{3+}$  or  $\text{Fe}^{2+}$  - explain
20. Write Arrhenius equation and explain the terms involved
21. Give two examples for first order Reaction
22. Calculate the pH of 0.04 M  $\text{HNO}_3$  Solution.
23. Define ionic product of water. Give its value at room temperature.
24. Write note on Rosemund reduction
25. What is benzoin condensation

**PART-C WRITE ANY 7 Q.NO 31 IS COMPULSORY**

26. Write about holmes signal
27. Explain bleaching action chlorine
28. Explain chromyl chloride test

29. Compare lanthanoids and actinoids
30. Explain pseudo first order reaction with an example.
31. Show that in case of first order reaction, the time required for 99.9% completion is nearly ten times the time required for half completion of the reaction
32. Explain common ion effect with an example
33. Derive Henderson hasselbalch equation
34. How will you convert benzaldehyde into the following compounds?  
benzophenone (ii) benzoic acid (iii)  $\alpha$ -hydroxyphenylacetic acid
35. Explain mechanism of aldol condensation

### **PART-D WRITE ALL QUESTION**

36. a) What are interhalogen compounds? Give examples. (2)
- b) Give the balanced equation for the reaction between chlorine with cold NaOH and hot NaOH. (2)
- c) What happens when  $\text{PCl}_5$  is heated? (1)

OR

- a) Give two equations to illustrate the chemical behaviour of phosphine. (2)
  - b) Ozone act as powerful oxidizing agent why? (2)
  - c) HF acid cannot stored in glass bottles why? (1)
37. a) What is lanthanoid contraction and what are the effects of lanthanoid contraction? (3)
  - b) Which is more stable?  $\text{Fe}^{3+}$  or  $\text{Fe}^{2+}$  - explain. (1)
  - c) Why do Zirconium and Hafnium exhibit similar properties? (1)

OR

- a) Describe the preparation of potassium dichromate. (3)
  - b) What are transition metals? (1)
  - c) How will you prepare chlorine in the laboratory? (1)
38. a) Differentiate molecularity and order of reaction (2)

b) Derive the integrated law first order reaction(3)

OR

a) Define rate law and rate constant. (2)

b) Derive integrated rate law for a zero order reaction and with example (3)

39. a) What are Lewis acids and bases? Give two example for each. (2)

b) Derive an expression for Ostwald's dilution law (3)

OR

a) Write the expression for the solubility product of  $\text{Hg}_2\text{Cl}_2$  (2)

b) Explain buffer solution with an example (3)

40. a) Mention the test carboxylic acid (2)

b) Explain mechanism of cannizaro reaction(3)

OR

a) How will you prepare (3)

i) Ethylacetate from methylacetate

ii) Cinnamic acid from benzaldehyde

b) Explain reducing nature formic acid (2)

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