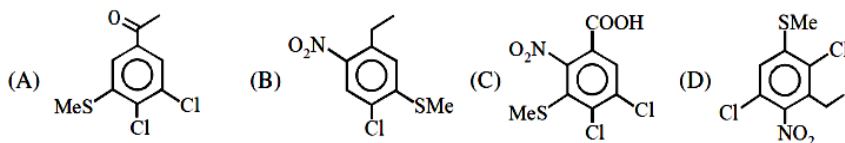
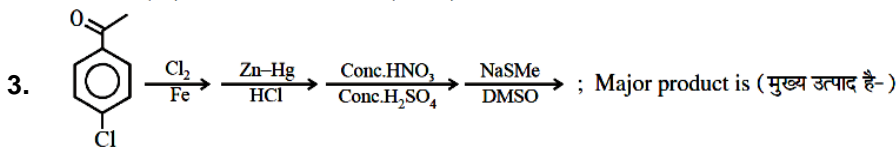


CHEMISTRY REVISION SHEET-96

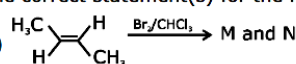
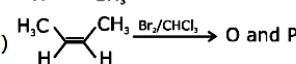
1. Based on the data given for half cell $M^{(x+n)+}$, M^{x+} / Pt
- | | | |
|----------------|-----|-------|
| % Reduced form | 50 | 20 |
| Potential (V) | 0.1 | 0.112 |
- The value of n is -
 (A) 2 (B) 3 (C) 4 (D) 5
2. The conductivity of 0.2M methanoic acid is 0.8 S m^{-1} . Then degree of dissociation for methanoic acid is -
 Given $\lambda_{(H^+)}^{\circ} = 350 \text{ Scm}^2\text{mol}^{-1}$; $\lambda_{(HCOO^-)}^{\circ} = 50 \text{ Scm}^2 \text{ mol}^{-1}$



4. Consider the following table regarding interhalogen (when two different halogens react with each other, interhalogen compounds are formed) XY_n (where Y is more electronegative than X)

Polarity	Planarity	Total number of d-orbitals used in hybridisation of central atom	Value of n for respective interhalogen
Non-polar	Non-planar	R_1	A
Polar	Non-planar	R_2	B
Polar	Planar	R_3	C

Select the **CORRECT** statement about table :

- (A) Value of R_1 is 3 and value of A is 7 (B) Value of R_2 is 1 and value of B is 3
 (C) Value of R_3 is 2 and value of C is 5 (D) All are correct
5. In a reaction,
 $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$
 1 mole of H_2 and 3 mole of I_2 gave rise to x mole of HI at equilibrium. Further addition of 2 mole of H_2 gave an additional x mole of HI, then what is the value of 2x.
6. One mole of an ideal gas at 300 K in thermal contact with surroundings expands isothermally from 1.0 L to 2.0 L against a constant pressure of 3.0 atm. In this process, the change in entropy of surrounding (ΔS_{sur}) in JK^{-1} is (1L atm = 101.3 J)
 (A) 5.763 (B) 1.013
 (C) -1.013 (D) -5.763
7. In neutral or faintly alkaline solution, 8 moles of permanganate anion quantitatively oxidize thiosulphate anions to produce X moles of a sulphur containing product. The magnitude of X is
8. The correct statement(s) for the following addition reaction is (are)
- (i) 
- (ii) 
- (A) (M and O) and (N and P) are two pairs of enantiomers
 (B) Bromination proceeds through trans-addition in both the reactions
 (C) O and P are identical molecules
 (D) (M and O) and (N and P) are two pairs of diastereomers
9. If the unit cell of a mineral has cubic close packed (ccp) array of oxygen atoms with m fraction of octahedral holes occupied by aluminium ions and n fraction of tetrahedral holes occupied by magnesium ions, m and n, respectively, are
 (A) $\frac{1}{2}, \frac{1}{8}$ (B) $1, \frac{1}{4}$ (C) $\frac{1}{2}, \frac{1}{2}$ (D) $\frac{1}{4}, \frac{1}{8}$
10. The molar conductivity of a solution of a weak acid HX (0.01 M) is 10 times smaller than the molar conductivity of a solution of a weak acid HY (0.10 M). If $\lambda_{X^-}^{\circ} \approx \lambda_{Y^-}^{\circ}$, the difference in their pK_a values, $pK_a(HX) - pK_a(HY)$, is (consider degree of ionization of both acids to be $\ll 1$)

PARAGRAPH 1

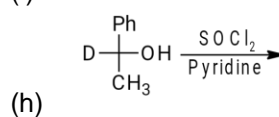
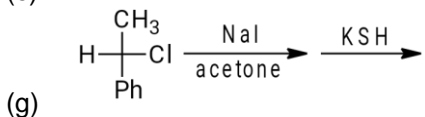
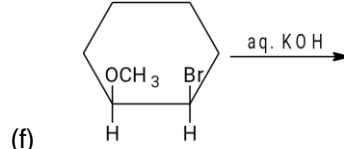
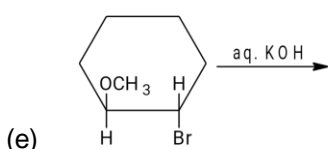
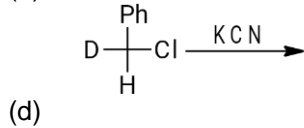
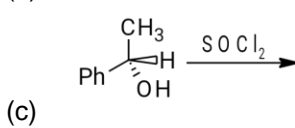
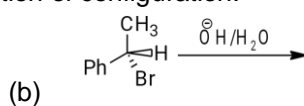
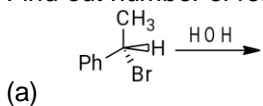
When 100 mL of 1.0 M HCl was mixed with 100 mL of 1.0 M NaOH in an insulated beaker at constant pressure, a temperature increase of 5.7 °C was measured for the beaker and its contents (Expt. 1). Because the enthalpy of neutralization of a strong acid with a strong base is a constant (−57.0 kJ mol^{−1}), this experiment could be used to measure the calorimeter constant.

In a second experiment (Expt. 2), 100 mL of 2.0 M acetic acid (K_a = 2.0 × 10^{−5}) was mixed with 100 mL of 1.0 M NaOH (under identical conditions to Expt. 1) where a temperature rise of 5.6 °C was measured.

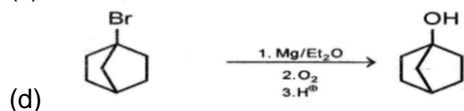
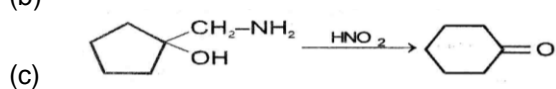
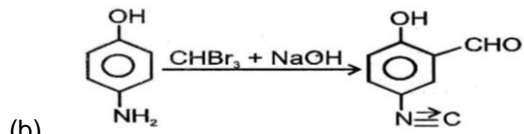
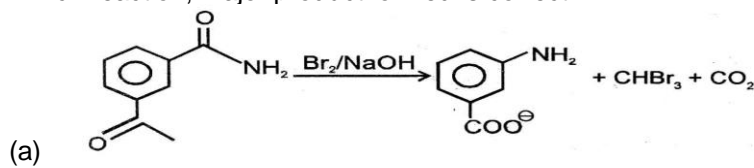
(Consider heat capacity of all solutions as 4.2 J g^{−1} K^{−1} and density of all solutions as 1.0 g mL^{−1})

11. Enthalpy of dissociation (in kJ mol^{−1}) of acetic acid obtained from the Expt. 2 is
 (a) 1.0 (b) 10.0 (c) 24.5 (d) 51.4
12. The pH of the solution after Expt. 2 is
 (a) 2.8 (b) 4.7 (c) 5.0 (d) 7.0

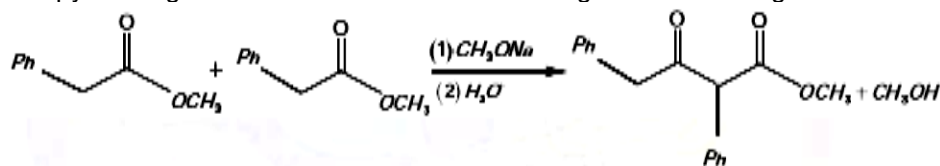
13. You are given the following cell at 298 K,
 $Zn \left| Zn^{++}_{(aq)} \left(\frac{0.01 M}{1.0 lit} \right) \parallel HCl_{(aq)} \left(\frac{1.0 lit}{1.0 atm} \right) \left| H_2(g) \right| Pt$ with $E_{cell} = 0.701$ and $E^0_{Zn^{2+}/Zn} = -0.76V$.
 Which of the following amounts of NaOH (equivalent weight = 40) will just make the pH of cathodic compartment to be equal to 7.0.
 (a) 0.4 gms (b) 4 gms (c) 10 gms (d) 2 gms
14. Find out number of reactions those proceed with retention of configuration.



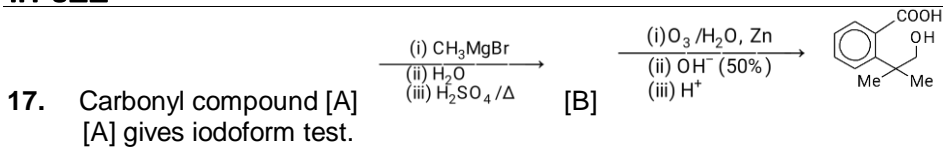
15. In which reaction, major product formed is correct

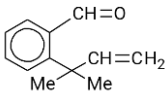
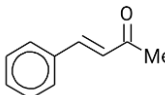
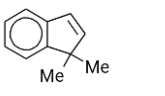
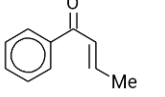


16. Calculate the enthalpy of the given reaction in kcal/mol from the given bond-energies data

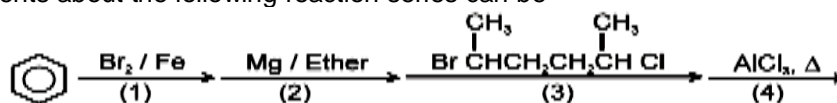


BE : C–C = 85 kcal/mol; C–O = 91 kcal/mol; O–H = 102 kcal/mol; C–H = 99 kcal/mol

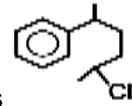


- (a) Compound B in above reaction is 
- (b) Compound A in above reaction is 
- (c) Compound B in above reaction is 
- (d) Compound A in above reaction is 

18. The correct statements about the following reaction series can be



(A) Step-4 is intramolecular electrophilic substitution reaction

(B) The intermediate product is 

(C) The end product is 

(D) Step-3 is an S_N2 reaction

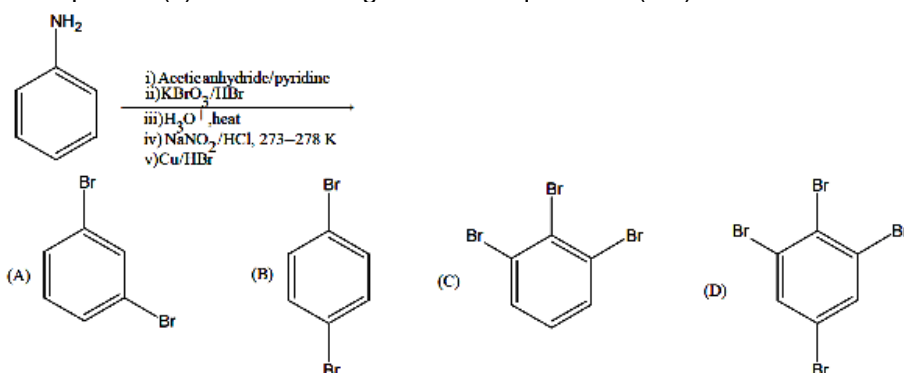
19. Consider the following pairs of miscible liquids A and B.

Liquid A	+	Liquid B
द्रव A	+	द्रव B
(i) $\text{C}_2\text{H}_5\text{Br}$	+	CS_2
(ii) CHCl_3	+	CH_3COCH_3
(iii) HCl	+	H_2O
(iv) CH_3COOH	+	$\text{C}_5\text{H}_5\text{N}$
(v) $\text{C}_6\text{H}_5\text{Cl}$	+	$\text{C}_6\text{H}_5\text{Br}$
(vi) CH_3COCH_3	+	CCl_4

If solutions showing $\Delta H_{\text{mixing}} > 0 = x$, solutions showing $\Delta S_{\text{mixing}} > 0 = y$, solutions showing $\Delta V_{\text{mixing}} < 0 = z$,

Then find $|x + y - z|$.

20. The product(s) of the following reaction sequence is (are)



ANSWER KEY

1	2	3	4	5	6	7	8	9	10
B	A	B	A	3	C	6	BD	A	3
11	12	13	14	15	16	17	18	19	20
A	B	A	3	ABCD	3	BC	ABCD	5	B