



I. Choose The Correct Answer:

[15 x 1 = 15]

- An aqueous solution of borax is
 - neutral
 - acidic
 - basic
 - amphoteric
- Oxidation state of carbon in its hydrides
 - +4
 - 4
 - +3
 - +2
- P_4O_6 reacts with cold water to give
 - H_3PO_3
 - $H_4P_2O_7$
 - HPO_3
 - H_3PO_4
- The basicity of pyro phosphorous acid ($H_4P_2O_5$) is
 - 4
 - 2
 - 3
 - 5
- The magnetic moment of Mn^{2+} ion is
 - 5.92BM
 - 2.80BM
 - 8.95BM
 - 3.90BM
- The most common oxidation state of actinoids is
 - +2
 - +3
 - +4
 - +6
- Which of the following fluoro compounds is most likely to behave as a Lewis base?
 - BF_3
 - PF_3
 - CF_4
 - SiF_4
- Which of these is not likely to act as Lewis base?
 - BF_3
 - PF_3
 - CO
 - F^-
- Hair cream is
 - gel
 - emulsion
 - solid sol
 - sol.
- Adsorption of a gas on solid metal surface is spontaneous and exothermic, then
 - ΔH increases
 - ΔS increases
 - ΔG increases
 - ΔS decreases
- Which of the following reagent can be used to convert nitrobenzene to aniline
 - Sn / HCl
 - ZnHg / NaOH
 - Zn/ NH_4Cl
 - All of these
- Secondary nitro alkanes react with nitrous acid to form
 - red solution
 - blue solution
 - green solution
 - yellow solution
- Which one of the following is not produced by body?
 - DNA
 - Enzymes
 - Harmones
 - Vitamins
- In a protein, various amino acids linked together by
 - Peptide bond
 - Dative bond
 - α - Glycosidic bond
 - β - Glycosidic bond

15. Which one given below is a non-reducing sugar?

a) Glucose

b) Sucrose

c) maltose

d) Lactose

II. Answer any 6 of the following questions:

[6 x 2 = 12]

Question number 22 is compulsory.

16. What is catenation?

17. Write a note on Fisher tropsch synthesis.

18. How will you identify borate radical?

19. What is inert pair effect?

20. Give the uses of helium.

21. How will you prepare chlorine in the laboratory?

22. What are transition metals? Give four examples.

23. What are inner transition elements?

24. What are actinides? Give three examples.

III. Answer any 6 of the following questions:

[6 x 3 = 18]

Question number 33 is compulsory

25. Give the uses of silicones.

26. Complete the following reactions: $B(OH)_3 + NH_3 \rightarrow$

27. Write a short note on hydroboration.

28. Chalcogens belongs to p-block. Give reason.

29. What are interhalogen compounds? Give examples.

30. Transition metals show high melting points why?

31. Define pH.

32. What is common ion effect?

33. K_{sp} of AgCl is 1.8×10^{-10} . Calculate molar solubility in 1 M AgNO₃

IV. Answer the following questions:

[5 x 5 = 25]

34. a. (i) What are Lewis acids and bases?(3)

(ii) Define solubility product.(2)

[OR]

b. (i) Describe the structure of diborane.(3)

(ii) Give the uses of argon.(2)

35. a. (i) Why fluorine is more reactive than other halogens?(2)

(ii) Complete the following reactions : $\text{Xe} + \text{F}_2 \xrightarrow[400^\circ\text{C}]{\text{Ni} / 200 \text{ atm}} \text{ (3)}$

[OR]

b. (i) Explain the oxidation states of 4d series elements.(3)

(ii) Which is more stable? Fe^{3+} or Fe^{2+} - explain.(2)

36. a. (i) Compare lanthanides and actinides.(3)

(ii) Calculate the pH of $1.5 \times 10^{-3}\text{M}$ solution of $\text{Ba}(\text{OH})_2$ (2)

[OR]

(i) Write a note on catalytic poison. (3)

(ii) Give two important characteristics of physisorption (2)

37. a. (i) Write a note on electro osmosis.(3)

(ii) What are enzymes? (2)

[OR]

(i) What is the difference between homogenous and heterogenous catalysis?(3)

(ii) What is the difference between a sol and a gel?(2)

38. a. (i) Write a notes on (a) coupling reaction (b) mustard oil reaction.(2)

(ii) Gabriel phthalimide synthesis is preferred for synthesising primary amines.(3)

[OR]

(i) Write a short note on peptide bond.(3)

(ii) Give any three difference between DNA and RNA.(2)