Chemistry NTA Abhyas 21-25

01. Select the correct order for the given properties–
(I) Thermal stability: $BaSO_4 > SrSO_4 > CaSO_4 > MgSO_4$
(II) Basic Nature: ZnO > BeO > MgO >CaO
(III) Solubility in water: LiOH > NaOH > KOH > RbOH
(IV) Melting point: NaCl > KCl > RbCl > LiCl
[NTA Abhyas-21-3]

(1) I, IV (2) I, II and IV
(3) II, III (4) All are correct

02. The reaction with incorrect major product is **[NTA Abhyas-21-4]**

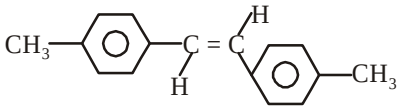
(1) $HC \equiv CH \xrightarrow{47\%H_2SO_4} CH_3CHO$

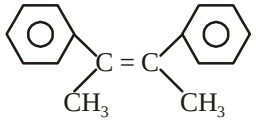
(2) $Me_2CHCl \xrightarrow{Ag_2O} Me_2CHOH$

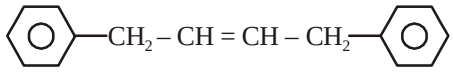
(3) $C_6H_5OH + CH_2N_2 \xrightarrow{BF_3} C_6H_5OCH_3$

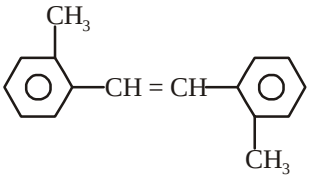
(4) $CH_3CBr_2CBr_2CH_3 + 2Zn \xrightarrow{EtOH} CH_3C \equiv CCH_3$

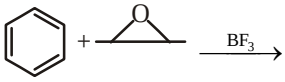
03. An alkene (A) $C_{16}H_{16}$ on ozonolysis gives only one product (B) (C_8H_8O). Compound (B) on reaction with NH_2OH followed by reaction with H_2SO_4, Δ gives N–methyl benzamide the compound 'A' is **[NTA Abhyas-21-6]**

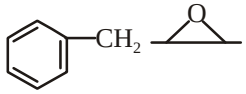
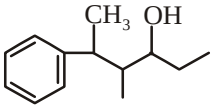
(1) 

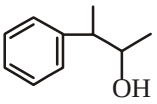
(2) 

(3) 

(4) 

04.  product **[NTA Abhyas-21-14]**

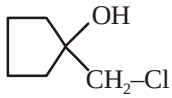
(1)  (2) 

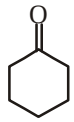
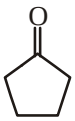
(3)  (4) None of the above

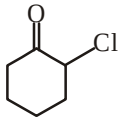
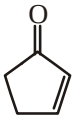
05. Select the correct matching **[NTA Abhyas-21-24]**

	List- (Metal ions)		List-II Magnetic Moment (BM)
(i)	XeF_4	(A)	Pyramidal
(ii)	XeF_6	(B)	T-shape
(iii)	XeO_3	(C)	Distorted octahedral
(iv)	$XeOF_2$	(D)	Square planar

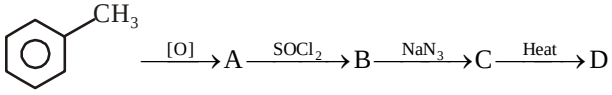
(1) (i)–(D); (ii)–(C); (iii)–(A); (iv)–(B)
(2) (i)–(A); (ii)–(B); (iii)–(C); (iv)–(D)
(3) (i)–(B); (ii)–(A); (iii)–(C); (iv)–(D)
(4) (i)–(C); (ii)–(A); (iii)–(A); (iv)–(B)

06.  P, P is **[NTA Abhyas-23-45]**

(1)  (2) 

(3)  (4) 

07. In the following sequence of reaction, what is D?



[NTA Abhyas-23-39]

(1) Primary amine
(2) An amide
(3) phenyl isocynate
(4) A chain lengthened hydrocarbon

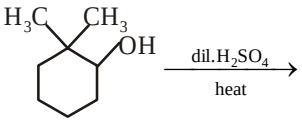
08. In Lassaigne's test sodium metal is used because **[NTA Abhyas-23-36]**

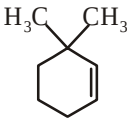
(1) It is very reactive
(2) Its melting point is low
(3) Its compounds are soluble in water
(4) All of the above

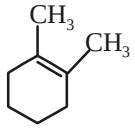
09. The dissolution of $Al(OH)_3$ by a solution of NaOH results in the formation of: **[NTA Abhyas-23-24]**
(1) $[Al(H_2O)_4(OH)_2]^+$ (2) $[Al(H_2O)_3(OH)_3]$
(3) $[Al(H_2O)_2(OH)_4]^-$ (4) $[Al(H_2O)_6(OH)_3]$

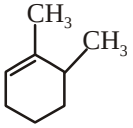
10. Which of the following has glycol as an important constituent? **[NTA Abhyas-24-03]**
(1) Dacron (2) Acrilan
(3) Teflon (4) Viscose system

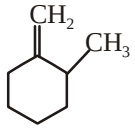
11. Consider the reaction **[NTA Abhyas-24-07]**



(1) 

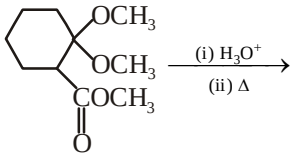
(2) 

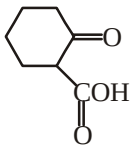
(3) 

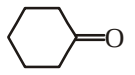
(4) 

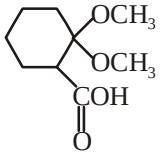
12. Which of the following does not turn Schiif's reagent to pink? **[NTA Abhyas-24-10]**
(1) Formaldehyde (2) Propanaldehyde
(3) Acetone (4) Acetaldehyde

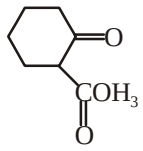
13. The end product of the following reaction would be **[NTA Abhyas-24-18]**



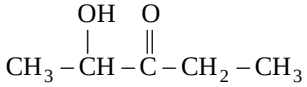
(1) 

(2) 

(3) 

(4) 

14. $A + 2B + H_2O \rightarrow C + 2D$
If $A = HNO_2$, $B = H_2SO_3$ and $C = NH_2OH$, then geometry of D will be **[NTA Abhyas-24-28]**
(1) trigonal planar (2) bent
(3) tetrahedral (4) linear

15. 
will respond to **[NTA Abhyas-22-09]**
(1) Only Fehling solution
(2) Only Tollen's reagent
(3) Both Tollen's reagent and Fehling solution
(4) none of these

16. The correct order of increasing basic nature for the bases NH_3, CH_3NH_2 and $(CH_3)_2NH$ in aqueous solutions is: **[NTA Abhyas-22-22]**
(1) $CH_3NH_2 < NH_3 < (CH_3)_2NH$
(2) $NH_3 < CH_3NH_2 < (CH_3)_2NH$
(3) $CH_3NH_2 < (CH_3)_2NH < NH_2$
(4) $(CH_3)_2NH < NH_3 < CH_3NH_2$

17. Hybridisation, shape and magnetic moment of $K_3[Co(CO_3)_3]$ is **[NTA Abhyas-22-23]**
(1) d^2sp^3, octahedral, 4.9 BM
(2) sp^3d^2, octahedral, 4.9 BM
(3) dsp^2, square planer, 4.9 BM
(4) sp^3, tetrahedral, 4.9 BM

18. H_2Se has higher boiling point than H_2S. This is best explained by **[NTA Abhyas-22-31]**
(1) Higher extent of hydrogen bonding in H_2Se
(2) Higher polarity of H_2S
(3) Higher polarity of H_2Se
(4) Higher dispersion forces H_2Se due to its higher molecular weight

19. A colourless liquid A(b.p. 184°C) is sparingly soluble in warm water to which it gives feebly alkaline. On treating with $NaNO_2$ and dil HCl in the cold solution, it yields a solution which reacts with an alkaline solution β–naphthol to give an orange yellow precipitate compound A is **[NTA Abhyas-22-22]**
(1) $C_6H_5N_2Cl$ (2) $C_6H_5NHNH_2$
(3) $n–C_4H_9NH_2$ **(4) $C_6H_5NH_2$**

20. Arrange the following compounds in order of increasing dipole moment. **[NTA Abhyas-22-42]**
(I) Toluene (II) m–dichlorobenzene
(III) o–dichlorobenzene (IV) p–dichlorobenzene
(1) I < IV < II < III (2) IV < I < II < III
(3) IV < I < III < II (4) IV < II < I < III

21. The first (Δ_iH_1) and second (Δ_iH_2) ionization enthalpies (in kJ mol^{-1}) and the electron gain enthalpy ($\Delta_{eg}H$) (in kJ mol^{-1}) of the elements I, II, III, IV and V are given below:

Element	Δ_iH_1	Δ_2H_2	$\Delta_{eg}H$
I	520	7300	–60
II	419	3051	–48
III	1681	3374	–328
IV	1008	1846	–295
V	2372	5251	+48

The most reactive metal and the least reactive non-metal of these are respectively. **[NTA Abhyas-25-16]**
(1) V and II (2) V and III
(3) II and V (4) IV and V

22. Mark the correct statement(s).
(I) Manganese exhibits +7 oxidation state

(II) Zinc forms coloured ions
(III) $[CoF_6]^{3-}$ is diamagnetic
(IV) Sc forms +4 oxidation state
(V) Zn exhibits only +2 oxidation state

[NTA Abhyas-25-20]

(1) (i) and (ii) (2) (ii) and (iv)
(3) (iii) and (iv) **(4) (i) and (v)**

23. In petrochemical industry, alcohols are directly converted to gasoline by passing over heated **[NTA Abhyas-25-24]**
(1) Platinum (2) Nickel
(3) Palladium **(4) ZSM-5**

24. Aryl halides do not undergo nucleophilic substitution reactions under ordinary conditions because **[NTA Abhyas-25-33]**
(a) Approach of nucleophile is retarted
(b) Carbon carrying halogen atom is sp^3 hybridised
(c) The substrate molecule is destablised due to resonance
(d) partial double bond character between carbon and halogen
(1) (b) and (c) only (2) (b), (c) and (4) only
(3) (a) and (d) only (4) (a) and (c) only

25. Amine that cannot be prepared by Gabriel phthalimide synthesis is **[NTA Abhyas-25-35]**
(1) Benzyl amine **(2) Aniline**
(3) iso-butylamine (4) tertiary-butylamine