Aakash
Medical | IIT-JEE | Foundations
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MM : 160 **Time : 1½ Hr.**

Sample Paper : Campus Recruitment Test
Chemistry (Medical)

Complete Syllabus of Class XI & XII

Instructions:

(i) Use ball point pen only to darken the appropriate circle.
(ii) Mark should be dark and should completely fill the circle.
(iii) Dark only one circle for each entry.
(iv) Dark the circle in the space provided only.
(v) Rough work must not be done on the Answer sheet and do not use **white-fluid** or any other **rubbing material** on Answer sheet.
(vi) Each question carries 4 marks. For every wrong response 1 mark shall be deducted from the total score.

Choose the correct answer :

1. Which of the following have same number of s-electrons as d-electrons in Fe^{2+}?
   (1) Li (2) Na
   (3) N (4) P

2. For a 'd' electron, the orbital angular momentum is
   (1) $\sqrt{6}\,\hbar$ (2) $\sqrt{2}\,\hbar$
   (3) $\hbar$ (4) $2\hbar$

3. If there are no intermolecular forces of attraction then the volume occupied by the molecules of 4.5 kg of water at STP will be
   (1) 4.5 m^3 (2) 11.2 m^3
   (3) 22.4 m^3 (4) 5.6 m^3

4. The reciprocal of viscosity is called
   (1) Resistivity (2) Fluidity
   (3) Density (4) Surface tension

5. The oxidation number of phosphorous in P_4O_{10} and $P_2O_7^{4-}$ is
   (1) +3 (2) +2
   (3) +5 (4) –3

6. The amount of hydrazine (N_2H_4) oxidised to N_2 by 19.4 g K_2CrO_4 which itself reduces to $Cr(OH)_4^-$ is
   (1) 2 g (2) 2.4 g
   (3) 2.8 g (4) 3 g

7. $CuSO_4$ solution is treated separately with KCl and KI. In which case Cu^{2+} will be reduced to Cu^+
   (1) KCl (2) KI
   (3) Both can reduce (4) None can reduce

8. Standard electrode potentials of $Fe^{2+} + 2e^- \rightarrow Fe$ and $Fe^{3+} + 3e^- \rightarrow Fe$ are –0.44 volt and –0.036 volt respectively. The standard electrode potential for $Fe^{3+} + e^- \rightarrow Fe^{2+}$ will be
   (1) – 0.404 V (2) + 0.404 V
   (3) + 0.772 V (4) – 0.476 V

9. The correct order of bond angle is
   (1) $PF_3 < PCl_3 < PBr_3 < PI_3$
   (2) $PF_3 < PBr_3 < PCl_3 < PI_3$
   (3) $PI_3 < PBr_3 < PCl_3 < PF_3$
   (4) $PF_3 > PCl_3 < PBr_3 < PI_3$

10. Which of the following species has triangular planar shape?

(1) CH_3^+ (2) ClO_2^-

(3) H_3O^+ (4) ClO_3^-

11. Yg of non-volatile organic substance of molecular mass M is dissolved in 250 g of benzene. If molal elevation constant of benzene is K_b, then elevation in its boiling point is given by

(1) $\frac{M}{K_bY}$ (2) $\frac{4K_bY}{M}$

(3) $\frac{K_bY}{4M}$ (4) $\frac{K_bY}{M}$

12. Which of the following statement/s is/are correct?

(1) Gases having high critical temperature possess more tendency for adsorption

(2) An adsorbent possesses more tendency for adsorption if it is in the colloidal state

(3) Chemical adsorption first increases with increase in temperature and then decreases

(4) All are correct

13. The rate of a chemical reaction depends upon

(1) Temperature

(2) Nature of reacting species

(3) Concentration of reacting species

(4) All of these

14. The reaction A $\rightarrow$ B is started with 10 g of A. After 30 and 90 min, 5 g and 1.25 g of A are left respectively. The order of reaction is

(1) Zero (2) 1

(3) 2 (4) 3

15. The degree of dissociation of $PCl_5(\alpha)$ for the equilibrium $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$ is approximately related to the pressure at equilibrium (P) by the relation [α<<1]

(1) $\alpha \propto P$ (2) $\alpha \propto \frac{1}{\sqrt{P}}$

(3) $\alpha \propto \frac{1}{P^2}$ (4) $\alpha \propto \frac{1}{P^4}$

16. A weak acid HX ($K_a = 10^{-5}$) on reaction with NaOH gives NaX. For 0.1 M aqueous solution of NaX, the % hydrolysis is

(1) 0.001% (2) 0.01%

(3) 0.15% (4) 1%

17. Correct order of lattice energy of the given crystals is

(1) KCl < NaCl < NaF (2) NaF > KCl > NaCl

(3) KCl > NaCl > NaF (4) NaCl > KCl > NaF

18. Benzene reacts with iso-butyl chloride in the presence of anhyd. $AlCl_3$ to give (as a major product)

(1) t-butylbenzene (2) Isobutylbenzene

(3) n-butylbenzene (4) Sec-butylbenzene

19. Ethene is shaken with aqueous solution of Br_2. Which of the following is the possible product?

(1) $CH_2(Br)-CH_2(Br)$ (2) $CH_2(OH)-CH_2(OH)$

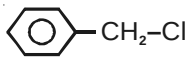
(3) $CH_2(Br)-CH_2(OH)$ (4) All of these

20. How many enantiomeric pairs can be obtained by monobromination of iso-pentane?

(1) 1 (2) 2

(3) 3 (4) 4

21. Which of the following compound will not give ppt. with $AgNO_3(aq)$?

(1)  (2) $(CH_3)_3CCl$

(3) $CH_3CH=CH-Cl$ (4) $CH_2=CH-CH_2-Cl$

22. Which of the following statement is not correct?

(1) Alkyl iodides are heavier than water

(2) Alkyl bromides are lighter than water

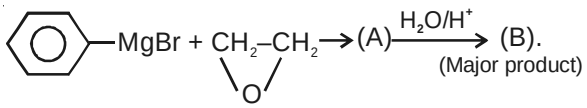
(3) Ethyne reacts with excess HCl to form ethylidene dichloride

(4) Vinyl chloride does not undergo nucleophilic substitution reaction readily

23. What amount of bromine will be required to convert 2 g of phenol into 2, 4, 6-tribromophenol?

(1) 20.4 g (2) 10.2 g

(3) 6.0 g (4) 4.0 g

24. 

(B) is

(1) Benzyl alcohol (2) 2-phenylethanol

(3) 1-phenylethanol (4) Quinol

25. Propan-2-ol $\xrightarrow[\text{Oxidn.}]{\text{mild}}$ (X) $\xrightarrow[\text{(i) } H_2O]{\text{(i) MeMgBr}}$ (Y). (Major product)

(Y) is

(1) Butan-2-ol (2) Butan-1-ol

(3) 2-methylpropene (4) 2-methylpropan-2-ol

26.  $\xrightarrow[AlCl_3]{CH_3COCl}$ (A) $\xrightarrow{\text{Zn-Hg/Conc. HCl}}$ (B). (Major product) (B) is

(1) Ethylbenzene (2) Glyoxal

(3) Benzoic acid (4) Phenylethanol

27. A substance (X) containing 3 C–atoms gives white crystalline ppt. with sodium bisulphite solution but does not give red ppt. with Fehling's solution. (X) on treatment with NH_2–NH_2/KOH will yield

(1) Propane (2) Propene

(3) Cyclopropane (4) Propionic acid

28. One mole of ethylamine when reacts with nitrous acid produces dinitrogen gas at 0°C and 1 atmospheric pressure equal to

(1) 22.4 L (2) 1 L

(3) 11.2 L (4) 24.8 L

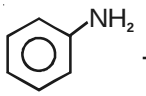
29. PhCOOH $\xrightarrow[Py.]{SOCl_2}$ (A) $\xrightarrow[\Delta]{NH_3}$ (B) $\xrightarrow[\Delta]{P_2O_5}$ (C) $\xrightarrow{H_3O^+}$ (D).

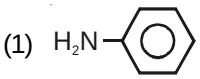
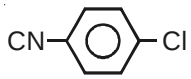
(D) as a major product is

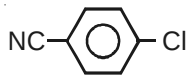
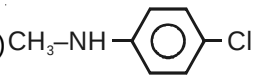
(1) Phenol (2) Benzoic acid

(3) Benzylamine (4) Cyclohexylamine

30. Identify (Z)

 $\xrightarrow[KOH]{CHCl_3}$ (Y) $\xrightarrow[300\ K]{HCl/H_2O}$ (Z)+methanoic acid

(1)  (2) 

(3)  (4) 

31. Which of the following is not an antipyretic?

(1) Analgin (2) Morphine

(3) Aspirin (4) Phenacetin

32. Sodium hydroxide solution reacts with phosphorous to form phosphine. The reaction requires

(1) White phosphorous and dil. NaOH

(2) White phosphorous and conc. NaOH

(3) Red phosphorous and dil. NaOH

(4) All of these

33. The correct order of increasing thermal stability of the given compounds is

I. HF II. HBr

III. HCl IV. HI

(1) I < II < III < IV (2) IV < II < III < I

(3) IV < II < I < III (4) II < IV < I < III

34. Which of the following will not show geometrical isomerism?

(1) $[Co(ox)_3]^{3-}$ (2) $[Co(en)_2Cl_2]Cl$

(3) $[Cr(NH_3)_4Cl_2]Cl$ (4) Both (2) & (3)

35. Which one of the following has the highest paramagnetism?

(1) $[Cr(H_2O)_6]^{3+}$

(2) $[Fe(H_2O)_6]^{2+}$

(3) $[Cu(H_2O)_6]^{2+}$

(4) $[Zn(H_2O)_6]^{2+}$

36. A paste of compound 'X' in water is heated with ethanol. It gives a product which is used as an anaesthetic agent. 'X' is

(1) $KClO_3$ (2) $Ca(ClO_3)_2$

(3) $CaOCl_2$ (4) $KClO_4$

37. Which oxoacid of phosphorous cannot act as a reducing agent?

(1) H_3PO_2 (2) H_3PO_3

(3) H_3PO_4 (4) Both (1) & (2)

38. The geometries of $Ni(CO)_4$ and $Ni(PPh_3)_2Cl_2$ are

(1) Both square planar

(2) Tetrahedral and square planar respectively

(3) Both tetrahedral

(4) Square planar and tetrahedral respectively

39. The correct order of boiling points of noble gases is

(1) He < Ne < Ar < Kr < Xe

(2) He > Ne > Ar > Kr > Xe

(3) He < Ne < Kr < Ar < Xe

(4) He < Ne < Ar < Xe < Kr

40. Which compound of nitrogen produces nitrogen gas on heating?

(1) NH_4NO_2 (2) $(NH_4)_2Cr_2O_7$

(3) $Ba(N_3)_2$ (4) All of these

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1.	(4)	11.	(2)	21.	(3)	31.	(2)
2.	(1)	12.	(4)	22.	(2)	32.	(2)
3.	(4)	13.	(4)	23.	(2)	33.	(2)
4.	(2)	14.	(2)	24.	(2)	34.	(1)
5.	(3)	15.	(2)	25.	(4)	35.	(2)
6.	(2)	16.	(2)	26.	(1)	36.	(3)
7.	(2)	17.	(1)	27.	(1)	37.	(3)
8.	(3)	18.	(1)	28.	(1)	38.	(2)
9.	(4)	19.	(4)	29.	(2)	39.	(1)
10	(1)	20.	(1)	30.	(1)	40.	(4)