

Model Question of HSC Examination 2015

(English Version)

Subject : Chemistry 2nd Paper (Creative)

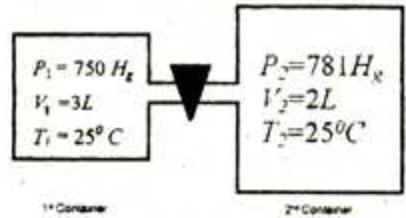
Time : 2 Hours 10 Minutes

Full Marks—40

1. ► Ethanol reacts with sulphuric acid at different conditions produces 'A' (alkene) and 'B' (ether). Again, 'A' can be converted to 'C' (alkyne) which has same number of carbon atoms.

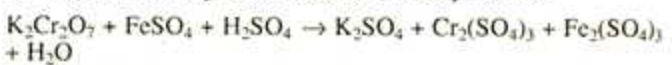
- a. What is nanoparticle? 1
- b. Show that volume of all gases becomes theoretically zero at absolute zero temperature. 2
- c. Write down the interconversion of 'A' and 'C'. 3
- d. Describe with proper logic 'A' is an unsaturated hydrocarbon, 'B' is an acid and 'C' is an organic compound. 4

2. ► Observe the figure and answer the questions.



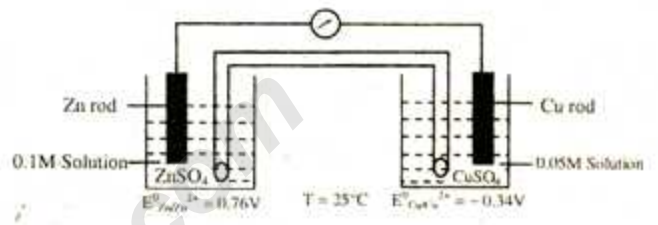
- a. Calculate the oxidation number of B in KBF_4 ? 1
- b. Why $FeSO_4$ Solution can not be kept in zinc container?
 $Zn/Zn^{2+}; E_{Ox}^0 = 0.76v$, $Fe/Fe^{2+}; E_{Ox}^0 = 0.44V$ 2
- c. Determine the total pressure of the mixture after opening crock. 3
- d. Analyze the comparative total pressure at $25^\circ C$ temperature and $30^\circ C$ temperature. 4

3. ► Observe the equation and answer the questions:



- a. What is the formula of Dettol? 1
- b. Why tartaric acid has more than one chiral carbon atoms, but it is optically inactive? 2
- c. Balance the mentioned reaction by ion electron method. 3
- d. How much gram of oxidizing agent will be needed to neutralize 10gm of $FeSO_4$? 4

4. ► Observe the following figure and answer the questions :



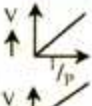


- a. What is the formula of Acrolein? 1
- b. Why amino acid is considered as Zwitter ion? 2
- c. Calculate the E.M.F of above cell. 3
- d. If $ZnSO_4$ is reserve in Cu container and $CuSO_4$ is stored in Zn container then which one would be more feasible-give logic for your answer. 4
- 5. ► The molecular formula 'A' is C_7H_6O . When 'A' reacts with neutral solution of $FeCl_3$ gives violet colour solution. 'A' also produces 'B' when heated with $ZnCl_2$ and NH_3 .
 - a. What is the spectator ion in redox reaction? 1
 - b. Find out the Root Mean Square Velocity of oxygen molecule at $0^\circ C$ temperature? 2
 - c. How can we get an antipyretic and pain killer from mentioned 'A'? 3
 - d. Explain with proper logic the compound 'A' is acidic but compound 'B' is basic in nature. 4
- 6. ► A solution of 10mL 0.1 M HCl and 4mL 0.1M H_2SO_4 is taken in a conical flask at $25^\circ C$ temperature and then 25mL NaOH solution is added to neutralize the acid solution completely. But when the acid solution is heated to $50^\circ C$ temperature; it needs more than 25 mL NaOH solution.
 - a. Write down the formula of picric acid? 1
 - b. Explain-OH group direct the ortho-para directing position in benzene ring. 2
 - c. Calculate the molarity of NaOH solution. 3
 - d. Prove mathematically that excess of NaOH solution is needed to neutralize the acid solution completely at $50^\circ C$ temperature? 4

Subject : Chemistry 2nd Paper (MCQ)

Time: 35 Minutes

Full Marks — 35

[Darken the circle (O) with black ball point pen from the alternatives]

- Compressibility of ideal gas is—
 (a) 1.5 (b) 1.4
 (c) 2.0 (d) ∞
 - What is the RMS value of N₂ at 270°C?
 (a) 461.94 ms⁻¹ (b) 695.56 m/s
 (c) 561.34 cms⁻¹ (d) 519.5 cms⁻¹
 - Which one is use on salt bridge in electrochemical cell?
 (a) K₂SO₄ (b) CaCl₂
 (c) HgCl₂ (d) KCl
 - Felting reagent is reduced by—
 i. Acclaldenhyde
 ii. Formaidenhyde
 iii. Formic acid
 Which one of the following is correct?
 (a) i & ii (b) ii & iii
 (c) i & iii (d) i, ii & iii
 - HCl + H₂O = H₃O⁺ + Cl⁻ in this reaction conjugate base is—
 (a) H₃O⁺ (b) Cl⁻
 (c) HCl (d) H₂O
 - Molarity of 10% Na₂CO₃ solution is—
 (a) 0.9434M (b) 1.886M
 (c) 1.9434M (d) 2.886M
 - How much Silver will be deposited if 0.5 amp Current is supplied to the AgNO₃ solution for 10 minutes?
 (a) 0.136 gm (b) 0.236 gm
 (c) 0.336 gm (d) 0.436 gm
 - Alkyl halide reacts with aqueous base to produce alcohol. This reaction is—
 (a) Elimination reaction
 (b) Addition reaction
 (c) Substitution reaction
 (d) Synthesis reaction
 - What is the name of the folk wing compound? (CH₃)₂CH-CH₂-CH₂-Br
 (a) 1-bromo-3 methyl butane
 (b) 1 bromopentane
 (c) 2-methyl-3-bromopropane
 (d) 2-methyl-3-bromopropane
 - heterocyclic compound are—
 i. Furan
 ii. Ethelene oxide
 iii. Pyridine
 Which one of the following is correct?
 (a) i & ii (b) ii & iii
 (c) i & iii (d) i, ii & iii
 - Propanol-1 and propanol-2 are—
 (a) Functional group isomer
 (b) Geometrical isomer
 (c) Optical isomer
 (d) শুভ্রবস্তুক বস্তুক
 - How many isomemns are possible in molecular formula?
 (a) 2 (b) 3
 (c) 4 (d) 5
 - Beer-Lambart law, A = abc. here A mean—
 (a) Absorbance (b) Transmittance
 (c) Slope (d) Temperature
 - Which one is ring deactivator?
 (a) NH₂ (b) -OH
 (c) -Cl (d) -CN
 - BOD-10 of any pond water mean water of that ponds is—
 (a) good (b) very good
 (c) bad (d) very bad
 - Which substance is used for making difference between carboxylic acid and pheol—
 (a) NaOH (b) NaHCO₃
 (c) CO₂ (d) H₂O₂
 - 1 atm Equal to—
 (a) 101.325 Pa (b) 1013.25 Pa
 (c) 1.01 × 10⁶ Pa (d) 1013.25 Pa
 - When ethanol is heated with conc H₂SO₄, a "X" gas is produced 1 "X" gas is—
 (a) Methane (b) Ethane
 (c) Ethene (d) Propane
 - Alkyl halides undergo—
 i. electrophile substitution reaction
 ii. nucleophile substitution reaction
 iii. elimination reaction
 Which one of the following is correct?
 (a) i & ii (b) i & iii
 (c) i, ii & iii (d) ii & iii
 - Alkanes—
 (a) are always gases
 (b) are more reactive than alkenes
 (c) are water soluble
 (d) contain single covalent bond only
- Answer 21-22 from following stem.
 Among two hottle of CaCl₂ solution one bottle is labeled 0.015M another bottle is labeled 1000 ppm.
- Cocentration of first bottle in ppm unit is—
 (a) 1500 ppm (b) 1600 ppm
 (c) 1665 ppm (d) 1765 ppm
 - Concentration of 2nd bottle in % is—
 (a) 0.1% (b) 0.01%
 (c) 0.001% (d) 0.0001%
 - pH of pure water is—
 (a) 5 (b) 6
 (c) 7 (d) 8
 - X is a unknown gas which can be prepared from salt of fatty acid. This gas is responsible for global warming. x gas is—
 (a) CO₂ (b) CH₄
 (c) C₂H (d) CFC
 - In case of x gas—
 i. It can be prepare from Na salt of ehanic acid
 ii. It can be prepare by Wurtz reaction
 iii. It can absorb or emit IR radition
 Which one of the following is correct?
 (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii
- Carbyl amine reaction we can identify—
 (a) primary amine
 (b) secondayr amine
 (c) terhary amine
 (d) ammonia
 - What is the formula of vinyl chionde—
 (a) CH₂ = CHCl
 (b) CH₂CH₂Cl
 (c) CH₂ = CH-CH₂Cl
 (d) CH₃ - CH = CHCl
 - Ozonolysis and then hydrolysis of propene we get—
 i. HCHO
 ii. CH₃CHO
 iii. CH₃OH
 Which one of the following is correct?
 (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii
 - Which one is weak electrolyte?
 (a) NH₄OH (b) HCl
 (c) NaOH (d) H₂SO₄
 - Rate of diffusion of which compound is high?
 (a) NH₃ (b) CO₂
 (c) NO₂ (d) CH₄
 - What is the wave length of visible light?
 (a) 200-300 nm (b) 380-700 nm
 (c) 700-900 nm (d) 800-1300 nm
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 The isotherms are
 Which one of the following is correct?
 (a) i (b) ii
 (c) i & ii (d) i, ii & iii
 - Which one is required to prepare hexane by Wurtz reaction?
 (a) CH₃Br
 (b) CH₃CH₂Br
 (c) CH₃CH₂CH₂Br
 (d) CH₃CH₂CH₂CH₂CH₂CH₂Br
 - Which compounds are used to differentiate ether and alcohol?
 i. Na
 ii. PCl₅
 iii. Acidic K₂Cr₂O₇
 Which one of the following is correct?
 (a) i & ii (b) ii & iii
 (c) i, ii & iii (d) i & iii
 - Which of the following act as an electrophile?
 (a) BF₃ (b) NO₂
 (c) Br (d) NH₃

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