CHEMISTRY

BOOKS - KCET PREVIOUS YEAR PAPERS

KARNATAKA CET 2015

Chemistry

1. $0.30g$ of an organic compound containing C, H and Oxygen on combustion yields $0.44gCO_2$ and $0.18gH_2O$. If one mole of compound weighs 60, then molecular formula of the compound is

A. C_3H_8O

B. $C_2H_4O_2$

C. CH_2O

D. C_4H_6O

Answer: B

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2. For one of the element various successive ionization ethalpies (in kj mol^{-1}) are given below :

I.E.	1^{st}	2^{nd}	3^{rd}	4^{th}	5^{th}
	577.5	1810	2750	11,580	14,820

The element is

A. A) P

B. B) Mg

C. C) Si

D. D) Al

Answer: D

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3. The aqueous solution of following salt will have the lowest pH :

A. NaClO

B. $NaClO_4$

C. $NaClO_3$

D. $NaClO_2$

Answer: B

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4. One of the following is an essential amino acid.

A. Cysteine

B. Serine

C. Tyrosine

D. Isoleucine

Answer: B

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5. The formation of cyanohydrin from a ketone is an example of

A. nucleophilic addition

B. electrophilic substitution

C. nucleophilic substitution

D. electrophilic addition

Answer: A

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6. $100cm^3$ of 1 M CH_3COOH was mixed with $100cm^3$ of 2 M CH_3OH to form an ester. The change in the initial rate if eachsolution is diliuted with equal volume of water would be

A. 4 times

B. 0.25 times

C. 2 times

D. 0.5 times

Answer: B

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7. How many coulombs of electricity are required for the oxidation of one mol of water to dioxygen ?

A. $1.93 \times 10^4 C$

B. $19.3 \times 10^5 C$

C. $9.65 \times 10^4 C$

D. $1.93 \times 10^5 C$

Answer: B

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8. Cheilosis and digestive disorders are due to the deficiency of

A. ascorbic acid

B. pyridoxine

C. thiamine

D. riboflavin

Answer: D

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9. One of the following amide will not undergo Hoffmann bromamide reaction :

A. $CH_3CONHCH_3$

B. $CH_3CH_2CONH_2$

C. CH_3CONH_2

D. $C_6H_5CONH_2$

Answer: A

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10. Iodoform can be prepared from all, except

A. butan - 2 - one

B. acetophenone

C. propan - 2- ol

D. propan - 1 - ol

Answer: B

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11. The arrangement of following compounds :

i. bromomethane ii.bromoform

iii. Chloromethane iv. Dibromomethane

In the increasing order of their boiling point is

A. $iv < iii < i < ii$

B. $i < ii < iii < iv$

C. $iii < i < iv < ii$

D. $ii < iii < i < iv$

Answer: C

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12. The complex ion having minimum magnitude of $\Delta_o(CFSE)$ is

A. $\left[Co(NH_3)_6\right]^{3+}$

B. $\left[Cr(H_2O)_6\right]^{3+}$

C. $\left[Cr(CN)_6\right]^{3-}$

D. $[CoCl_6]^{3-}$

Answer: D

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13. Which of the following colloids cannot be easily coagulated ?

A. Multicolor colloids

B. Irreversible colloids

C. Lyophobic colloids

D. Macromolecular colloids

Answer: B

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14. After adding non-volatile solute freezing point of water decreases to -0.186°C. Calculate ΔT_b if $K_f = 1.86 K kgmol^{-1}$ and $K_b = 0.521 K kgmol^{-1}$

A. 0.0521K

B. 0.0186 K

C. 0.521K

D. 1.86 K

Answer: A

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15. Which of the following compound of Xenon has pyramidal geometry ?

A. XeF_2

B. XeF_4

C. $XeOF_4$

D. XeO_3

Answer: D

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16. Cryolite is

A. Na_3AlF_6 and is used in the electrolysis of alumina for lowering the melting point of alumina only

B. N_3AlF_6 and is used in the elctrolytic refining of alumina

C. Na_3AlF_6 and is used in the electrolysis of alumina for decreasing electrical conductivity

D. Na_3AlF_6 and is used in the electrolysis of alumina for lowering the melting point and increasing the conductivity of alumina .

Answer: B

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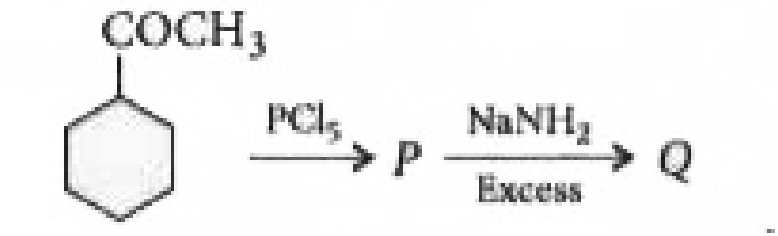
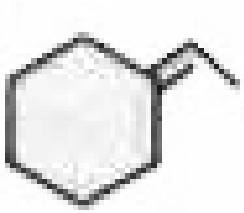
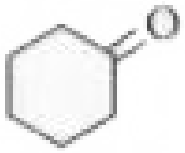
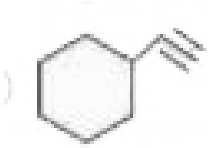
17. Identify 'Q' in the following sequence of reactions :



A. 

B. 

C. 

D. 

Answer: D

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18. What ammount of dioxygen (in gram) contains 1.8×10^{23} molecules ?

A. 0.960

B. 96.0

C. 0.960

D. 9.60

Answer: A

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19. The pair of compound which cannot exist together in solution is

A. $NaHCO_3$ and H_2O

B. Na_2CO_3 and $NaOH$

C. $NaHCO_3$ and $NaOH$

D. $NaHCO_3$ and Na_2CO_3

Answer: C

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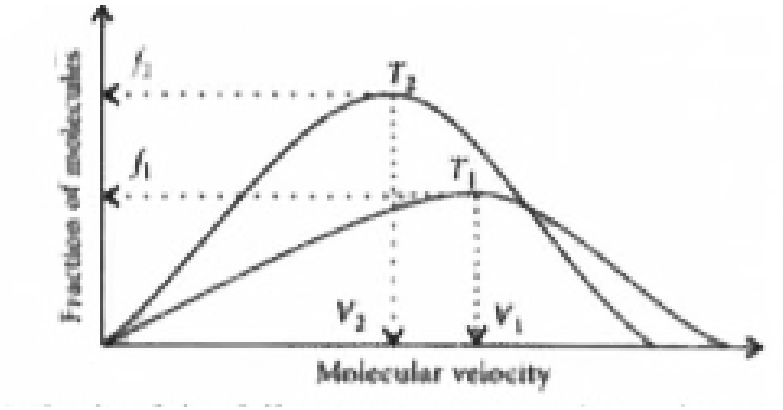
20. Plot of Maxwell's distribution of velocities is given below :



Which of the following is correct about this plot ?

A. $f_1 > f_2$

B. $V_1 < V_2$

C. $T_1 < T_2$

D. $T_1 > T_2$

Answer: B

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21. Arrange the following compounds in the increasing order of their acidic strength :

i. m - nitrophenol ii. m - cresol

iii. Phenol iv. m -chlorophenol

A. $ii < iv < iii < i$

B. $ii < iii < i < iv$

C. $iii < ii < i < iv$

D. $ii < iii < iv < i$

Answer: D

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22. In the reaction

$S + \frac{3}{2}O_2 \rightarrow SO_3 2xkJ$ and $SO_2 + \frac{1}{2}O_2 \rightarrow SO_3 ykJ$

heat of formationof SO_2 is

A. $x - y$

B. $2x + y$

C. $x + y$

D. $2x - y$

Answer:

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23. Which of the following is not true?

A. Ampicillin is not a natural antibiotic

B. Vancomycin is a broad spectrum antibiotic

C. Erythromycin is a bacteriostatic antibiotic

D. Prontosil is not converted into sulphanilamide in the body

Answer: D

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24. Using MOT, compare O_2^+ and O_2^- species and choose the incorrect option.

A. O_2^- is less stable

B. Both O_2^+ and O_2^- are paramagnetic

C. O_2^+ have higher bond order than O_2^-

D. O_2^+ is diamagnetic while O_2^- is paramagnetic .

Answer: D

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25. Which of the following compound possesses the " C-H" bond with the lower bond dissociation energy ?

A. Benzene

B. 2,2 - Dimethylpropane

C. Toluene

D. n - Pentane

Answer: C

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26. The correct statement is

A. BI_3 is the weakest Lewis acid among the boron halides

B. there is minimum $p\pi - p\pi$ back bonding in BF_3

C. BF_3 is the strongest Lewis acid among the other boron halides

D. there is maximum $p\pi - p\pi$ back bonding in BF_3

Answer: D

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27. Acetic acid is treated with $Ca(OH)_2$ and the product so obtained is subjected to dry distillation. The final product is

A. propanal

B. ethanol

C. ethanal

D. propanone

Answer:

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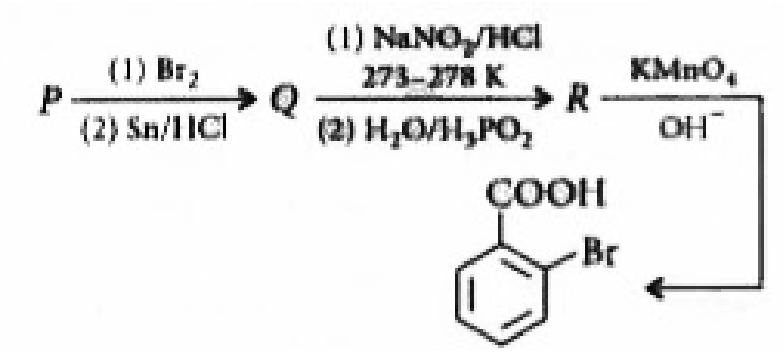
28. In the sequence of following reactions :



The starting compound 'P' is

A. m - nitrotoluene

B. p - nitrotoluene

C. o - nitrotoluene

D. o - bromotoluene

Answer: B

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29. An alkali metal hydride (NaH) reacts with diborane in .A. to give a tetrahedral compound .B. which is extensively used as reducing agent in organic synthesis. The compounds. The compound .A. and .B. respectively are

A. CH_3COCH_3 and $B_3N_3H_6$

B. $(C_2H_5)O$ and $NaBH_4$

C. C_2H_6 and C_2H_5Na

D. C_6H_6 and $NaBH_4$

Answer: B

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30. Water softening by Clark.s process uses

A. $NaHCO_3$

B. $Ca(OH)_2$

C. $Ca(HCO_3)_2$

D. Na_2CO_3

Answer: B

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31. One of the following conversion results in the change of hybridization and gemetry :

A. $NH_3 \rightarrow NH_4^+$

B. $H_2O \rightarrow H_3O^+$

C. $CH_4 \rightarrow C_2H_6$

D. $BF_3 \rightarrow BF_4^-$

Answer: B

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32. In presence of HCl, H_2S results the precipitatiion of Group-2 elements but not Group -4 elements during qualitative analysis. If is due to

A. higher concentration of H^+

B. lower concentration of H^+

C. higher concentration of S^{2-}

D. lower concentration of S^{2-}

Answer: B

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33. The two electron have the following set of quantum numbers :

$P = 3, 2, -2, +\frac{1}{2}$

$Q = 3, 0, 0, +\frac{1}{2}$

Which of the following statement is true ?

A. P has greater energy than Q

B. P and Q represent same electron

C. P and Q have same energy

D. P has lesser energy than Q

Answer: A

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34. Orlon has monomeric unit

A. glycol

B. isoprene

C. acrolein

D. vinyl cyanide

Answer: D

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35. Adenosine is an example of

A. purine base

B. nucleoside

C. nucleoside

D. pyrimidine base

Answer: B

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36. While charging the lead storage battery

A. $PbSO_4$ on cathode is reduced to Pb

B. $PbSO_4$ on anode is oxidized to PbO_2

C. $PbSO_4$ on anode is reduced to Pb

D. $PbSO_4$ on cathode is oxidized to Pb

Answer: C

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37. The unit cell with crystallographic dimensions, $a \neq b \neq c, \alpha = \gamma = 90 \text{ and } \beta \neq 90$ is

A. monoclic

B. tetragonal

C. triclinic

D. orthorhombic

Answer: A

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38. Sodium metal crystallizers in B.C.C. lattice with edge length of 4.29 A^o. The radius of sodium atom is

A. 1.601 Å

B. 1.857 Å

C. 2.857 Å

D. 2.145 Å

Answer: B

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39. On heating with concentrated NaOH solution in an inert atmosphere of CO_2 white phorus gives a gas . Which of the following statements is incorrect about the gas ?

A. It is more basic than NH_3

B. Its solution in water decomposes in the presence of light

C. It is less basic than NH_3

D. It is highly poisonnous and has smell like rotten fish .

Answer: A

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40. 1.78 g of an optically active L-amino acid (A) is treated with $NaNO_2/HCl$ at 0° C. $448cm^3$ of

nitrogen was at STP is evolved. A sample of protein has 0.25% of this amino acid by mass. The molar mass of the protein is

A. N - isopropylmethanamine

B. N - methypropan - 2- amine

C. N - methylpropanamine

D. butan - 2- amine

Answer: B

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41. 10 g of a mixture of BaO and CaO requires $100cm^3$ of 2.5 M HCl to react completely. The percentage of calcium oxide in the mixture is approximately (Given : molar mass of BaO= 153)

A. Na_2SO_3

B. KI

C. PbS

D. O_3

Answer: D

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42. The ratio of heats liberated at 298 K from the combustion of one kg of coke and by burning water gas obtained from kg of coke is (Assume coke to be 100% carbon). (Given enthalpies of combustion of CO_2, CO and H_2 as 393.5 kJ, 285 kJ, 285 kJ respectively at 298 K).

A. MA_2B_2 - Tetahedral

B. MABCD - Tetrahedral

C. MA_3B - Square planar

D. Mabcd - square planar

Answer: B

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43. Impure copper containing Fe, Au, Ag as impurities is electrolytically refined. A current of 140 A for 482.5 s decreased the mass of the anode by 22.26 g and increased the mass of cathode by 22.011 g. Percentage of iron in impure copper is (Given molar mass Fe= 55.5 g mol^{-1}, molar mass Cu = 63.54 g mol^{-1})

A. iron has less afinity for oxygen at high temperature

B. sulphur has less affinity for oxygen at high temperature

C. copper has more affinity for oxygen than sulphur at high temperature

D. copper has less affinity for oxygen than sulphur at high temperature

Answer: B

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44. $25cm^3$ of oxalic acid completely neutralised 0.064 g of sodium hydroxide. Molarity of the oxalic acid solution is

A. Na_2g

B. Na_3PO_4

C. $NaCl$

D. Na_2SO_4

Answer: C

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45. The statement that is NOT correct is

A. 20 min

B. 15 min

C. 3 hr

D. 30 min

Answer: A

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46. For the equilibrium:

$CaCO_{3(s)} \Leftrightarrow CaO_{(s)} + CO_{2(g)}, K_p = 1.64$

atm at 1000 K, 50 g of $CaCO_3$ in a 10 litre closed vessel is heated to 1000 K. Percentage of $\acute{C}aCO_3$ that remains unreacted at equilibrium is (Given R=0.082 L atm $K^{-1}\text{mol}^{-1}$).

A. 0.6 % glucose solution

B. 0.1 M glucose solution

C. 0.06 % glucose solution

D. 0.01 M glucose solution

Answer: B

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47. Conversion of oxygen into ozone is non-spontaneous at

A. $O_{2(g)} + 2H_2O_{(l)} + 4e^- \rightarrow 4OH^-_{(aq)}$

B. $H^+_{(aq)} + OH^-_{aq} \rightarrow H_2O_{(l)}$

C. $2H_{2(g)} + O_{2(g)} \rightarrow 2H_2O_{(l)}$

D. $H^+ + e^- \rightarrow \frac{1}{2}H_2$

Answer: A

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48. Density of carbon monoxide is maximum at

A. Tollens test

B. sodium bicarbonate test

C. litmus test

D. esterification test .

Answer: A

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49. The acid strength of active methylene group in :

(i) $CH_3COCH_2COOC_2H_5$

(ii) $CH_3COCH_2COCH_3$

(iii) $C_2H_5OO\mathbb{C}H_2COOC_2H_5$ decreases as :

A. $(-)$ - butan - 20-ol

B. $(\pm)$ - butan - 2 - ol

C. (+) - butan - 2 - ol

D. $(\pm)$ - butan - 1 - ol

Answer: B

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50. A metallic oxide reacts with water to from its hydroxide, hydrogen peroxide and also liberates oxygen. The metallic oxide could be

A. Zn,ZnS

B. Al,Al_2S_3

C. Cu,ZnS

D. Fe,FeS

Answer: A

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51. $X \xrightarrow[(\text{Reductive})]{\text{Ozonolysis}} Y + Z$

Y can be obtained by Etard's reaction, Z undergoes disproportionation reaction with concentrated alkali. X could be

A. $[Xe[4f^7$

B. $[Xe]4f^7 5d^1$

C. $[Xe]4f^8$

D. $[Xe]4f^7 5d^1 6s^1$

Answer: B

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52. Gold sol is not a

A. 3

B. 5

C. 2

D. 4

Answer: A

53. Carbocation as an intermediate is likely to be formed in the reaction :

A. a structual polysaccharide

B. structurally similar to amylopectein but extensively branched

C. a polymer of β - D - glucose units

D. structurally very much similar to amylopectin

Answer: B

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54. For an ideal binary liquid mixture

A. 5

B. 10

C. 4

D. 6

Answer: A

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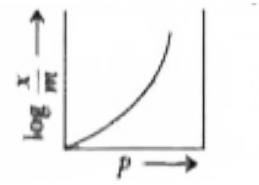
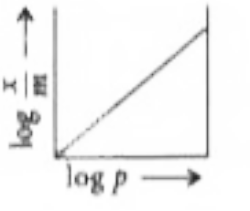
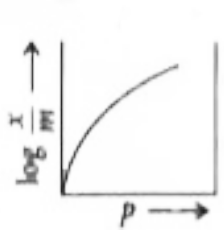
55. For hydrogen - oxygen fuel cell at one atm and 298 K

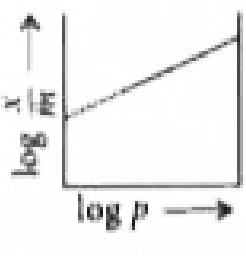
$$H_{2(g)} + \frac{1}{2}O_{2(g)} \rightarrow H_2O_{(l)}, \Delta G^\circ = -240kJ$$

E° for the cell approximately , (Given F = 96,500 C)

A. 

B. 

C. 

D. 

Answer: D

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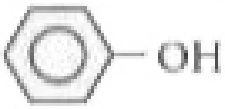
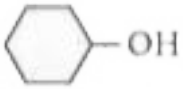
56.

The product 'B' is

A. 

B. 

C. 

D. 

Answer: D

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57. The correct statement is

A. MnO

B. K_2MnO_4

C. O_2

D. MnO_2

Answer: A

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58. $P \xrightarrow[2.H_3O^+]{1.CH_3MgBr} R \xrightarrow[2.\Delta]{1.dil.NaOH} 4-$ methylpent -3-en-2-one

P is

A. $Ba(NO_3)_2$

B. Na_3PO_4

C. CaF_2

D. Na_2SO_4

Answer: A

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59. When $CH_2 = CH - O - CH_2 - CH_3$ reacts with one mole of HI , one of the products formed is

A. $0.693 \times 3 \ \ \mathrm{M\,Min^{-1}}$

B. $0.0693 \times 4 \ \ \mathrm{M\,min^{-1}}$

C. $0.0693 \ \ \mathrm{M\,min^{-1}}$

D. $0.0693 \times 3 \ \ \mathrm{M\,min^{-1}}$

Answer: B

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60. 0.44 g of a monohydric alcohol when added to methylmagnesium iodide in ether liberates at S.T.P., $112cm^3$ of methane. With PCC the same alcohol forms a carbonyl compound that answers silver mirror test. The monohydric alcohol is

A. 0.01 M NaCl

B. $0.01 \quad \mathrm{M} \quad Na_2SO_4$

C. 0.1 M Sucrose

D. 0.1 M NaCl

Answer: A

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