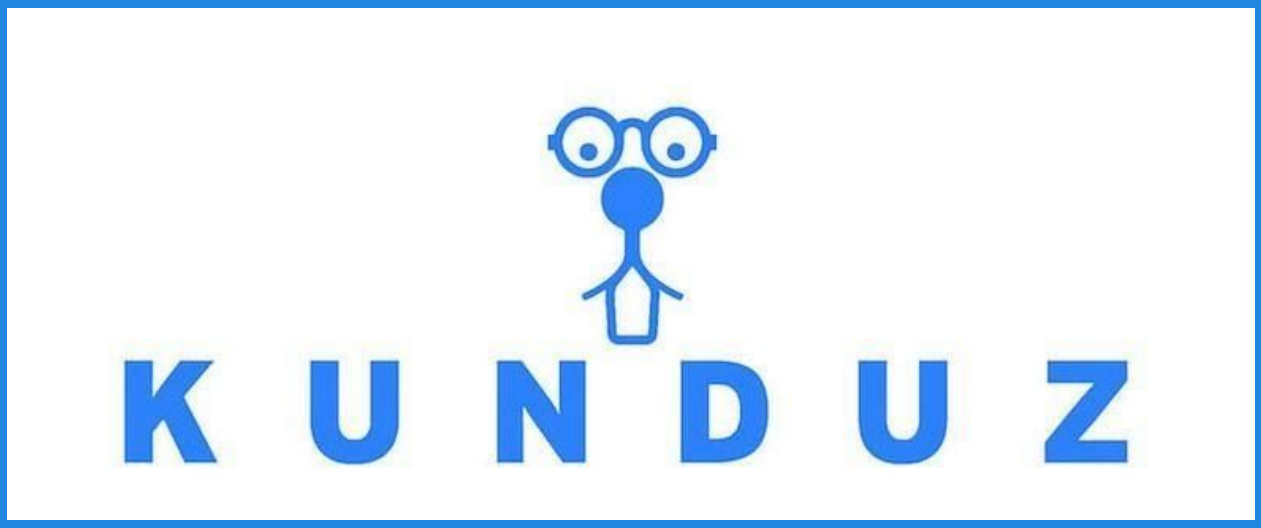

Jan 7 2020 shift 2 Chemistry prepared by KUNDUZ tutors

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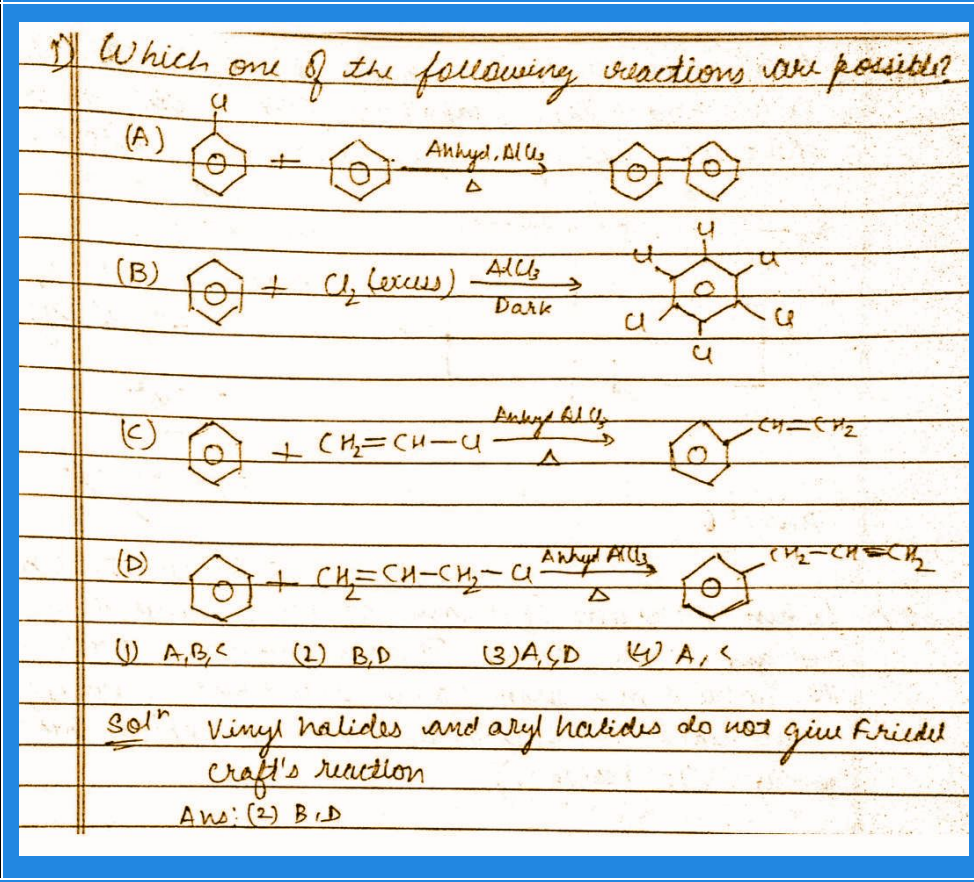
Question no.	Questions and Answers
1	

1) Which one of the following reactions are possible?

(A)

(B)

(C)

(D)

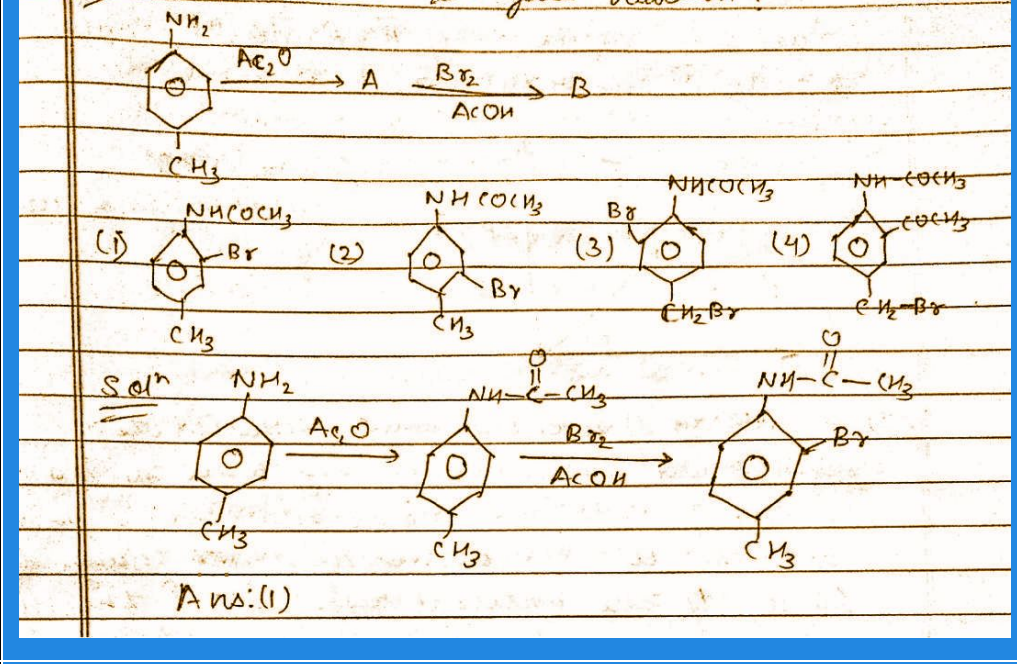
(1) A, B, C (2) B, D (3) A, C, D (4) A, C

Sol^{n} Vinyl halides and aryl halides do not give Friedel Craft's reaction

Ans: (2) B, D

2

2) A and B are in the given reaction ?



Ans: (1)

3

3) Correct statement regarding gluconic acid is

(1) It is prepared by oxidation of glucose with HNO_3

(2) It is obtained by partial oxidation of glucose

(3) It is dicarboxylic acid

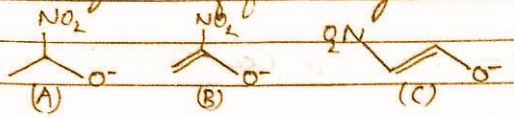
(4) It forms hemiacetal or acetal

Soln Gluconic acid $\left[CH_2(OH)-CH(OH)-CH(OH)-CH(OH)-CH(OH)-COOH\right]$ is obtained by partial oxidation of glucose by Tollen's reagent or Fehling's soln or Br_2, H_2O

Gluconic acid can not form hemiacetal or acetal.

4

4) Stability order of following alkoxide ion is



(1) C > B > A (2) A > C > B (3) B > A > C (4) C > A > B

Soln

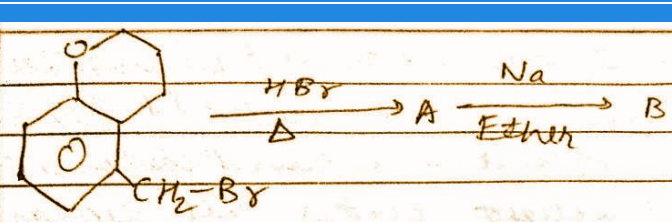
When negative charge is delocalised with electron withdrawing group like (NO_2) then stability increases

(A) Negative charge is delocalised with electron withdrawing group (NO_2)

(B) Negative charge is delocalised with C of alkene

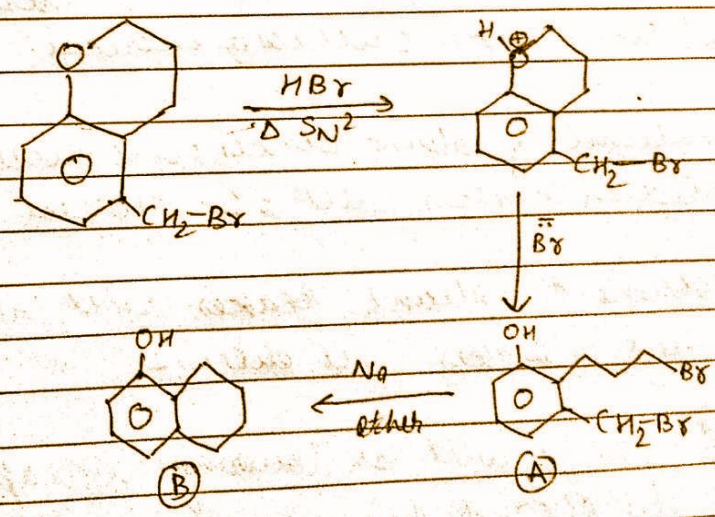
(C) Negative charge is localised ∴ Ans is (1) C > B > A

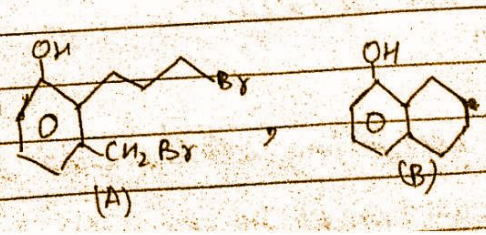
5

5) 

A & B are?

Sol^n



∴ (B) 

is correct

6

6) For complex $[Ma_2b_2]$ if M is sp^3 or dsp^3 hybridised respectively then total no. of optical isomers are respectively

(1) 1, 1 (2) 2, 1 (3) 0, 0. (4) 1, 2

Sol^n

Ans(3)

Both will not show optical isomerism

7

7) Bond order and magnetic nature of CN^- are respectively
(1) 3, diamagnetic (2) 3, paramagnetic
(3) 2.5, paramagnetic (4) 2.5, diamagnetic

Soln:- CN^- is a 14 electron system
Ans is(1) 3, diamagnetic

8

8) Which of the following is incorrect?
(1) $\Lambda^\circ_m NaCl - \Lambda^\circ_m NaBr = \Lambda^\circ_m KCl - \Lambda^\circ_m KBr$
(2) $\Lambda^\circ_m H_2O = \Lambda^\circ_m HCl + \Lambda^\circ_m NaOH - \Lambda^\circ_m NaCl$
(3) $\Lambda^\circ_m NaI - \Lambda^\circ_m NaBr = \Lambda^\circ_m NaBr - \Lambda^\circ_m KBr$
(4) $\Lambda^\circ_m NaCl - \Lambda^\circ_m KCl = \Lambda^\circ_m NaBr - \Lambda^\circ_m KBr$

Ans(3)

Soln:- Theory based.

9

9) $NaOH + Cl_2 \longrightarrow A$ + other products
Hot & conc

$Ca(OH)_2 + Cl_2 \longrightarrow B$ + other products
Cold & dil

A & B are respectively
(1) $NaClO_3$, $Ca(OCl)_2$ (2) $NaClO_3$, $Ca(ClO_3)_2$
(3) $NaCl$, $Ca(ClO_3)_2$ (4) $NaClO$, $Ca(ClO_3)_2$

Soln:- $6NaOH + 3Cl_2 \longrightarrow 5NaCl + NaClO_3 + 3H_2O$
$2Ca(OH)_2 + Cl_2 \longrightarrow Ca(OCl)_2 + CaCl_2 + 2H_2O$

Ans is(1) $NaClO_3$, $Ca(OCl)_2$

10

10 There are two beakers (1) having pure volatile solvent and non volatile solute. If both beakers are placed together in a closed container then:

(1) Volume of solvent beaker will decrease and solution beaker will increase

(2) Volume of solvent beaker will increase and solution beaker will also increase

(3) Volume of solvent beaker will decrease and solution beaker will also decrease

(4) Volume of solvent beaker will increase and solution beakers will decrease

Sol^n There will be lowering in vapour pressure in second beaker.

∴ correct ans is (1)

11

11. Metal with low melting point containing impurity of high melting point can be purified by

(1.) Zone Refining (2.) Vapour phase refining

(3.) Distillation (4.) Liquation

Ans. (4)

Sol. Theory based.

12

12. Which of the following statements are correct?
(I) On decomposition of H_2O_2, O_2 gas is released.
(II) 2-ethylanthraquinol is used in preparation of H_2O_2.
(III) On heating $KClO_3$, $Pb(NO_3)_2$, $NaNO_2$, O_2 gas is released
(1) I, II, IV (2) II, III, IV (3) I, II, III, IV (4) I, II, III

Ans :- (3)
Theory based.

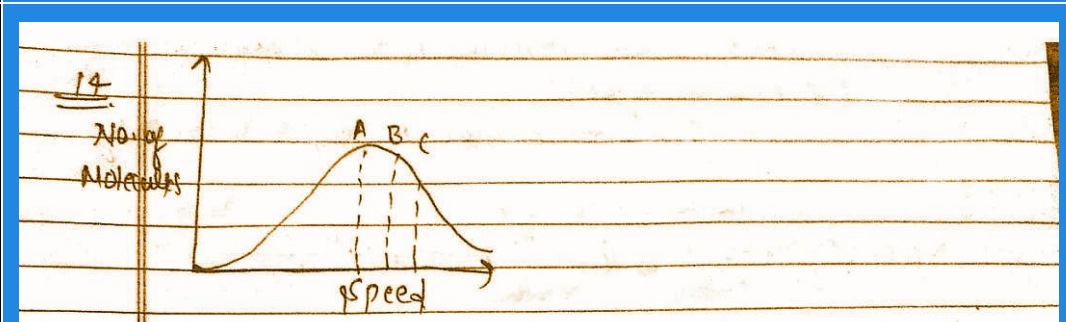
13

13. Amongst the following which is redox reaction?
(1) $N_2 + O_2 \xrightarrow{2000K}$ (2) Formation of O_3 from O_2
(3) Reaction between NaOH and H_2SO_4 (4) Reaction between $AgNO_3$ and NaCl

Ans (1)
Sol:
$N_2 + O_2 \longrightarrow 2NO$
$3O_2 \longrightarrow 2O_3$
$2NaOH + H_2SO_4 \longrightarrow Na_2SO_4 + 2H_2O$
$AgNO_3 + NaCl \longrightarrow NaNO_3 + AgCl$

14

14.



Select correct options:
(1) A = C_{MPS}, B = $C_{Average}$, C = C_{RMS} (2) A = $C_{Average}$, B = C_{MPS}, C = C_{RMS}
(3) A = C_{RMS}, B = $C_{Average}$, C = C_{MPS} (4) A = $C_{Average}$, B = C_{MPS}, C = C_{RMS}

Ans (1)
Sol:
$C_{RMS} > C_{Avg} > C_{MPS}$

15

15. Which one of the following amongst each pair will release maximum energy on gaining one electron (A = F, Cl); (B = S, Se), (C = Li, Na)

(1) A = Cl, B = S, C = Li (2) A = S, B = Cl, C = Li

(3) A = Li, B = Cl, C = S (4) A = Cl, B = Li, C = S

Ans (1)

Theory based

16

16) Which of the following statements is incorrect?

(A) Co^{+3} with strong field ligand forms a high magnetic moment complex

(B) For Co^{+3} if pairing energy (P) > Δ_o then the complex formed will have t_{2g}^4, e_g^1 configuration

(C) For $[Co(en)_3]^{3+}$ λ absorbed is less than λ absorbed for $[CoF_6]^{3-}$

(1) A, D (2) B, C (3) A, B (4) A, B, C, D

Ans (1)

Theory based.

17

17. 0.6 g of urea on strong heating with NaOH evolved NH_3. Liberated NH_3 will combine completely with which of the following HCl solution?

(1) 100 ml of 0.2 N HCl

(2) 400 ml of 0.2 N HCl

(3) 100 ml of 0.1 N HCl

(4) 200 ml of 0.2 N HCl

Ans (1)

Sol. 2 × mole of urea = mole of NH_3 — (1)

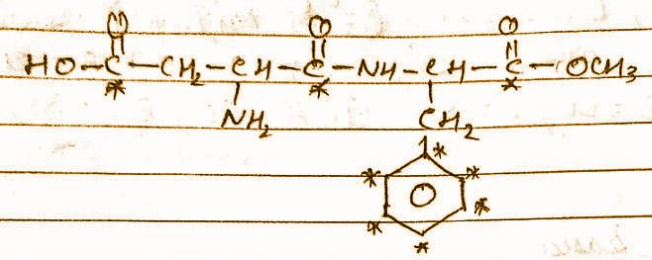
mole of NH_3 = mole of HCl

∴ mole of HCl = 0.02 mole.

21

21 Number of sp^2 hybrid carbon atoms in aspartame is-

soln



Ans = 9

22

22 3g of acetic acid is mixed with 250 ml of 0.1M HCl. This mixture is now diluted to 500ml. 20 ml of this solution is now taken in another container & ½ ml of 5M NaOH is added to this. Find the pH of this solution. ($\log 3 = 0.4771$, $pK_a = 4.74$)

soln

m mole of acetic acid in 20 ml = 2

m mole of HCl in 20 ml = 1

m mole of NaOH = 2.5

$CH_3COOH + NaOH$ (remaining) $\longrightarrow CH_3COONa$ + water

2	3/2	0	0
0.5	0	3/2	0

$$pH = pK_a + \log \frac{3/2}{1/2}$$

$$= 4.74 + \log 3$$

$$= 5.22$$

∴ Answer is 5.22.

23

23.) Flocculation value of As_2S_3 sol by HCl is 30 mmole L^{-1}. Calculate mass of H_2SO_4 required in gram for 250 ml sol.

soln:- FOR 1L sol 30m mol of HCl is required

∴ FOR 1L sol 15m mol H_2SO_4 is required

FOR 250 ml of sol

$\frac{15}{4} \times 10^{-3}$ m mole $H_2SO_4 \equiv 0.3675$ g

∴ answer is 0.37

24

24) $NaCl \xrightarrow[\text{Conc. } H_2SO_4]{K_2Cr_2O_7(s)} (A) \xrightarrow{NaOH} (B) \xrightarrow[+H_2O_2]{\text{Dil } H_2SO_4} (C)$

Determine total number of atoms in per unit formula of (A), (B) & (C)

Soln

(A) = CrO_2Cl_2

(B) = Na_2CrO_4

(C) = CrO_5

Ans = 18.00

25

(25) Calculate $\Delta_f H^\circ$ (in kJ/mol) for $C_2H_6(g)$ if $\Delta_c H^\circ$[Graphite] = −393.5 kJ/mol, $\Delta_c H^\circ[H_2(g)]$ = −286 kJ/mol and $\Delta_c H^\circ[C_6H_6(g)]$ = −1560 kJ/mol

Soln $C_6H_2(g) + 3.5O_2(g) \longrightarrow 2CO_2(g) + 3H_2O(l)$

$2 \times (-393.5) + 3 \times (-286) - (-1560) = -85$ kJ/mol

∴ Answer is 85.00

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