MM : 120   **Sample Paper : Campus Recruitment Test**   Time : 1½ Hr.
Chemistry (Engineering)

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 3 marks. For every wrong response 1 mark shall be deducted from the total score.

Choose the correct answer :

1. For the reaction $AB(g) \rightleftharpoons \frac{1}{2}A_2(g) + \frac{1}{2}B_2(g)$, if degrees of dissociation of AB is 80%, the $\Delta G°$ of the reaction can be given by (Assume volume of container = 1 L)

   (1) $\Delta G° = -2.303\ RT \log \frac{1}{4}$

   (2) $\Delta G° = -2.303\ RT \log 4$

   (3) $\Delta G° = -2.303 \times 3\ RT \log 2$

   (4) $\Delta G° = -2.303\ RT \log 2$

2. In which of the following cases, the increase in temperature is the highest?

   (1) Mixing of 100 ml 0.1 M HCl & 50 ml 0.1 M KOH

   (2) Mixing of 500 ml 0.1 M H_2SO_4 & 150 ml 0.1 M NaOH

   (3) Mixing of 75 ml 0.1 M HNO_3 & 200 ml 0.1 M KOH

   (4) Mixing of 100 ml 0.1 M HCN & 300 mol 0.1 M KOH

3. For the reaction :

   $C_3H_8(g) + 5O_2(g) \rightarrow 3CO_2(g) + 4H_2O(l)$ at constant temperature (T), $\Delta H - \Delta U$ is

   (1) 3 RT   (2) –3 RT

   (3) 5 RT   (4) –5 RT

4. The number of unpaired electrons in Cu^+ (Z = 29) is

   (1) 1   (2) 2

   (3) 0   (4) 3

5. A mixture of ethyl alcohol and propyl alcohol has vapour pressure of 290 mm at 300 K. The vapour pressure of propyl alcohol is 200 mm. If the mole fraction of ethyl alcohol is 0.6, its vapour pressure (in mm) at the same temperature will be

   (1) 300   (2) 700

   (3) 360   (4) 350

6. What will be the equilibrium constant for the reaction $2Fe^{+3} + 3I^- \rightleftharpoons 2Fe^{+2} + I_3^-$?

   (given $E°_{Fe^{+3}/Fe^{+2}} = 0.77$ V , $E°_{I_3^-/I^-} = 0.54$ V)

   (temperature = 298 K)

   (1) 7.7×10^3 (2) 7.7×10^9

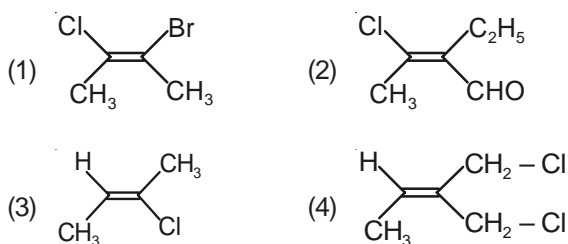   (3) 6.07×10^3 (4) 6.07×10^7

7. In a face centred cubic arrangement, A atoms are at face centres and B atoms are at the corner of the unit cell also B atom is missing from one corner in unit cell. The simplest formula of compound is

   (1) A_7B_3 (2) $A_{24}B_7$

   (3) AB_3 (4) $A_{7/8}B_3$

8. The osmotic pressure of 14% (mass/volume) solution of KCl (the degree of dissociation of which is 85%) at 27°C (Atomic mass of K = 39)

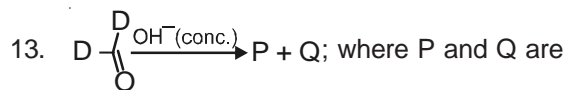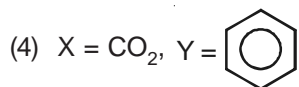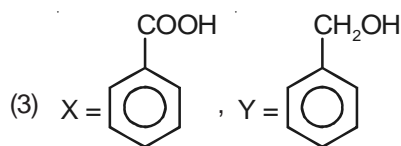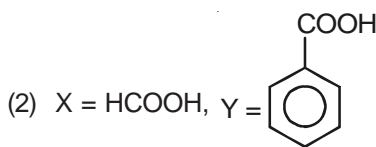   (1) 90.27 atm   (2) 85.5 atm

   (3) 67.22 atm   (4) 72.62 atm

9. The E-isomer among the following isomers is

   (1) ![Cl, Br on double bond with CH3, CH3]

   (2) ![Cl, C2H5 on double bond with CH3, CHO]

   (3) ![H, CH3 on double bond with CH3, Cl]

   (4) ![H, CH2-Cl on double bond with CH3, CH2-Cl]

10. The number of mole of electrons involved in the reduction of one mole nitrate ion to hydrazine is

    (1) 8   (2) 7

    (3) 5   (4) 3

11. Which of the following compounds will not undergo Cannizzaro's reaction?

    (1) HCHO

    (2) ![benzaldehyde CHO]

    (3) ![glyoxal CHO-CHO]

    (4) $CH_3 - CH_2 - CHO$

12. ![benzaldehyde CHO] $\xrightarrow{\text{NaOH(50\%)}}$ X + Y; X and Y are

    (1) X = ![benzoic acid COOH], Y = ![toluene CH3]

    (2) X = HCOOH, Y = ![benzoic acid COOH]

    (3) X = ![benzoic acid COOH], Y = ![benzyl alcohol CH2OH]

    (4) X = CO_2, Y = ![benzene ring]

13. ![D-C(=O)-CD3 structure] $\xrightarrow{\text{OH}^-\text{(conc.)}}$ P + Q; where P and Q are
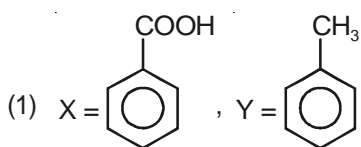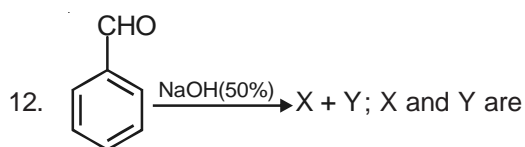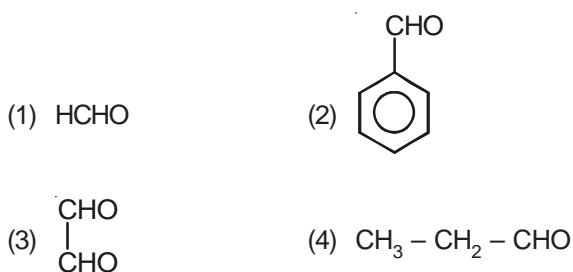
    (1) $D - COO^-$ and $CD_3 - OH$

    (2) $D - COO^-$ and $CH_3 - OH$

    (3) $DCOO^-$ and $D - CH_2 - OD$

    (4) $HCOO^-$ and $CD_3 - OD$

14. A first order reaction is 20% complete in 60 s. The time required to complete 75% of the same reaction will be

    (1) 312 s   (2) 360 s

    (3) 432 s   (4) 492 s

15. In the reaction, $2KClO_3 \rightarrow 2KCl + 3O_2$ when 36.75 gm of $KClO_3$ is heated, the volume of oxygen evolved of NTP will be

    (1) 9.74 L   (2) 8.92 L

    (3) 10.08 L   (4) 24.4 L

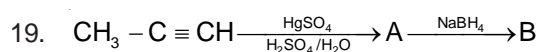16. The first ionisation potential of Na, Mg, Al and Si are in the order

    (1) Na < Mg > Al < Si

    (2) Na > Mg > Al > Si

    (3) Na < Mg < Al < Si

    (4) Na > Mg > Al < Si

17. In which of the following ion/molecule, the S atom does not assume sp^3 hybridization?

    (1) SO_4^{-2} (2) SF_4

    (3) SF_2 (4) S_8

18. If the radius of 1st Bohr orbit is r, then the de Broglie wavelength in the 3rd Bohr orbit is

    (1) $2\pi r$ (2) 9r

    (3) $\dfrac{r}{3}$ (4) $6\pi r$

19. $CH_3 - C \equiv CH \xrightarrow[\text{H}_2\text{SO}_4/\text{H}_2\text{O}]{\text{HgSO}_4} A \xrightarrow{\text{NaBH}_4} B$

    The product B is

    (1) Propanal   (2) 2-propanol

    (3) 1-propanol   (4) Propane

20. Lead dissolves most readily in dilute
    (1) CH_3COOH
    (2) H_2SO_4
    (3) H_3PO_4
    (4) NaOH

21. Out of following compounds which has lowest bond dissociation energy?
    (1) F_2
    (2) Cl_2
    (3) Br_2
    (4) I_2

22. How much of $CaCO_3$ is required (whose percentage purity is 40%) to produce 4.4 g of CO_2?
    (1) 10 g
    (2) 25 g
    (3) 30 g
    (4) 20 g

23. ΔG is equal to
    (1) $\Delta H - T\Delta S$
    (2) $VdP - SdT$
    (3) $\Delta G° + RT\ln Q$
    (4) All of these

24. A magnetic moment of 1.73 B.M. will be shown by one among the following compounds
    (1) $[Cu(NH_3)_4]^{2+}$
    (2) $[Ni(CN)_4]^{2-}$
    (3) $[TiCl_4]$
    (4) $[CoCl_6]^{4-}$

25. The vapour density of N_2O_4 at certain temperature is 30, what is the percentage dissociation of N_2O_4 at this temperature?
    (1) 53.3
    (2) 106.6
    (3) 26.7
    (4) 34.5

26. 0.01 M CH_3COOH (pK_a = 4.74) is 100% neutralised by using NaOH. The pH value of final solution will be
    (1) 7
    (2) 3.87
    (3) 7.74
    (4) 8.37

27. Which of the following is most effective for the coagulation of Arsenic sulphide sol.?
    (1) Al^{+3}
    (2) Na^+
    (3) SO_4^{-2}
    (4) PO_4^{-3}

28. Strongest hydrogen bonding is observed in
    (1) Cl – H.......Cl
    (2) N – H.......N
    (3) F – H.......O
    (4) Br – H.......Br

29.

    Product (C) is

    (1)
    (2)
    (3)
    (4)
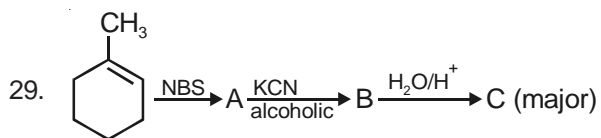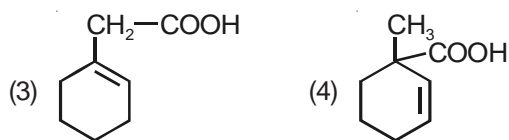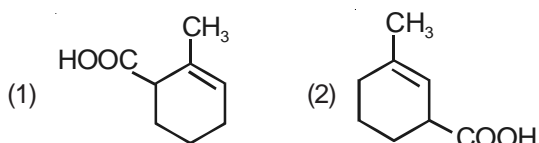
30. For Boyle's law, the value of $\dfrac{dV}{dP}$ (at constant T and n) is
    (1) $-\dfrac{V}{P}$
    (2) $-\dfrac{K}{P^2}$
    (3) $-\dfrac{V^2}{K}$
    (4) All of these

31. Among the following, the most stable carbocation is
    (1) $\ddot{N}H_2—\overset{+}{C}H_2$
    (2) $CH_3—\overset{+}{C}H_2$
    (3) $BH_2—\overset{+}{C}H_2$
    (4) $O_2N—CH_2—\ddot{O}—\overset{+}{C}H_2$
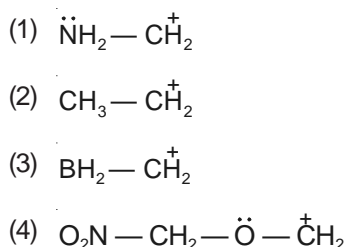
32. Which of the following is aromatic?
    (1)
    (2)
    (3)
    (4)
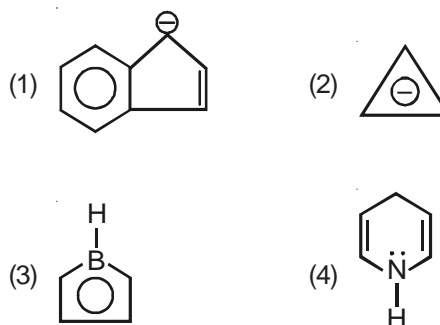
33. Which of the following has different bond order?
    (1) O_2^+
    (2) NO
    (3) N_2^+
    (4) $\overset{+}{C}O$

34. For principal quantum number 'n', the maximum number of orbitals in an orbit is
    (1) n
    (2) n^2
    (3) $2n^2$
    (4) 2n
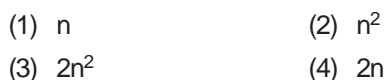
35. The correct order of boiling point is
    (1) $SbH_3 > NH_3 > AsH_3 > PH_3$
    (2) $NH_3 > SbH_3 > AsH_3 > PH_3$
    (3) $NH_3 > PH_3 > AsH_3 > SbH_3$
    (4) $SbH_3 > AsH_3 > PH_3 > NH_3$

(3)
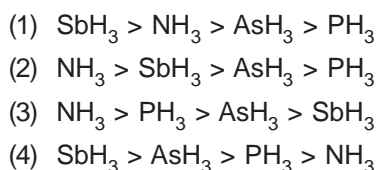
36. For which of the following, heat of combustion at constant pressure and constant volume are equal at 25°C?

   (1) Glucose
   (2) Acetic acid
   (3) Formic acid
   (4) Benzene

37. At room temperature, He gas expand isothermally from high pressure to low pressure, then its temperature will

   (1) Increase
   (2) Decrease
   (3) Not change
   (4) May decrease or increase

38. Slope of the graph of G vs T is maximum out of three state of substance in

   (1) Solid
   (2) Liquid
   (3) Gas
   (4) Equal in all state

39. The oxidation state of Cr in product in the following reaction is

   $K_2Cr_2O_7 + H_2O_2 + H_2SO_4 \rightarrow P.$

   (1) +6
   (2) +3
   (3) +4
   (4) +5

40. Mole fraction of component A in vapour phase if a solution of component A and B having mole fraction 0.4 and 0.6 and $P^o_A = 600$ mm of Hg and $P^o_B = 500$ mm of Hg is

   (1) $\dfrac{2}{3}$

   (2) $\dfrac{4}{9}$

   (3) $\dfrac{2}{9}$

   (4) $\dfrac{1}{2}$

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(4)

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MM : 120

Sample Paper : Campus Recruitment Test
Chemistry (Engineering)

Time : 1½ Hr.

Complete Syllabus of Class XI & XII

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