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India's Number 1 Education App

CHEMISTRY

BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

PRACTICE SET 23

Paper 1 Physics Chemistry

1. For which reaction will $\Delta H - \Delta E = 0$?

Assume that each reaction is carried out in an

open container.

A. $2CO(g) + O_2(g) \rightarrow 2CO_2(g)$

B. $PCl_5(g) \rightarrow PCl_3(g) + Cl_2(g)$

C. $H_2(g) + Br_2(g) \rightarrow 2HBr(g)$

D. $C(s) + 2H_2O(g) \rightarrow 2H_2(g) + CO_2(g)$

Answer: C

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2. The type of bond that is most important in maintaining secondary structure of a protein is

A. disulphide bridges

B. hydrogen bonding within the backbone

C. hydrogen bonding between R group

D. salt bridges

Answer: C

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3. The angle $\angle P - O - R$ is

A. $109^\circ, 28'$

B. 95°

C. 110°

D. 105°

Answer: C

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4. The properties of Zr and Hf are same because

A. they have similar radii

B. they belong to d-block

C. they have same valence electrons

D. None of the above

Answer: A

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5. For the redox reaction, $Zn + NO_3^- \rightarrow Zn^{2+} + NH_4^+$. In basic medium, coefficients of Zn, NO_3^- and OH^- in the balanced reaction respectively, are

A. 4,1,7

B. 7,4,1

C. 4,1,10

D. 1,4,10

Answer: C

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6. The molarity of a 0.2 N Na_2CO_3 solution will be

A. 0.05M

B. 0.2M

C. 0.4M

D. 0.01M

Answer: D

7. Which is not a colligative property?

A. Refractive index

B. Lowering of vapour pressure

C. Depression in freezing point

D. Elevation in boiling point

Answer: A

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8. RNO_2 is reduced with Sn/HCL Product formed is

A. $RNHOH$

B. RNH_2

C. RNH_3^+

D. R_2NH

Answer: B

9. A bottle of cold drink has 200 mL liquid in which CO_2 is 0.1 molar. If CO_2 behaves as ideal gas the volume of CO_2 at S.T.P. solution of cold drink is

A. 0.224L

B. 22.4L

C. 0.448L

D. 44.8L

Answer: C

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10. Which of the following is not correct regarding the electroplytic perparation of H_2O_2 ?

A. Lead is used as cathode

B. 50% H_2SO_4 is used

C. Hydrogen is liberated at anode

D. Sulphuric acid undergoes oxidation

Answer: C

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11. If uranium (mass number = 238 and atomic number = 92) emits an α-particle, the product has mass number and atomic number respectively are

A. 238, 90

B. 236, 90

C. 234, 90

D. 236, 92

Answer: C

12. The solubilities of carbonates decreases down the magnesium group due to a decrease in

A. lattice energies of solids

B. hydration energies of cations

C. inter-ionic attraction

D. entropy of solution formation

Answer: B

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13. van't Hoff factor of 0.01M $Bacl_2$ is 1.98, percentage dissociation of $BaCl_2$ on this concentration will be

A. 69

B. 100

C. 49

D. 98

Answer: C

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14. In the equilibrium

$$CH_3COOH + HF \Leftrightarrow CH_3COOH_2^+ + F^-$$

A. F^- is the conjugate acid of CH_3COOH

B. F^- is the conjugate base of HF

C. CH3COOH is the conjugate acid of CH3COOH

D. $CH_3COOH_2^-$ is the conjugate base of CH_3COOH

Answer: B

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15. An emulsifier is a substance which :

A. stabilises the emulsion

B. homogenises the emulsion

C. coagulates the emulsion

D. acceleration the dispersion of liquid in liquid

Answer: A

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16. Among the following, the true statement is

A. ether+Na form ethoxides

B. $\text{ether} + NH_3$ form amides

C. both (a) and (b) are true

D. both (a) and (b) are false

Answer: D

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17. If $C + O_2 \rightarrow CO_2 + 94.2kcal$

$H_2 + \frac{1}{2}O_2 \rightarrow H_2O + 68.3\text{kcal}$

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O + 210.8\text{kcal}$

Then, the heat of formation of methane will be

A. 47.3kcal

B. 20.0kcal

C. 45.9kcal

D. -47.3kcal

Answer: B

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18. Based on the following thermochemical equations

$H_2O(g) + C(s) \rightarrow CO(g) + H_2(g), \Delta H = 131KJ$

$CO(g) + 1/2O_2(g) \rightarrow CO_2(g), \Delta H = -282KJ$

$H_2(g) + 1/2O_2(g) \rightarrow H_2O(g), \Delta H = -242KJ$

$C(s) + O_2(g) \rightarrow CO_2(g), \Delta H = XKJ$

The value of X will be

A. $+393.0kJ$

B. $-6550kJ$

C. $-393.0kJ$

D. $+655.0kJ$

Answer: C

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19. rate constant of a reaction at 290 K was found to be 3.2×10^{-3}. At 300 K it will be

A. 1.28×10^{-2}

B. 6.4×10^{-3}

C. 9.6×10^{-3}

D. 3.2×10^{-4}

Answer: B

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20. In a first order reaction the concentration of reactant decreases from 800 mol/dm to $50 mol / dm^3$ in $2 \times 10^2 s$. The rate constant of reaction in s^{-1} is

A. 2×10^4

B. 3.45×10^5

C. 1.386×10^{-2}

D. 2×10^4

Answer: C

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21. A gas is found to have a formula $[CO]_x$. If its vapour density is 70, then value of x is

A. 2.5

B. 3

C. 5

D. 6

Answer: C

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22. Dettol, a common antiseptic is a combination of

A. cresol and ethanol

B. chloroxylenol and terpineol

C. xylenol and terpineol

D. phenol and cresol

Answer: B

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23. The standard oxidation potential, E°, for the reactions are given as:

$Zn \rightarrow Zn^{2+} + 2e^-, E^\circ = +0.76V$

$Fe \rightarrow Fe^{2+} + 2e^-, E^\circ = +0.41V$

The emf for the cell :

$Fe^{2+} + Zn \rightarrow Zn^{2+} + Fe$

A. $+0.35V$

B. $-0.35V$

C. $-1.17V$

D. $+1.17V$

Answer: A

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24. Lanthanide ions show

A. magnetic properties

B. coloured ion formation

C. lanthanide contraction

D. All of the above

Answer: D

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25. $H-\underset{\underset{O}{||}}{C}-(CH_2)_4COOH$

A. 6-oxohexanoic acid

B. hexane-1-al-6-oic acid

C. 1-carboxy hexanal

D. 5-oxopentanoic acid

Answer: D

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26. A starting material required for the manufacture of nulon 66 is

A. adipic acid

B. 1,3-butadiene

C. ethylene

D. methyl methacrylate

Answer: A

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27. The exact composition of brass is

A. $Cu = 80\,\%\,, Zn = 20\,\%$

B. $Cu = 90\,\%\,, Zn = 10\,\%$

C. $Cu = 80\,\%\,, Sn = 20\,\%$

D. $Cu = 80\,\%\,, Sn = 10\,\%\,, Zn = 10\,\%$

Answer: A

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28. If for the reaction $A \rightarrow B$ rate $= -\frac{d[A]}{dt} = 2\frac{d[B]}{dt}$ then, rate law is

A. $-\frac{d[A]}{dt} = k[A]^2$

B. $\frac{d[B]}{dt} = k[A]$

C. $\frac{d[A]}{dt} = k[A]^2$

D. $-\frac{d[B]}{dt} = k[B]^2$

Answer: A

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29. Acetaldimine intermediate in the above sequence can also be obtained by

A. reduction of acetaldoxime

B. oxidation of ethylamine

C. reduction of methyl isonitrile

D. oxidation of methyl carbylamine

Answer: B

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30. The correct order of ionic radii Y^{3+} , La^{3+} , Eu^{3+} and Lu^{3+} is

$(AT.\ No: Y = 39, La = 57, Eu = 63, Lu = 71)$

A. $Lu^{3+} < Eu^{3+} < La^{3+} < Y^{3+}$

B. $La^{3+} < Eu^{3+} < Lu^{3+} < Y^{3+}$

C. $Y^{3+} < La^{3+} < Eu^{3+} < Lu^{3+}$

D. $Y^{3+} < Lu^{3+} < Eu^{3+} < La^{3+}$

Answer: D

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31. The commonly used analgesic that does not lead to addiction is

A. morphine

B. pethidine

C. diazepam

D. N-acetyl-p-aminophenol

Answer: D

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32. Which of the following set of properties belong to PCI_5 ?

A. sp^3 tetrahedral, 4 valence shell pairs of electrons

B. sp^3d, trigonal bipyramidal, 5 valence shell pairs of electrons

C. sp^3d^2, octahedral, 6 valence shell pairs of electrons

D. sp^3d, square planar, 4 valence shell pairs of electrons

Answer: B

33. The most that does not give the borax bead test

A. Cr

B. Ni

C. Pb

D. Mn

Answer: C

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34. $CH_3CH_2 - \underset{\underset{O}{||}}{C} - \underset{\underset{CH_3}{|}}{OCH} - CH_3$

when boiled with sodium hydroxide solution would yield

A. $2(CH_3)_2CHOH$

B. $CH_3CH_2COOH + (CH_3)_2CHOH$

C. $CH_3CH_2COO^- + (CH_3)_2CHOH$

D. $2CH_3CH_2COO^-$

Answer: C

35. The triglycerides of which of the following unsaturated fatty acids are not present in oils and fats?

A. Oleic acid

B. Linoleic acid

C. Linolenic acid

D. Maleic acid

Answer: D

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36. The units of constants a in van der Waal's equation is

A. $dm^6 atm mol^{-2}$

B. dm^3 atm mol^{-1}

C. dm atm mol^{-1}

D. atm mol^{-1}

Answer: A

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37. Sodium phenoxide $\xrightarrow[\text{pressure}]{CO_2} A \xrightarrow{H_3O^+} o.$ hydroxy benzoic acid

This product can also be obtained by the reaction of which of the following?

A. Phenol+chloroform+alkali

B. Phenol+pyrene+alkali

C. Phenol+acetyl chloride+$AICI_3$

D. Phenol+methyl chloride+$AICI_3$

Answer: A

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38. $CH \equiv \equiv CH + HBr \rightarrow X$, product X is

A. ethylene bromide

B. bromo ethane

C. vinyl bromide

D. ethyledine bromide

Answer: D

39. Sodium phenoxide reacts with CO_2 at 400 K and 4.7 atm pressure to give

A. sodium salicylate

B. salicyl aldehyde

C. benzoic acid

D. benzaldehyde

Answer: A

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40. Propene on hydration gives

A. propan-1-ol

B. propan-2-ol

C. propanal

D. methoxy ethane

Answer: B

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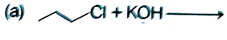
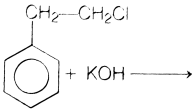
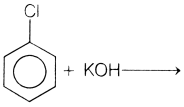
41. S_N1 reaction is feasible in

A. (a) 

B. (b)

C. (c) 

D. (d) 

Answer: B

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42. Ethyl ethanoate on reacting with excess of CH_3MgBr will give

A. acetone

B. 2-methyl-2-propanol

C. isobutanol

D. n-butyl alcohol

Answer: B

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43. When acetaldehyde is heated with Fehling's solution it gives a precipitate of

A. Cu

B. Cu_2O

C. CuO

D. $Cu + Cu_2O + CuO$

Answer: B

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44. An alkaloid contains 17.28% of nitrogen and it's molecular mass is 162. The number of nitrogen atoms present in one molecular of alkaloid is

A. five

B. four

C. three

D. two

Answer: D

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45. $CH_3CONH_2 \xrightarrow{Na+ROH} Z + H_2O$, Z is

A. $CH_3CH_2NH_2$

B. CH_3CH_2NC

C. $CH_3CH_2CH_3$

D. NH_2CONH_2

Answer: A

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46. Aniline on treatment with bromine water yields a white precipitate of

A. o-bromoaniline

B. p-bromoaniline

C. 2,4,6-tribromoaniline

D. m-bromoaniline

Answer: C

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47. Starch converts into maltose by the catalytic action of the enzyme

A. maltase

B. zymase

C. diastase

D. lipase

Answer: C

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48. If enthalpy of combustion of carbon, hydrogen and C_3H_8 are x_1, x_2 and x_3 per mol^{-1} respectively , then the enthalpy of formation of C_3H_8 will be

A. $x_3 - x_1 - x_2$

B. $x_3 - 3x_1 + 4x_2$

C. $3x_1 + 4x_2 - x_3$

D. $x_1 + x_2 - x_3$

Answer: C

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49. Which of the following reagents converts both acetaldehyde and acetone to alkanes?

A. Ni / H_2

B. $LiAlH_4$

C. $I_2 / NaoH$

D. $Zn - Hg / \text{conc. } HCl$

Answer: D

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