CHEMISTRY

BOOKS - UNITED BOOK HOUSE

SET-12

Exercise

1. How many Faraday of electricity are required to produce 18g of Al (atomic mass = 27) from molten Al_2O_3 by electrolysis?

A. $\dfrac{3}{2}$

B. $\dfrac{2}{3}$

C. 2

D. $\dfrac{3}{17}$

Answer:

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2. Which of the following is an antibiotic?

A. Aspirin

B. Chloramphenicol

C. Veronal

D. Foristal

Answer:

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3. Alitame is.

A. Artificial sweetener

B. Food additive

C. Preservative

D. Synthetic detergent

Answer:

4. Vulcanisation of rubber is done by heating natural rubber with which of the following:
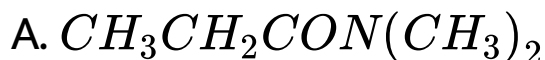
A. S

B. SF_6

C. P

D. none of these

Answer:

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5. In which of the following peptide bond is present?

A. $CH_3CH_2CON(CH_3)_2$

B. $H_2NCH_2CH_2COOC_2H_5$

C. $C_6H_5CONHOC_2H_5$

D. $H_2NCH_2CONH\underset{\underset{CH_3}{|}}{C}HCO_2H$

Answer:

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6. Oxidation no of Fe in $K_4\left[Fe(CN)_6\right]$.

A. 3

B. 0

C. 2

D. 1

Answer:

7. If 'a' is the length of the edge of unit cell fcc

lattice, the atomic radius is equal to.

A. $\dfrac{a}{2\sqrt{2}}$

B. $\dfrac{a}{2}$

C. $\dfrac{\sqrt{3}a}{2}$

D. $\dfrac{a}{4}$

Answer:

8. Which one among the following is maximum

acidic?

A. p-nitrohpenol

B. phenol

C. m-nitrophenol

D. o-nitrophenol

Answer:

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9. Which one of the following undergoes oxidation reduction simultaneously in presence of 50% NaOH?

A. Benzoic acid

B. Acetaldehyde

C. Benzaldehyde

D. Acetone

Answer:

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10. The extent of physical adsorption is appreciable at.

A. high temp.

B. low temp.

C. high pressure

D. Both (b) and (c)

Answer:

11. Ethanol can be converted to ethyl ethanoate by the action of.

A. Acetaldehyde

B. Acetone

C. Formic acid

D. Acetic acid

Answer:

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12. Alkyl nitrile is obtained by the action of alkyl halide with.

A. KCN

B. AgCN

C. Both of these

D. None of these

Answer:

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13. Which of the following free gaseous ions of 3d elements has the highest paramagnetic moment?
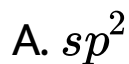
A. $Ni2+)$

B. Mn^{2+}

C. Fe^{2+}

D. Cu^{2+}

Answer:

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14. The hybridisation of phosphorus in PCl_3 is.

A. sp^2

B. sp^3d

C. sp^3d^2

D. sp^3

Answer:

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15. Write the general outer electronic configuration of f block elements.

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16. Relation between equivalent conductance ($\wedge$) and specific conductance (k) is

17. Write down the relatiuon between the emf of a galvanic cell and the Gibbs energy change for the chemical reaction occuring in the cell.

18. Write two differeneces between physisorption and chemisorption.

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19. Give one reason why a finely divided substance is more effective as an addorbent?

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20. What is an antiseptic?

21. What is colligative property? Define osmotic pressure.

22. What would be the osmotic pressure of a 0.02 molar aqueous solution of urea at $27^\circ C$.

23. What are Micelles? Given example of heterogeneous catalyses.

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24. Explain the formation of delta at the mouth of the river where it meets the sea.

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25. What is the hybridisation state of Xenon in $XeOF_4$?

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26. Between white & red phosphorus which one is more reactive & why?

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27. Explain why $[Ti(H_2O)_6]^{3-}$ is coloured while $[Sc(H_2O)_6]^{3+}$ is colourless.

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28. What is co-polymer? Give example.

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29. Silver crystalise in face centred cubic lattice. If edge length the unit cell is

4.07×10^{-8} cm and density of silver is $10.48 cm^{-3}$, determine the relative mass of silver.

30. What is sehottky defect?
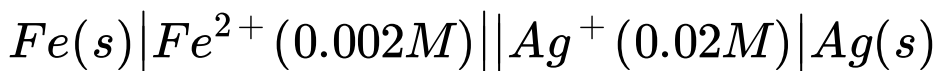
31. What is meant by the molality of a solution. Find the molecular weight of a solute where

1.2gm of the solute is dissolved in 180g water at $25°C$ shows vp of 36mm of Hg. VP of pure water at $25°C$ is 37.5 mm of Hg.

32. Write down the appropriate Nernst equation for the followign volataic cell and calcualte the emf of the cell at 298K.

$$Fe(s)\,|\,Fe^{2+}(0.002M)\,||\,Ag^+(0.02M)\,|\,Ag(s)$$

Given $E° - (Fe^{2+}/Fe) = 0.44V$ and

$E° - (Ag^{2+}/Ag) = 0.80v$ at 298K.

33. Write down Kohlrausch's law of independent migration of ions. Find out the molar conductivity of ammonium hydroxide at infinite dilution ($\wedge_m^\circ$) at 298K, given that $\wedge_m^\circ$ vales for NH_4Cl, NaCl and NaOH are 149, 126 and 248 $S cm^2 mol^{-1}$ respectively at 298K.

34. Differentiate between the following:

Calcination and roasting

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35. Write the composition of electrolytes used in the extraction of aluminium by electrolytic process. Write the chemical reactions occuring at the two electrodes.
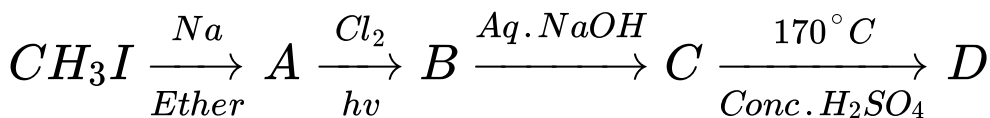
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36. What is Lanthanide contraction?

37. Identify A, B, C, D.

$$CH_3I \xrightarrow[Ether]{Na} A \xrightarrow[hv]{Cl_2} B \xrightarrow{Aq.NaOH} C \xrightarrow[Conc.H_2SO_4]{170°C} D$$

38. Write the structural formula of DDT.

39. How can you prepare $2°$ alcohol using CH_3MgBr?

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40. How can you remove -OH group from benzene?

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41. How can you distinguish? Phenol and Anisole.

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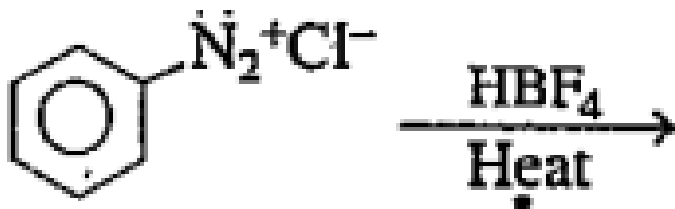**42.** Give an example of Reimr-Tiemann reaction.

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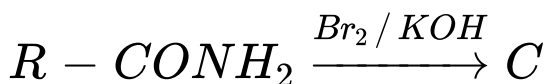**43.** Identify A, B, C, D, E and F in the following reaction.

$C_6H_5-NH_2 \xrightarrow{\quad CF_3CO_3H \quad} A$

44. Identify A, B, C, D, E and F in the following reaction.

$C_6H_5-N_2^+Cl^- \xrightarrow[\text{Heat}]{\quad HBF_4 \quad}$

45. Identify C in the following reaction.

$$R - CONH_2 \xrightarrow{Br_2 \, / \, KOH} C$$

46. Identify D in the following reaction.

$$R - CN \xrightarrow[Dryether]{LiAlH_4} D$$
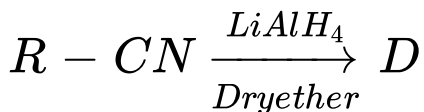
47. Identify A, B, C, D, E and F in the following reaction.

$$\underset{\text{NO}_2}{\bigcirc} \xrightarrow[\text{aq EtOH; }\Delta]{\text{Zn dust/NH}_4\text{Cl}} E \xrightarrow[\text{reagent}]{\text{Tollen's.}} ? F$$
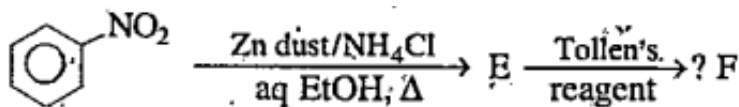
48. An organic compound (A) of molecular formula C_7H_7NO, on treatment with P_2O_5 produces (B). Reaction of both (A) and (B) with $LiAlH_4$ gives (C). Acid hydrolysis of (A) and (B) affords benzoic acid. Identify A, B and C.

convert: `Glucose → Glucosazone

49. An organic compound (A) of molecular formula C_7H_7NO, on treatment with P_2O_5 produces (B). Reaction of both (A) and (B) with $LiAlH_4$ gives (C). Acid hydrolysis of (A) and (B) affords benzoic acid. Identify A, B and C.

Define peptide bond with an example.

50. An organic compound (A) of molecular formula C_7H_7NO, on treatment with P_2O_5 produces (B). Reaction of both (A) and (B) with $LiAlH_4$ gives (C). Acid hydrolysis of (A) and (B) affords benzoic acid. Identify A, B and C. Write the name and structure of the monomer of natural rubber.

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51. Write down the Arrhenius equation relating the rate constant of a reaction with temp.

If K_1 and K_2 be the rate constants of reaction at temperature $t_1^\circ C$ and $t_2^\circ C$ respectively, Find out the relation between K_1, K_2, t_1 and t_2. Give that the activation energy (E_a) of the reaction remains unchnaged within the temp. range mentioned. The rate constants of a reaction at 400K and 500K are $0.02S^{-1}$ and $0.085S^{-1}$ respectively. Determine the activation energy (E_a) of the reaction.

52. What is meant by pseudo unimolecular reaction. Explain with an example.

0.0625g remains from 1g of a radioactive element after 20 years of radioactive decay. Determine the rate constant and half-line (t1/2) of the reaction. How much of the element did remain after 10 years from the start.

53. The lower electron affinity of fluorine than that of chlorine is due to

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54. Write with balanced chemical equation, What happens when white phosphorus is boiled with ecustic soda solution.

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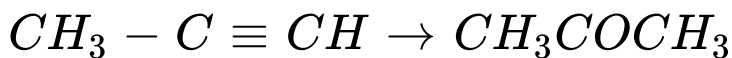**55.** Interhalogen compounds are more reactive than halogens. Explain.

56. How can you introduce -CHO group in benzene ring?

57. Carry out the conversion:

$$CH_3 - C \equiv CH \rightarrow CH_3COCH_3$$
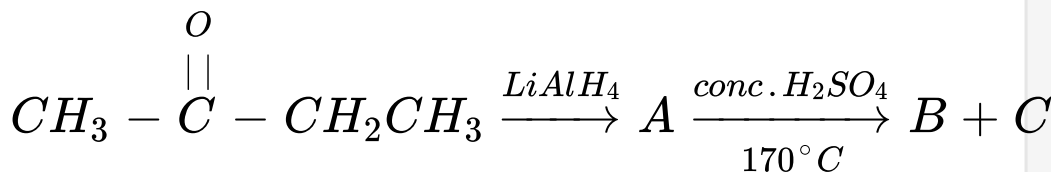
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58. How can you distinguish between HCOOH and CH_3COOH by a chemical test?

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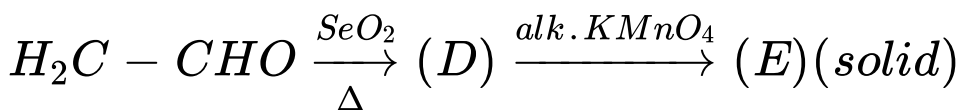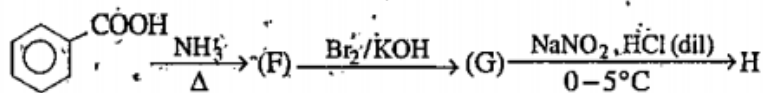**59.** Write (A) to (J) in the following reaction sequence:

$$CH_3 - \overset{\overset{\displaystyle O}{||}}{C} - CH_2CH_3 \xrightarrow{LiAlH_4} A \xrightarrow[170^\circ C]{conc.\,H_2SO_4} B + C$$

(major)

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60. What are (A) to (J) in the following reaction sequence?

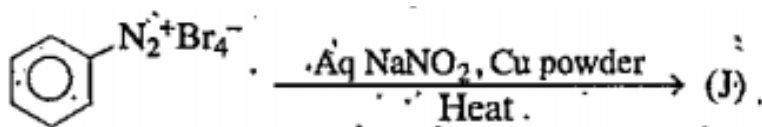$$H_2C - CHO \xrightarrow[\Delta]{SeO_2} (D) \xrightarrow{alk.\,KMnO_4} (E)(solid)$$

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61. Write (A) to (J) in the following reaction

sequence:

$$\text{C}_6\text{H}_5\text{-COOH} \xrightarrow[\Delta]{\text{NH}_3} (F) \xrightarrow{\text{Br}_2/\text{KOH}} (G) \xrightarrow[0-5°C]{\text{NaNO}_2,\text{HCl (dil)}} H$$

62. Write (A) to (J) in the following reaction

sequence:

$$\text{C}_6\text{H}_5\text{-CHO} \xrightarrow{\text{alc KCN}} (I)$$

63. Write (A) to (J) in the following reaction sequence:

$$C_6H_5-N_2^+Br_4^- \xrightarrow[\text{Heat}]{\text{Aq } NaNO_2, \text{ Cu powder}} (J)$$