KENDRIYA VIDYALAYA BHU CAMPUS (FS)
MONTHLY TEST (SEP) 2024-25
Class- XII

SUBJECT – CHEMISTRY **M.M -40**
Section A contains 8 questions of 1 marks each. **Section B contains 5 questions of 2 marks each.**
Section C contains 4 questions of 3 marks each. **Section D contains 2 question of 5 mark**

SECTION A

1. In which of the following does the central atom exhibit an oxidation state of +3?
   (a) $K_2[Ni(CN)_4]$ (b)$K_4[Fe(CN)_6]$.
   (c)$[Fe(C_2O_4)_3]^{3-}$. (d)$[Cu(NH_3)_4]$
2. Which of the following coordination compounds exhibit linkage isomerism?
   (a) $[Co(NH_3)_3Cl_3]$ (b) $[Co(NH_3)_5(CO_3)]Cl$
   © $[Co(NH_3)_5NO_2](NO_3)_2$ (d) $[Co(en)_3]Cl_3$
3. The colourless complex ion among the following is:
   (a) $[Cu(NH_3)_4]^{2+}$ (b) $[Zn(NH_3)_4]^{2+}$ © $[Fe(H_2O)_6]^{3+}$ (d) $[Fe(CN)_6]^{3-}$
4. Which one of the following halides contains Csp^2-X bond?
   (a) Allyl halide (b) alkyl halide
   © Benzyl halide (d) Vinyl halide
5. The synthesis of alkyl fluoride is best obtained from:

(a) free radicals (b) Swarts reaction (c) Sandmeyer reaction (d) Finkelstein reaction

In the following questions , two statements are given _ one labelled assertion (A) and Reason(r).Select the correct answer to these questions from the codes (a),(b),(c) and (d) as given below;

(a) Both assertion (A) and reason® are correct statements and reason(R) is correct explanation of the Assertion(A).
(b) Both assertion (A) and reason(R) are correct statements ,but Reason (rR) is not correct explanation of of the assertion (A).
(c) Assertion (A) is correct but Reason (R) is incorrect statement
(d) Assertion (A) is incorrect but Reason (R) is correct statement.

6. Assertion (A) :[Fe(CN)6]3- ion shows magnetic moment corresponding to two unpaired electrons.
   Reason (R): Because is has d2sp3 type hybridisation.
7. Assertion (A): $[Ni(CN)_4]^{2-}$ has square planar and $[NiCl_4]^{2-}$ is paramagnetic.
   Reason (R) : $[Ni(CN)_4]^{2-}$ is diamagnetic while $[NiCl_4]^{2-}$ is paramagnetic.
8. Assertion (A) : Nucleophile substitution of iodoethane is easier than chloroethane.
   Reason (R): bond enthalpy of C-I bond is less than that of C-Cl bond.

SECTION B

9. Write the IUPAC name of $[Cr(NH_3)_4Cl_2]^+$ and $[Pt(NH_3)_2Cl_2]$
10. Draw structures of geometrical isomers of $[Fe(NH_3)_2(CN)_4]$.
11. Which of the following is a more stable complex and why?
    $[Co(en)_3]^{3+}$ and $[Co(NH_3)_6]^{3+}$
12. Write chemical equations to illustrate the following reaction:

(i) Finkelstein reaction (ii) sandmeyer reaction

13. Which of the following compounds will react faster in the SN^1 reaction and why?

X

or

SECTION C

14. Draw the structures of optical isomers of :

(i) $[PtCl_2(en)_2]^{2+}$

(ii) $[Cr(NH_3)_2Cl_2(en)]^{+}$

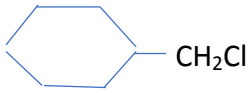
15. (i) Write the formula of the following coordination compound:

Iron(III)hexacynatoferrate(II)

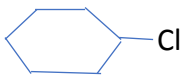
(ii) Write the hybridisation and number of unpaired electrons in the complex $[CoF_6]^{3-}$.

16. Which one of the following pairs of the substances undergoes S_N^2suhstitution reaction faster and why?

(i)

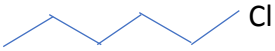


Or



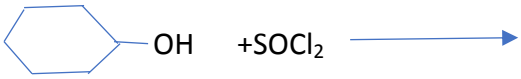
(ii)

or

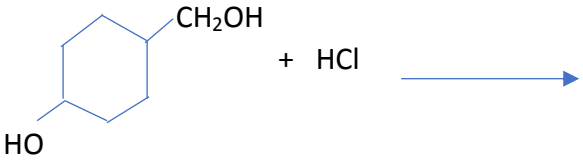


17. Complete the following reaction equation

(i)



(ii).



SECTION D

18.(i) Using valence bond theory , predict the hybridisation and magnetic character of the complex [Ni(CO)4].

(ii) Write IUPAC name of $[Pt(NH_3)_2Cl(NO_2)]$

(iii) Why $[Co(en)_3]^{3+}$ is a more stable complex than $[Co(NH3)_6]^{3+}$.

19. (i) Write the structure of 1-bromo-4-chlorobut-2-ene

(ii) What happen when bromine react with CH_2=CH2.

(iii) Write the reaction when unsymmetrical alkene react with HBr.