CHEMISTRY

BOOKS - A2Z CHEMISTRY (HINGLISH)

MOCK TEST

Mock Test 1

1. A 0.1 molal solution of $NaCI$ found to be isotomic with $1\,\%$ urea solution , calculate α and i for $NaCI$

A. $i = 1.66\alpha = 0.66$

B. $i = 2.66\alpha = 0.66$

C. $i = 1.66\alpha = 2.66$

D. $i = 3.66\alpha = 2.66$

Answer: a

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2. In the cell $Zn / Zn^{-2}(c_1) / cu$, $E_{cell} - E^0_{cell} = 0.059V$ The ratio $\frac{C_1}{C_2} at 298K$ will be

A. 2

B. 100

C. 1

D. 10^{-2}

Answer: d

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3. Equivalent condictance of $BaCI_2, H_2SO_4$ and HCI are x_1, x_2 and $x_3 Scm^2 \text{equiv}^{-1}$ at infinite dilution , if specific conductance of structured $BaSO_4$ solution is of $yScm^{-1}$ then K_{sp} of $BaSO_4$ is

A. $\frac{10^3 y}{2(x_1 + x_2 - 2x_3)}$

B. $\frac{10^6 y^2}{(x_1 + x_2 - 2x_3)^2}$

C. $\frac{10^6 y^{23}}{4(x_1 x_2 - 2x_3)^2}$

D. $\frac{x_1 x_2 - 2x_3}{10^3 y^2}$

Answer: c

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4. Find the product of the following reaction

$CH_3CH_2MgBr + HgCI_2 \rightarrow (X)$, (X)will be

A. $(CH_3CH_2)_2Hg$

B. CH_3CH_3

C. CH_2CH_3CI

D. CH_3CH_2HgCI

Answer: a

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5. Under standered condition ΔG° for the reaction $2Cr(s) = 3Cd^{2+}(aq) \rightarrow 2Cr^{3+}_{(aa)} + 3Cd(s)$ is $\left(E^{\circ}_{Cr^{3+}/Cr} = -0.74V, E^{\circ}_{Cd^{2+}/Cd} = -0.4V\right)$

A. $-65.62J$ mole

B. $-196.86kJ$ mole

C. $-98.43kJ$ mole

D. $-96.86J$mole

Answer: b

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6. $2Ph - \overset{\overset{O}{||}}{C} - CH_3 \xrightarrow[H_2O]{Mg-Hg} \xrightarrow[\Delta]{Conc.\,H_2SO_4} \xrightarrow{KMnO_4H^{\oplus}}$

The final product is

A. $CH_3 - \overset{\overset{Ph}{|}}{\underset{\underset{O}{|}}{C}} - \overset{\overset{Ph}{|}}{\underset{\underset{O}{|}}{C}} - CH_3$

B. $CH_3 - \underset{\underset{O}{||}}{C} - \underset{\underset{O}{||}}{C} - CH_3$

C. $Ph - \underset{\underset{O}{||}}{C} - \underset{\underset{O}{||}}{C} - Ph$

D. $CH_3 - \overset{\overset{Ph}{|}}{\underset{\underset{Ph}{|}}{C}} - \underset{\underset{O}{||}}{C} - CH_3$

Answer: c

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7. Arrange the following compound is decreasing order of macheophillic addection reation

(I) $CH_3 - \overset{O}{\overset{||}{C}} - CH_3$ (II) $CH_3 - \overset{O}{\overset{||}{C}} - CI$ (III) $CH_3 - \overset{O}{\overset{||}{C}} - NH_2$

(Iv) $CH_3 - \overset{O}{\overset{||}{C}} - OH$ (V) $CH_3 - \overset{O}{\overset{||}{C}} - O - \overset{O}{\overset{||}{C}} - CH_3$

A. II gt Vgt I gt IV gt III

B. III gt IV gt I gt V gt II

C. II gt I gt V gt III gt V

D. IV gt III gt I gt I gt II

Answer: b

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8. One mole of an organic compound A with the formula C_2H_3O reacts completely with two moles of ill to force X and Y when Y is boiled with aqueous alkali it force Z, Z answers the iodoform rest .The comound A is

A. Propen 2 -ol

B. Propen 1 -ol

C. ethoxy ethane

D. methoxy ethane

Answer: d

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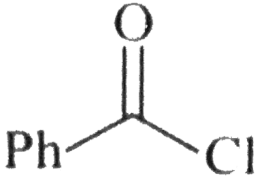
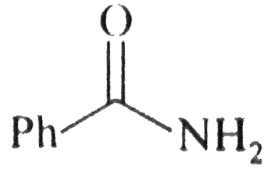
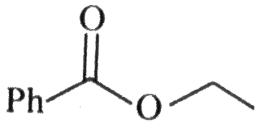
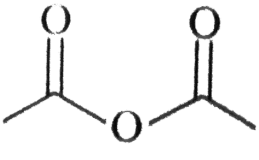
9. Which one of the following compounds gives carboxylic acid with HNO_2?

A. 

B. 

C. 

D. 

Answer: b

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10. The molecular conductivity of acetic acid at infinite dilution is $390 Scm^2 \text{mole}^{-1}$ and for 0.1 acetic and solution is $5.8 cm^3 \text{mole}^{-1}$ .The hydrogen ion concentration of the solution is

A. 15×10^{-3}

B. 15×10^{-4}

C. 66×10^{-3}

D. 66×10^{-4}

Answer: b

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11. In a cubic packed structure of mixed oxides , the lattice is made up of oxide lois one fifth of retrahedral voids are occupied by cation of a while one half of the formula of the oxide is

A. XY_2O_3

B. X_2YO_4

C. $X_4Y_3O_{10}$

D. $X_5Y_4O_{10}$

Answer: c

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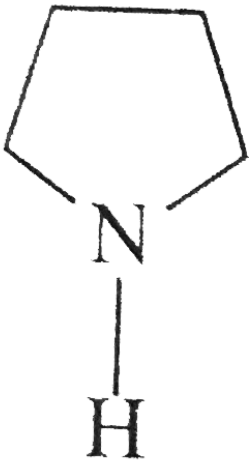
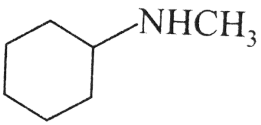
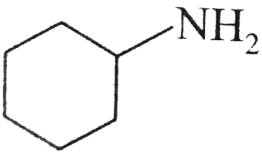
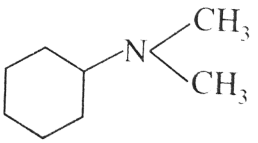
12. Among the following compound which one will produce a schift base an reaction with cyelopentanone?

A. 

B. 

C. 

D. 

Answer: c

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13. Which of the following is an addictive drug?

A. serotonin

B. Codeine

C. Barbituric axid

D. Sucrolose

Answer: b

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14. The standard reduction potential for $Cu^{2+} \mid Cu$ is $+0.34V$. Calculate the reduction potential at$pH = 14$ for the above couple . K_{sp} of $Cu(OH)_2$ is 1.0×10^{-19}

A. $+0.22V$

B. $-0.44V$

C. $-0.22V$

D. $+0.44V$

Answer: c

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15. N_2 gas is bubbled through water at $293K$ and the partial pressure of N_2 is 0.987 bar .If the henry's law constant for N_2 at $293K$ is 76.84 kbar, the number of millimoles of N_2 gas that will dissolve in $1L$ of water at $293K$ is

A. 1.29

B. 0.716

C. 2.29

D. 7.16

Answer: b

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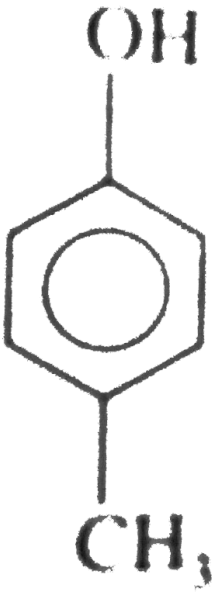
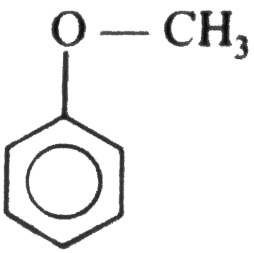
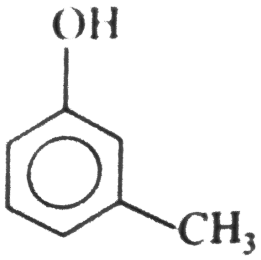
16. Compound 'P', C_7H_8O is insolution in water , dilute when HCI and $NaHCO_3$ it disolves in dilite $NaOH$ P is treated with $Br_2 - H_2O$ it converts rapidly into a compound of formula $C_7H_5OBr_3$ Idenity structure of P?

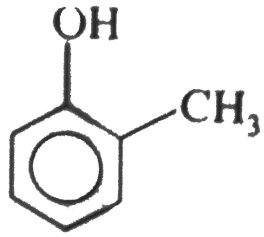
A.



B.



C. 

D. 

Answer: c

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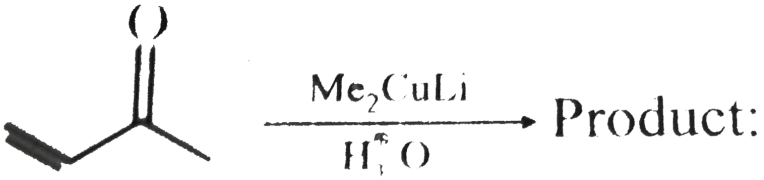
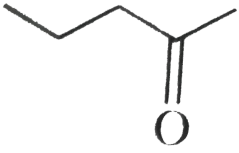
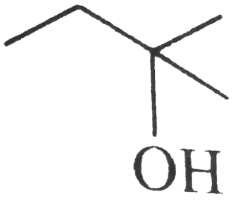
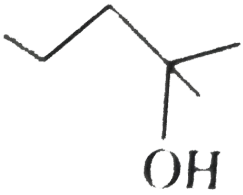
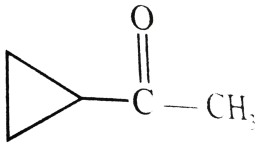
17. Find the producet of the following reaction,



A. 

B. 

C. 

D. 

Answer: a

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18. Alanine forms Z witter ion which exists as

A. $CH_3\underset{\underset{.^{\oplus}NH_3}{|}}{CH}COO^{-}$ in acidic medium

B. $CH_3\ \underset{\underset{.^{\oplus}NH_3}{|}}{CH}\ COOH$ in a medium of $pH = 4$

C. $CH_3\underset{\underset{NH_2}{|}}{CH}COO^{\Theta}$ in a medium of $pH = 2$

D. $CH_3\underset{\underset{NH_2}{|}}{CH}COO^{\Theta}$ in a medium of $pH = 2$

Answer: b

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19. $2D-\overset{D}{\overset{||}{C}}=O+OH^{-}\xrightarrow{\text{Cannizzaro}}$ (Y is alcohol, D is deuterium)

A. $D-\overset{O}{\overset{||}{C}}-O^{-}, D-\underset{D}{\overset{D}{\underset{|}{\overset{|}{C}}}}-OH$

B. $D-\overset{O}{\overset{||}{C}}-O^{-}, D-\underset{H}{\overset{D}{\underset{|}{\overset{|}{C}}}}-OH$

C. $H-\overset{O}{\overset{||}{C}}-O^{-}, D-\underset{D}{\overset{D}{\underset{|}{\overset{|}{C}}}}-OH$

D. None of the above is correct

Answer: a

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20. $CH_3CH_2\underset{\underset{Br}{|}}{C}HCH_2CH=CH_2 \xrightarrow{\text{alcoholic KOH}} A$

(predominant) A is

A. $CH_3CH_2CH=CHCH=CH_2$

B. $CH_3CH=CHCH_2CH=CH_2$

C. $CH_2=CHCH_2=CH_2CH_2$

D. $CH_3CH_2CH_2CH_2C=CH$

Answer: a

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21. Arsenic (III) sulphide forms a sol with a negative charge. Which of the following ionic substances should

be most effective in coagulating the sol?

A. KCI

B. $MgCI_2$

C. $AI_2(SO_4)_3$

D. $NaPO_4$

Answer: a

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22. A Geiger melter countries is used to study , the radicuacting process in the abserence of radoactive substance A , it couts 2 disingration per second (dps) Al the start in due presence of A, it recoirds 23 dps and

after 10 in 3 dps,

(i) What does it count after 20 min?

(ii) What is the half -life A?

A. $8dps$, 10 min

B. $5dps$, 10 min

C. $5dps$, 20 min

D. $5dps$, 5 min

Answer: a

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23. During the electrolysis of the aqueous solution of copper sulphate using Pt electrode, the reaction taking

place at anode electrode is

A. $Cu^{2-} + 2e^{-} \rightarrow Cu$

B. $Cu + \rightarrow Cu^{2+} + 2e^{-}$

C. $2H_2O \rightarrow 4H^{\oplus} + O_2 + 4e^{-}$

D. $H_2O + e^{-} \rightarrow \overset{\Theta}{O}H + 1/2H_2$

Answer: c

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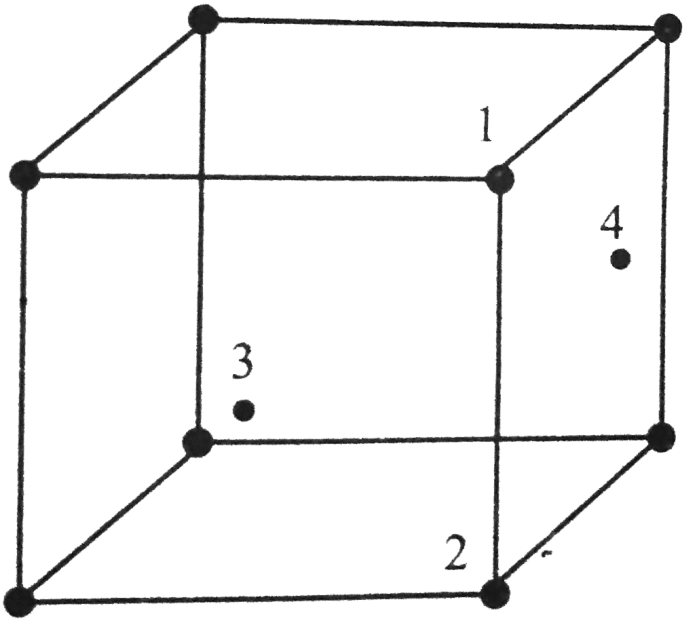
24. In an fcc unit cell, atoms are numbered as shown below



The atoms not rouching each other are (Atom numbered 3 is face center of front face)

A. 3 and 4

B. 1 and 3

C. 1 and 2

D. 2 and 4

Answer: c

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25. The cell reaction for the given cell is spontaneoous if:

$$Pt_{Cl_2}|Cl^-(1M)||Cl^-(1M)|Pt_{Cl_2}$$

A. $P_1 > P_2$

B. $P_1 < P_2$

C. $P_1 = P_2$

D. $P_2 = 1$ atm

Answer: b

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26. The vapour presure of a dilute aqueous solution of glucose in 750 atom of fig $373K$ .The mole fraction of solute is

A. $\frac{1}{10}$

B. $\frac{1}{7.6}$

C. $\frac{1}{35}$

D. $\frac{1}{76}$

Answer: d

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27. Which acts as poison for Pb-charcual in Lindle catayat?

A. $BaSo_4$

B. Quinoline

C. both (a) and (b)

D. None of these

Answer: c

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28. In a crystal some iron are missing from normal sites. This is an example of

A. F-centres

B. Interstitial defect

C. Frenkel defect

D. Schottky defect

Answer: d

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29. 20% aqueous solution of sodium, chloride containing ethy alcohol or electrolyasis gives

A. ethy chiorde

B. chloral

C. acetaldehyde

D. chloroform

Answer: d

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30. Widesptreal deaths due to liquor poisoning occurs due to oresence of

A. lead compound in liquid

B. methy alcohol in liquid

C. ethy alcoholin liquid

D. carbonic acid in liquor

Answer: b

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31. Aldol condesation between the following compounds followed by debydration given nethly vinyi ketone

A. methamal and ethanol

B. two moles of formaldehyde

C. methunal and propanone

D. two moles ethanal

Answer: c

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32. An amine rects with $C_6H_5SO_2CI$ and the produce is soluble in ankali, amine is

A. 1°

B. 2°

C. 3°

D. all of these

Answer: a

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33. The hormone thyroxine

A. is secreted by pancreas

B. is secreted by pancreas

C. decreases blood sugar

D. does not stimulate metabolism

Answer: b

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34. Thermosetting polymer, Bakeline is formed by the reaction of phenol with

A. CH_3CH_2CHO

B. CH_3CHO

C. $HCHO$

D. $HCOOH$

Answer: c

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35. Which of the following metal will have behind a metal on strong heating ?

A. $Mn(NO_3)_2$

B. $AgNO_2$

C. $Fe(NO_3)_2$

D. $Cu(NO_3)_2$

Answer: a

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36. Conductance (Siemens, S) is directly proportional to the area of the vessel and the concentration of solution in it and is inversely proprtional to the length of the vessel, then the unit of constant of proportionlity is :

A. $Smmol^{-1}$

B. Sm^2mol^{-1}

C. $S^{-2}m^1mol$

D. $S^2m^2mol^{-2}$

Answer: b

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37. The time for half-life period of a certain reaction, $A \rightarrow$ products is $1h$. When the initial concentration of the reactant $'A'$ is $2.0 \text{mol} L^{-1}$, how much time does it take for its concentration to come from 0.50 to $0.25 \text{mol} L^{-1}$, if it is zero order reaction ?

A. $4h$

B. $0.5h$

C. $0.25h$

D. $1h$

Answer: c

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38. The degree of dissociation (α) of a weak electrolyte, A_xB_y is related to van't Hoff's factor (i) by the expression:

A. $\alpha = \frac{i-1}{(x+y-1)}$

B. $\alpha = \frac{i-1}{x+y+1}$

C. $\alpha = \frac{x+y-1}{i-1}$

D. $\alpha = \frac{x+y+1}{i-1}$

Answer: a

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39. In the chemical reaction

$CH_3CH_2NH_2 + CHCI_3 + 3KOH \rightarrow (A) + (B) + 3H_2O$

the compound $(A)$and (B) are respectively

A. C_2H_5CN and $3KCI$

B. $CH_3CH_2CONH_2$ and $3KCI$

C. C_2H_5NC and K_2CO_3

D. C_2H_5NC and $3KCI$

Answer: d

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40. Aspirin is known as

A. acetlyl salicylic acid

B. phenyl salicylate

C. acetyl salicylate

D. methyl salicylic acid

Answer: a

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41. Assertion : In hexagonal close packing vaccant space are between three touching spheres whose centes lie at the coeners of an equilateral traingle

Reason :In hexagonal close packing voids are called voids are called square voids

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is the correct explanation of the assertion.

C. If assertion is true but reason is false

D. If assertion is false but reason is true

Answer: c

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42. Assertion: Order of reaction can never be fractional for an elementary reaction.

Reason: An elementary reaction takes place by one step mechanism.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is the correct explanation of the assertion.

C. If assertion is true but reason is false

D. If assertion is false but reason is true

Answer: a

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43. These questions consist of two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one of the following four responses:

Assertion: Potassium ferrocyanide is diamagnetic whereas potassium ferricyanide is paramagnetic.

Reason: Crystal field splitting in ferrocyanide ion is greater than that of ferricyanide ion.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is the correct explanation of the assertion.

C. If assertion is true but reason is false

D. If assertion is false but reason is true

Answer: c

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44. Assertion : cis-3 -chloroprop-2enoic acid is less stable than its trans-form.

Reason : Dipole moment of cis-form is greater than trans-form.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is the correct explanation of the assertion.

C. If assertion is true but reason is false

D. If assertion is false but reason is true

Answer: b

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45. Asseretion: Iton is found in the free state in nature.

Reason: Iron is highly reactive element.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true but reason is the correct explanation of the assertion.

C. If assertion is true but reason is false

D. If assertion is false but reason is true

Answer: d

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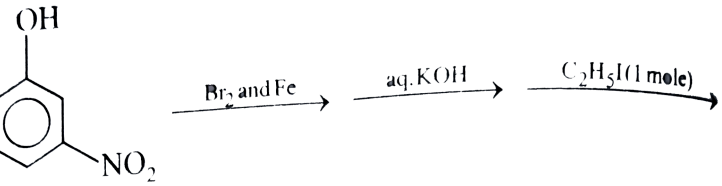
Single Correct Answer Type Question

116. 

1. $\xrightarrow{H^+}$ [P]

The major product $[P]$ is

A. 

B. 

C. 

D. 

Answer: C

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2. An alkene (C_6H_{12}) is optically active.This on reductive oxonolysis gives

A. Acetone

B. Acetaldehyde

C. Formaldehyde

D. Propanal

Answer: C

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3. The bond present in borazole$(B_3N_3H_6)$ are

A. $9\sigma, 6\pi$

B. $12\sigma, 3\pi$

C. $6\sigma, 9\pi$

D. 15σonly

Answer: B

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4. $SiCL_4 + 2MgCl \rightarrow X + 2MgCl_2$

'X' on hydrolysis followed by polymerization gives

A. Linear solution

B. Crosslinked silicone

C. Dimer

D. Zerolite

Answer: A

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5. In Lassaigne's test ,the sodium extract of an organic compound containing both nitrogen and sulpher on treatment with $FeCl_3$ produces a blood red colouration due to the formation of

A. $Fe(CNS)_2$

B. $NaCNS$

C. NH_4CNS

D. $Fe(SCN)_3$

Answer: D

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6. $R - X + I^- \rightarrow R - I + X$ is an example of ..... reaction.

A. Nucleophilic addition

B. Nucleophilic substituion

C. Electrophilic addition

D. Elimination

Answer: B

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7. Which of the following is most acidic?

A. $\begin{matrix} COOH \\ | \\ COOH \end{matrix}$

B. 

C. CH_3COOH

D. $HCOOH$

Answer: A

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8. $B(OH)_3 + NaOH \rightarrow Na[B(OH)_4]$

A. Borax

B. Ethene diol(cis)

C. Ethene diol (trans)

D. B_2O_3

Answer: B

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9. $HCOOH \xrightarrow{Conc.H_2SO_4} X \uparrow$

$\xrightarrow[AlCl_3]{X, HCl} Y$

What is Y ?

A. 

B. 

C. 

D. 

Answer: C

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10. The edge of unit cell of FCC ionic ceystal is 620 pm. The radius of cation is134pm.What is the radius of anion?

A. 168 pm

B. 176 pm

C. 184 pm

D. 152 pm

Answer: B

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11. Percentage of free spaces in simple cubic structure and hexaonal close packed structure are respectively

A. $48\ \%\ \text{and}\ 26\ \%$

B. $30\ \%\ \text{and}\ 26\ \%$

C. $26\ \%\ \text{and}\ 32\ \%$

D. $40\ \%$ and $26\ \%$

Answer: A

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12. The molal elevation constant of water $=0.52 Km^{-1}$. The boiling point of $1.0 molal$ aqueous KCl solution (assuming complete dissociation of KCl) should be

A. $98.96^{\circ} C$

B. $100.52^{\circ} C$

C. $101.04^{\circ} C$

D. $104.01^{\circ} C$

Answer: C

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13. Vapour pressure of ethanol and methanol are 44.5 mmHg and 88.7 mmHg respectively .At the same temperature 60 gm of ethanol is mixed with 40 gm of methanol forming an ideal solution.Calculation the vapour pressure of mixture.

A. 68 mm

B. 66.13 mm

C. 73.4 mm

D. 75.3 mm

Answer: B

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14. In a first order reaction initial concentration of a substance becoming the half is 100sec,then calculation the time requird to reduce the concentration of reaction 0.0125 M from 0.05 M

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15.  $\xrightarrow{Br_2 / hv}$ Product

A. 

B. 

C. Both (a)and(b)

D. None of these

Answer: C

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16. The correct order of $E^{\circ}_{M^{+2}/M}$ value with negative sign for the four successive element Mn,Fe, Co and Ni

A. $Mn > Fe > Co > Ni$

B. $NI > Co > Mn > Fe$

C. $Co > Fe > Mn > Ni$

D. $Mn > Co > Ni > Fe$

Answer: A

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17. The end product of the following reaction is :

$$\xrightarrow[1]{H_3CMgBr} \xrightarrow[(2)]{PhMgBr} \xrightarrow[(3)]{H_3^{\oplus}O} \text{Product}$$

A. $\alpha, \beta -$ diketone

B. $\alpha, \beta -$ hydroxide acid

C. $1, 2 -$ diol

D. $\beta -$ hydroxy acid

Answer: B

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18. 0.4 gm of an organic compound was treated according to Kjeldahl's method. The ammonia evoled was absorbed in 50 ml or $0.5MH_3PO_3$. The residual acid required 30 ml of $0.5MCa(OH)_2$ Find the percentage of N_2 in the compound.

A. $54\ \%$

B. $62\ \%$

C. $56\ \%$

D. $51\ \%$

Answer: C

Watch Video Solution

19. overset(H^o+//H_(2)O)underset(Delta)rarr`

A.

B.

C.

D.

Answer: C

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20. In the given reaction,The main product will be:

 $\xrightarrow[H_2O\,/\,H^{\oplus}]{CH_3MgBr\,/\,Cu_2I_2} (Y)$

A. 

B. 

C. 

D. 

Answer: B

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21. $CH_3-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-CH_2NH_2 \xrightarrow{NHO_2}$ A (major product),A is

A. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_2OH$

B. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{OH}{|}}{C}} - CH_2CH_3$

C. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_2N_2^{\oplus}$

D. $CH_3 - \overset{\overset{CH_3}{|}}{C} - CH = CH_2$

Answer: B

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22. The end product due to hydrolysis of (A) and subsequent

A. 

B. 

C. 

D. 

Answer: B

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23. Which of the following cannot undergo $E2$ reaction ?

.

A. 

B. 

C. 

D. None of these

Answer: C

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24. The process of passing of a precipitate into colloidal solution on adding an electrolyte is called

A. Dialysis

B. Peptization

C. Electrophoresis

D. Electro-osmosis

Answer: B

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25. On carrying out the electrolysis of acidified water, the volume of hydrogen liberated at STP condition is $22.4L$. The volume of oxygen liberated is

A. $22.4L$

B. $44.8L$

C. $11.2L$

D. $2.24L$

Answer: C

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26. If a thin slice of sugar beet is placed in concentrated solution of $NaCl$, then

A. Sugar beet will lose water from its cells

B. Sugar will absorb water from solution.

C. Sugar beet will neither absorb nor loose water.

D. Sugar beet will dissolve in solution

Answer: A

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27. A metallic crystal cystallizes into a lattice containing a sequence of layers $ABABAB\ldots$. Any packing of spheres leaves out voids in the lattice. What percentage by volume of this lattice is empty spece?

A. 74%

B. 26%

C. 50%

D. None of these

Answer: B

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28. Glucose is added to 1 litre water to such an extent that $\frac{\Delta T_f}{K_f}$ becomes equal to $\frac{1}{1000}$, the weight of glucose added is:

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29. For the reaction $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$, under certain conditions of temperature and partial pressure of the reactants, the rate of formation of NH_3 is $0.001 kgh^{-1}$. The same rate of converison of hydrogen under the same condition is.....kgh^{-1}.

A. 0.0015kgh^{-1}

B. $1.76 \times 10^{-4} \text{kgh}^{-1}$

C. $0.002 \mathrm{kgh}^{-1}$

D. $0.003 \mathrm{kgh}^{-1}$

Answer: B

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30. TiO_2 is well known example of :

A. Triclinic system

B. Tetragonal system

C. Monoclinic system

D. None of these

Answer: B

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31. Chloroform on reaction with conc.HNO_3gives an insecticide and war gas known as:

A. Chloropicrin

B. nitromethame

C. picric acid

D. acetylene

Answer: A

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32. $(CH_3)_3CoNa$ on reaction withCH_3Br will give

A. $(CH_3)_3COC(CH_3)_3$

B. CH_3OCH_3

C. $CH_3CH_2OCH_2CH_3$

D. $(CH_3)_3COCH_3$

Answer: D

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33. A mixture of calcium acetate and calcium formate on heating gives

A. CH_3COCH_3

B. $CH_3CH_2NH_2$

C. $HCHO$

D. all of these

Answer: D

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34. Main product of the reaction,

$CH_3CONH_2 + HNO_2 \rightarrow \ldots\ldots$ is

A. CH_3COCH

B. $CH_3CH_2NH_2$

C. CH_3NH_2

D. CH_3COONH_4

Answer: A

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35. In vulcanization of rubber:

A. Sulpher reacts to form new compound

B. Sulpher cross-links are introduced which resists wear and tear due to friction

C. sulpher forms a very thin protective layer over rubber

D. all of the statement are correct

Answer: B

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36. Which of the following compound can be detected by Molisch's test?

A. Nitro-compounds

B. Sugar

C. Amines

D. Primary alcohols

Answer: B

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37. The type of isomerism present in intro pentaamine-chromium(III)chloride is:

A. Optical

B. Linkage

C. Ionisation

D. Polymerisation

Answer: B

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38. The $E^{\circ}_{M^{3+}/M^{2+}}$ values for Cr, Mn, Fe and Co are $0.41, +1.57, +0.77$ and $+1.97$ V respectively .For which one of these metal the change in oxidation state from $+2$ to $+3$ is easiest:

A. Co

B. Mn

C. Fe

D. Cr

Answer: D

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39. Which is not correct for physical adsorption?

A. Adsorption is spontaneous

B. Both enthalpy and entropy of adsorption are negative

C. Adsorption on solid is reversible

D. Adsorption increases with increases in temperature

Answer: D

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40. Presence of a nitro group in a benzene ring:

A. Activates the ring towards electrophilic substituion

B. Renders the ring basic

C. Deactivates the ring towards nucleophilic substitution

D. Deactivates the ring towards electrophilic substitution

Answer: D

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Assertion Reasoning

1. Assertion : Molar heat of vaporistion of water is greater then benzene

Reason : Molar heat of vaporisation is the amount of heat required to vaporised one mole of liquid at constant temperature.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If assertion is false but reason is true.

Answer: B

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2. Assertion: Superoxide ion is paramagnetic whereas peroxide ion is diamagnetic.

Reason: Superoxide ion $[O=O]^-$ has one unpaired electron whereas peroxide ion $[O=O]^-$ has no unpaired electron.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If assertion is false but reason is true.

Answer: A

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3. Assertion: Bromobenzene upon reaction with Br_2 / Fe gives 1,4-dibromobenzene as the major product

Reason In bromobenzene the inductive effect of the bromo group is more dominant than the mesomeric effect in directing the incoming electrophile .

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If assertion is false but reason is true.

Answer: C

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4. Assertion : Alkyl isocyanides in acidified water give alkyl formamides.

Reason : In isocyanides, carbon first act as a nucleophile and then as electrophile.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If assertion is false but reason is true.

Answer: A

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5. Assertion(A): The micelle formed by sodiumm stearate in water has -COO groups at the surface.

Reason(R): Surface tension of water is reduced by addition of stearate.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If assertion is false but reason is true.

Answer: B

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1. What is the density of Na_2O having antifluorite-type crystgal stryctutre, if the edge length of cube is $100gm$ and what is the effect on density by $0.05\,\%$ Frenkel defect?

A. $823.\,5gm^{-3}$, density decreases

B. $414.\,16gcm^{-3}$ density decareases

C. $823.5gcm^{-3}$, densityn remanins same

D. $141.16gcm^{-3}$, density remanins same

Answer: D

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2. In the calcum fluaride structure, the coordination bumber of the cations and anions are respectively ,

A. 6 and 6

B. 8 and 4

C. 4 and 4

D. 4 and 8

Answer: B

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3. Assuming each salt to be 90% dissociated which of the following will have the highest osmotic pressure?

A. Decinormal $AL_2(SO_4)_3$

B. Decinormal $BaCl_4$

C. Decinormal Na_2SO_4

D. A solution obtained by mixing equal volumes of (b) and (c) and filtering .

Answer: A

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4. When a solution is separated from a solvent by a semi-permeable membrane, then the phenomenon taking place is called as

A. Osmosis

B. Diffusion

C. Solubility

D. None

Answer: A

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5. The values of $\wedge_m^\infty$ for $NH_4Cl, NaOH,$ and $NaCl$ are, respectively, 149.74, 248.1,and $126.4 ohm^{-1} cm^2 eq^{-1}$. The value of $\wedge_{eq}^\infty$ NH_4OH is

A. 371.44

B. 271.44

C. $71.\ 44$

D. It cannot be calculated from the data given

Answer: B

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6. $0.5F$ of electricity is passed through $500mL$ of copper sulphate solution. The amount of copper which can be deposited will be

A. $63.\ 5G$

B. $31.\ 75g$

C. $15.8g$

D. Unpredictable

Answer: C

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7. Rate constant of a reaction with a virsus is $3.1 \times 10^{-4} s^{-1}$. Time required for a virus to become 75% inactivated is

A. 35 min

B. 70 min

C. 105 min

D. $17.5\ \text{min}$

Answer: B

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8. $2N_2O_5 \rightarrow 4NO_2 + O_2$

If $-\frac{D[N_2O_5]}{dt} = k_1[N_2O_5]$

$\frac{d[NO_2]}{dt} = k_2[N_2O_5]$

$\frac{[O_2]}{dt} = k_3[N_2O_5]$

What is the relation between k_1, k_2 and k_3 ?.

A. $k_1 = k - 2 = k_3$

B. $2k_1 = k_2 = 4k_3$

C. $2k_1 = 4k_2 = k_3$

D. None

Answer: B

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9. Of which of the following colloidal systems, fog is an example?

A. Liquid dispersed in gas

B. Cas despersed in gas

C. Solid dispewsed in gas

D. Solie sispersed in liquid

Answer: A

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10. Soaking of water by a sponge is an example of

A. Simple adsorption

B. Physical adsorption

C. Chemisorption

D. Absorption

Answer: D

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11. A radioisotope has half life of 10 years. What percentage of the original amount of it would you expect to remain after 20 years? a)0 b)12.5 c)25 d)8

A. 0

B. 12.5

C. 25

D. 8

Answer: C

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12. When $._{92}U^{238}$ decauys it emits an a-particle. The new nuclide in turn emits a beta-particele to give another nuclide X. The mass number and atomic number of X are. Respectively .

A. 234 and 91

B. $234$and 96

C. 231 and 88

D. 234 and 88

Answer: A

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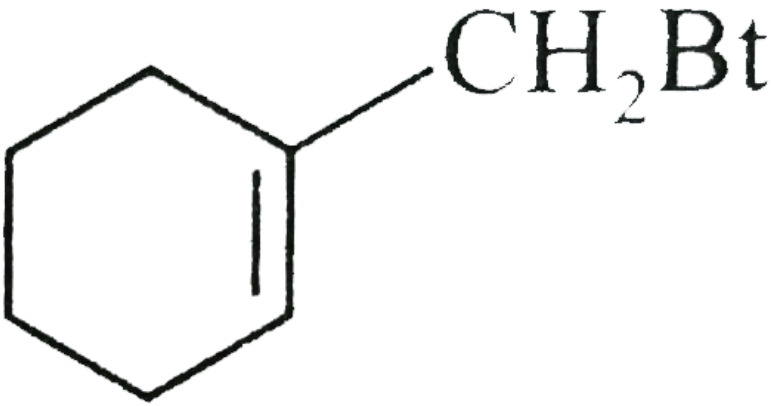
13. A will .....by E_1 reaction



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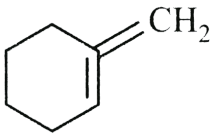
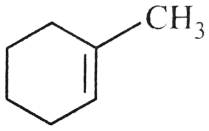
A. (a) 

B. (b) 

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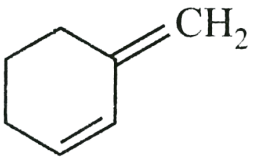
C. 

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D. (##A2Z_CHM_XII_MOC_C03_E01_013_O04.png"

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Answer: C

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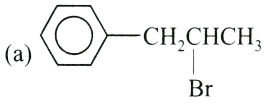
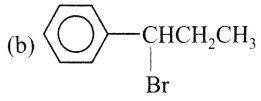
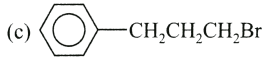
14. Major product of this reaction is

A. 

B. 

C. 

D. No reaction

Answer: B

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15. $CH_3CH_2CHO \xrightarrow[(aldol)]{NaOH, \Delta} A$, A is.

A. $CH_3CH_2CH = CHCH_2CHO$

B. 

C. 

D. 

Answer: D

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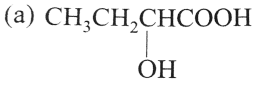
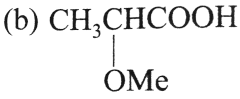
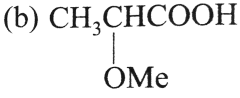
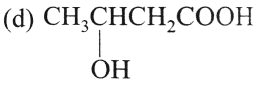
16. An optically active compound X has molecular formular

$C_4H_8O_3$. It evolves CO_2 with aq $NaHCO_3$ X reacts with $LiAlH_4$ give an achirla compound , X si .

A. 

B. 

C. 

D. 

Answer: C

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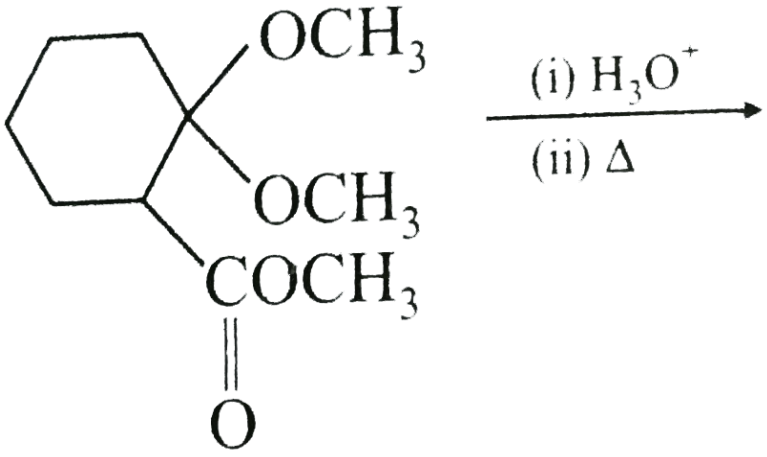
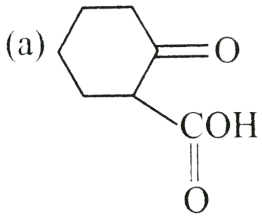
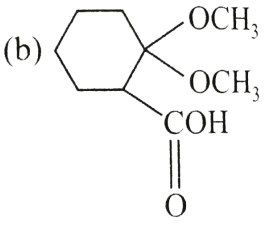
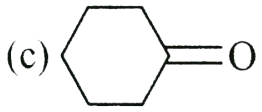
17. What is the end product of following reaction



$\xrightarrow[(ii)\ \Delta]{(i)\ H_3O^+}$.

A. 

B. 

C. 

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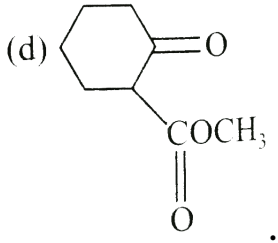
D. 

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Answer: C

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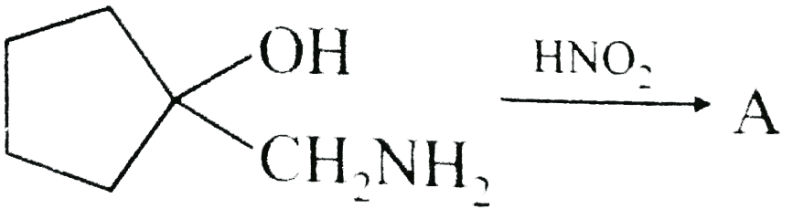
18. 

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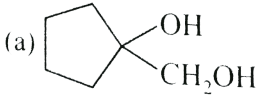
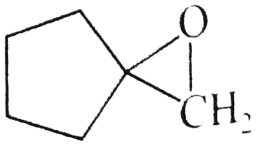
$\xrightarrow{HNO_2}$ A (Major product), A is .

A. 

B. 

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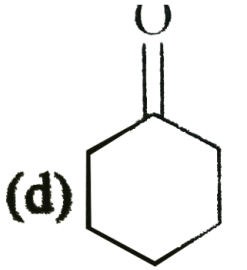
D. 

Answer: D

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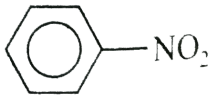
19. Which A gives red colour in the reaction

A $\xrightarrow[(ii)\,NaOH]{(i)\,HNO_2}$ red colur ?`

A. $CH_3CH_2NO_2$

B. $(CH_3)_2CHNO_2$

C. $(CH_3)_2CHO_2$

D. (d) 

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Answer: A

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20. Of the follwing , the most acidic is .

A. H_3PO_4

B. H_3AsO_4

C. H_3SbO_4

D. H_3BiO_4

Answer: A

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21. The mixed anhydride of nitrous and nitric acid is.

A. N_2O

B. NO_2

C. NO

D. N_2O_5

Answer: B

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22. Which one of the following is strongest acid ?

A. H_2S

B. H_2Se

C. H_2O

D. H_2Te

Answer: (d)

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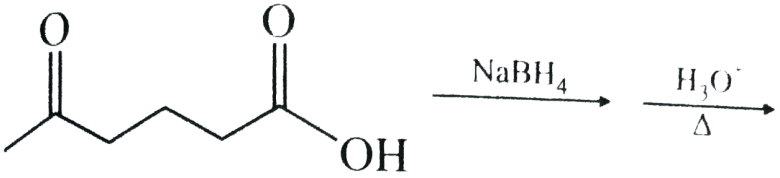
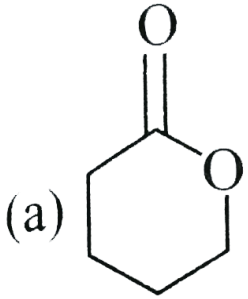
23. 

$\xrightarrow{NaBH_4}$ $\xrightarrow[\Delta]{(i)\,H_2O^+}$ A, A` is .

A. 

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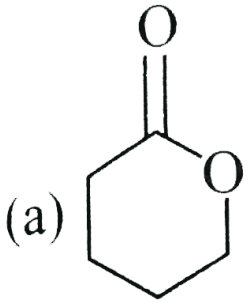
B. 

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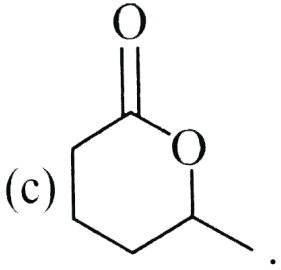
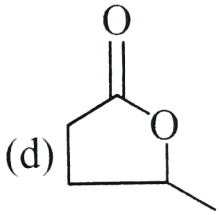
C. 

D. 

Answer: C

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24. For gaseous reactions, the rate is expressed in terms of dP/dt instead of dc/dt or dn/dt (where c is the concentration and n the number of mol). What is the relation among these expresisons ?

A. $\frac{dc}{dt} = \frac{1}{V}\left(\frac{dn}{dt}\right) = \frac{1}{RT}\left(\frac{dP}{dt}\right)$

B. $\frac{dc}{dt} = \left(\frac{dn}{dt} = \left(\frac{dP}{dt}\right)\right.$

C. $\frac{dc}{dt} = \left(\frac{dn}{dt} = \frac{1}{RT}\left(\frac{dP}{dt}\right)\right.$

D. None of these

Answer: A

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25. The boiling point of an azeotropic mixture of water and ethyl alcohol is less than that of the theoretical value of water and alcohol mixture. Hence the mixture shows

A. The solution is hoghly. Saturated

B. Positive deviation from Raoult's law.

C. Negative deviation from Raolut's law

D. Nothing can be said.

Answer: B

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26. Select the incorrect statement for a dry cell:

A. Mn is reduced from $+4$ to $+3$ state

B. NH_3 gas is liberated out

C. Zn is used as anode

D. A pass of NH_4Cl and $ZnCl_2$

Answer: B

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27. The rate constatnt of a second order reaction is 10^{-2}mol^{-1} litre $\sec^{-1}$. The rate constant when expressedd in cm^3 $\text{molecule}^{-1}\text{min}^{-1}$ is :

A. $9.96 \times 10 -^{22}$

B. $9.\ 96 \times 10^{23}$

C. 9.96×10^{21}

D. 1.004×10^{-24}

Answer: A

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28. Which statement about enzymes is not corect ?

A. Enzymes are in colloidal state

B. Enxymes can acts as catalyst

C. Enzymes cab catalyse any reaction

D. Urease is an ezzyme

Answer: C

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29. Formic acid is obtained when :

A. Calcium acetate is heated with conc .H_2SO_4

B. calcium formate is heated with calecium actate

C. glycerol is heated with oxalic acid

D. acetaldehyde is oxidzed with $K_2Cr_2O_7$ and H_2SO_4

Answer: C

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30. Whin $(NH_4)_2SO_4$ are heated, we get :

A. nitrogen

B. carbon dioxide

C. biuret

D. ammonium carbonte

Answer: C

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31. The destruction of the biological bature and activity of proteins by heat or chemical agent is called :

A. dehydration

B. denaturation

C. denitrogention

D. deamination

Answer: B

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32. The weakest interparticle forces are present in :

A. themosetting polymers

B. thermo,astic poymers

C. fibers

D. elastomers

Answer: D

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33. Cerium $(Z = 58)$ is an important nember of the lanthanoids . Which of the following statements about cerium is incorrect ?

A. Cerium (IV) acts as an oxidizing agent

B. The $+3$ oxidationg state of cerium is more stable than the $+4$ oxidation state

C. The $+4$ oxdation state of cerium is not known in solutions

D. The common oxidation states of cerium are $+3$ and $+4$.

Answer: C

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34. One mole of complex compound $Co(NH_3)_5Cl_3$ gives 3 moles of ions on dissolution in water. One mole of same complex reacts with two moles of $AgNO_3$ to yield two moles of $AgCl(s)$. The complex is:

A. $Co(NH_2)_4Cl_2]Cl_2]Cl.\ NH_3$

B. $[Co(NH_3)_4Cl]Cl_2.\ NH_3$

C. $\left[Co(NH_3)_5Cl\right]Cl_2$

D. $\left[Co(NH_3)_3\right].2NH_3$

Answer: C

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35. Consider the reaction,

$Cl_2(aq) + H_2S(aq) \rightarrow S(s) + 2H^+(aq) + 2Cl^-(aq)$

The rate equation for this reaction is,

Rate $= k[Cl_2][H_2S]$

Which of these mechanisms is/are consistent with this rate equation ?

(I) $Cl_2 + H_2S \rightarrow H^+ + Cl^- + Cl^+ + HS^-$ (slow)

$Cl^+ + HS^- \rightarrow H^+ + Cl^- + S$ (fast)

(II) $H_2S \Leftrightarrow H^+ + HS^-$ (fast equilibrium)

$Cl^+ + HS^- \rightarrow 2Cl^- + H^+ + S$ (slow)

A. (II) lonely

B. Both (I) and (I)

C. Neigher (I) nor (II)

D. (I) only

Answer: D

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36. The molality of a urea solution in which $0.0100g$ of urea, $\left[(NH_2)_2CO\right]$ is added to $0.3000dm^3$of water at STP is

A. $0.555m$

B. $5.55 \times 10^{-4}m$

C. $33.3m$

D. $3.33 \times 10^{-2}m$

Answer: B

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37. Consider the acidity of the carboxylic acids:

(1) $PhCOOH$

(2) $o - NO_2C_6H_4COOH$

(3) $p - NO_2C_6H_4COOH$

(4) $m - NO_2C_6H_4COOH$

Which of the following order is correct?

A. $2 > 3 > 4 > 1$

B. $2 > 4 > 3 > 1$

C. $2 > 4 > 1 > 3$

D. $1 > 2 > 3 > 4$

Answer: A

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38. Ortho -nitrophenol is less soluble in water than p-and $m -$ nitrophenols because

A. o-rth-bitriphenol is less soluble in water than p- and m-nitrophenol is more volatile steam than those of m- and p-isomers.

B. 0-nitrophenol shows intramolecular H-bonding

C. 0-nitrophenol shows intramolecular H-bonding

D. melting point of 0-nitrophenol is lower than those of m-and p-isomers

Answer: B

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39. The compound formed on heation cholrobenzed with cholral in presence of conc. H_2SO_4 is :

A. Hexachloroethane

B. DDT

C. Freon

D. Gammexane

Answer: B

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40. For the complete combustion of ethanol, $C_2H_5OH(l) + 3O_2(g) \rightarrow 2CO_2(g) + 3H_2O(l)$ the

amount of heat produced as measured in bomb calorimeter is $1364.47KJmol^{-1}$ at $25^{\circ}C$. Assuming ideality, the enthalpy of combustion, ΔH_C , for the reaction will be

$[R = 8.314JK^{-1}mol^{-1}]$

A. $-1366.95kJmol^{-1}$

B. $[R = 8.314jK^{-1}mol^{-1}]$

C. $-1460.50kJmol^{-1}$

D. -1350. 50 kJ "mol"^(-1)`.

Answer: A

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41. For the Daniell cell $Zn\left|Zn^{2+}\right|\left|Cu^{2+}\right|Cu$ with The questions consist of two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one of the following four responses :

$E_{cell} = 1.1V$, the application of oposite potential grater than $1.1V$ results into folow of electron from Cu to Zn. Zn is deposited at anode and Cu is deposited at cathode .

A. If both assertion and reason are terue and the reason is the correct explanation of the assertion .

B. If both assertion ans reason are true but reason is not the correct explanation of the assertion .

C. If assertion is true but reason is false .

D. If assertion is false but reason is true.

Answer: C

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42. Assertion: A catalyst is more effective in finely divided form.

Reason: Finely divided form has more surface area.

A. If both assertion and reason are terue and the reason is the correct explanation of the assertion .

B. If both assertion ans reason are true but reason is not the correct explanation of the assertion .

C. If assertion is true but reason is false .

D. If assertion is false but reason is true.

Answer: A

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43. For the Daniell cell $Zn|Zn^{2+}||Cu^{2+}|Cu$ with The questions consist of two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one of the following four responses :

Fe_3O_4 is paramagnetic at room temperature and becomes ferromagnetic at $850K$.

The randomization of spin takes place whith temperature.

A. If both assertion and reason are terue and the reason is the correct explanation of the assertion .

B. If both assertion ans reason are true but reason is not the correct explanation of the assertion .

C. If assertion is true but reason is false .

D. If assertion is false but reason is true.

Answer: D

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44. For the Daniell cell $Zn|Zn^{2+}||Cu^{2+}|Cu$ with The questions consist of two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one of the following four responses :

The pKa of acetic acid is lower than that of phenol.

Phenoxide ion is more resonance stabilized.

A. If both assertion and reason are terue and the reason is the correct explanation of the assertion .

B. If both assertion ans reason are true but reason is not the correct explanation of the assertion .

C. If assertion is true but reason is false .

D. If assertion is false but reason is true.

Answer: C

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45. For the Daniell cell $Zn|Zn^{2+}||Cu^{2+}|Cu$ with The questions consist of two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one of the following four responses :

Alpha (alpha)- amino acids exist an internal salt in solution as they have amino and carboxylic acid groupa in near vicinity.

$H+$ ion given by carboxylic group $(-COOH)$ is captured by amino group $(-NH_2)$ having lone pair of electrons .

A. If both assertion and reason are terue and the reason is the correct explanation of the assertion .

B. If both assertion ans reason are true but reason is not the correct explanation of the assertion .

C. If assertion is true but reason is false .

D. If assertion is false but reason is true.

Answer: A

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