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CHEMISTRY

BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

PRACTICE SET 04

Paper 1 Physics Chemistry

1. The largest number of molecules is in:

A. 34 g of H_2O

B. 28 g of CO_2

C. 46 g of CH_3OH

D. 54g of N_2O_5

Answer: A

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2. Two liters of N_2 at $0^\circ C$ and 5 atm pressure is expanded isothermally against a constant external pressure of 1 atm untill the pressure

of gas reaches 1 atm. Assuming gas to be ideal, claculate the work of expansion.

A. $-202.6J$

B. $-202.6J$

C. $-810.4J$

D. $-303.9J$

Answer: D

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3. The molar ionic conductivities of $NH_4^+ a \cap dOH^-$ at infinite dilution are 72 and 198 $ohm^{-1}cm^2$, respectively, the molar conductivity of a centinormal NH_4OH solution aththe same temperature is found to be 9 $ohm^{-1}cm^2$. The percentage dissociation of NH_4OH at this concentration will be

A. 0.0333

B. 0.0714

C. 0.125

D. 0.0454

Answer: A

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4. An endothermic reaction, $A \rightarrow B$ have an activation energy $15kcal/mol$ and the heat of the reaction is $5kcal/mol$. The activation energy of the reaction, $B \rightarrow A$ is:

A. 10 kcal/mol

B. 20 kcal/mol

C. 40 kcal/mol

D. 100 kcal/mol

Answer: A

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5. nh-type semicoductor

A. have no charge

B. have extra negative charge

C. have extra positive charge

D. are neutral type of semiconductor

Answer: B

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6. A metal oxide has the formula A_2O_3. It can be reduced by hydrogen to give free metal and water. 0.1596 g of this metal oxide requires 6 mg of hydrogen for complete reduction. What is the atomic wight of metal?

A. 52.3

B. 57.3

C. 55.8

D. 59.3

Answer: C

7. Element that liberates oxygen gas from water is

A. P

B. Na

C. F

D. I

Answer: C

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8. The maximum magnetic moment is shown by the ion with electronic configuration

A. $3d^8$

B. $3d^5$

C. $3d^7$

D. $3d^9$

Answer: B

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9. Identify in which of the following electrophilic centre is correctly marked for the, compound, $CH_3CH = O$

A. $\overset{*}{C}H_2 - CH = O$

B. $CH_3 - \overset{*}{C}H = O$

C. $CH_3 - CH = O$

D. No electrophilic centre

Answer: B

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10. Which of the following cannot be made by using Williamson's synthesis?

A. methoxybenzene

B. Benzyl p-nitrophenyl ether

C. tert-butyl methyl ether

D. di-tert-butyl ether

Answer: D

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11. How many grams of H_2SO_4 is/are to be dissolved to prepare 200 mL aqueous solution

having concentration of $\left[H_3O^+\right]$ ions is 1 M at $25^\circ C$ temperature?

A. 4.9 g

B. 19.6 g

C. 9.8 g

D. 0.98 g

Answer: C

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12. During change of O_2 to O_2^{2-} ion, the electrons add on which of the following orbitals ?

A. $\overset{*}{\pi}$-orbital

B. π-orbital

C. $\overset{*}{\sigma}$-orbital

D. σ-orbital

Answer: A

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13. The pressure and temperature of $4dm^3$ of carbon dioxide gas are doubled. Then, volume of carbon dioxide gas would be

A. $2dm^3$

B. $3dm^3$

C. $4dm^3$

D. $8dm^3$

Answer: C

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14. The unit of reaction rate constant depends upon the

A. order

B. molecularity

C. progress

D. none of these

Answer: A

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15. Calcium metal crystallises in fcc lattice with edge length of 556 pm. Calcualte the density in g/cm^3) of metal if it contains 0.2% Schottky defects.

A. 3.992

B. 1.5455

C. 0.1527

D. 1.4987

Answer: C

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16. In the reaction,

$$IO_3^- + SO_2 + 4H_2O \rightarrow I_2 + SO_4^{2-} + 8H^+$$

The coefficient of SO_2 is

A. three

B. four

C. five

D. six

Answer: C

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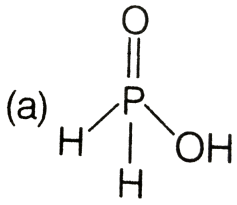
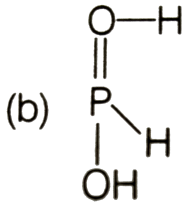
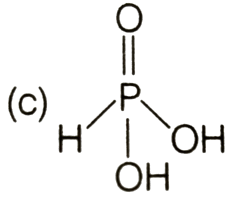
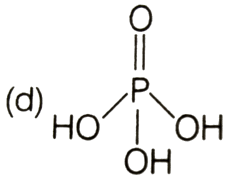
17. The structural formula of hypophosphorous acid is

A. 

B. 

C. 

D. 

Answer: A

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18. Which of the following ion is diamagnetic?

A. Fe^{2+}

B. Cr^{3+}

C. Zn^{2+}

D. Cu^{2+}

Answer: C

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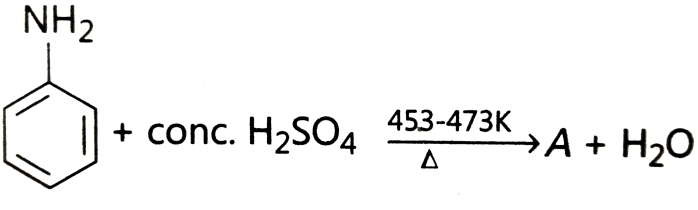
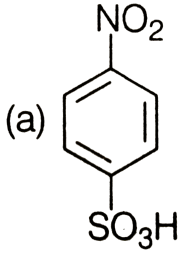
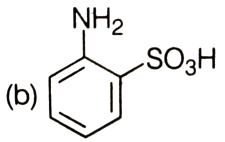
19.

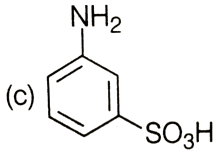


Here, 'A' refers to

A. (a)



B. 

C. 

D. All of these

Answer: A

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20. Oxime acetone is formed in which reaction?

A. acetone+hydroxylamine

B. acetone+ammonia

C. acetone+nitrous acid

D. none of the above

Answer: A

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21. The molal elevation constant is the ratio of the elevation in boiling point to :

A. molarity

B. molality

C. mole fraction of solute

D. mole fraction of solvent

Answer: B

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22. If ΔH is the change in enthylpy and ΔU, the change in internal energy accompanying a gaseous reactant then

A. ΔH is always greater than ΔU

B. $\Delta H < \Delta U$ only if the number of moles of the products is greater than the number of moles of the reactants

C. ΔH is always less than ΔU

D. $\Delta H < \Delta U$ only if the number of moles of products is less than the number of moles of the reactants.

Answer: D

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23. Hydrogen peroxide when added to a solution of potassium permanganate acidified with sulphuric acid

A. forms water only

B. acts as a oxidising agent

C. acts as a reducing agent

D. reduces sulphuric acid

Answer: C

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24. Which of the following is correct?

A. In the castner's process of sodium extraction, NaCl is used as an electrolyte

B. Sodium reduces CO_2 to carbon

C. Mg reacts with cold water and liberate hydrogen gas

D. Magnalium is an alloy of Mg and Zn

Answer: B

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25. The common metal present in german silver, bell metal and brass is

A. Mg

B. Sn

C. Cu

D. Al

Answer: C

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26. Which one of the following happens, in group 16, as the atomic number increases?

A. Ionic radius (M^{2-} ion) decreases

B. ionisation ethanlpy increases

C. Electronegativity decreases

D. Density decreases

Answer: C

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27. Which of the following statements is not true about noble gases ?

A. Their ionisation energy are very high

B. Their electron affinities are nearly zero

C. They do not form any chemical compounds

D. They are not easily liquefied

Answer: C

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28. Which of the following is most basic ?

A. $Ce(OH)_3$

B. $Lu(OH)_3$

C. $Tb(OH)_3$

D. $Yb(OH)_3$

Answer: A

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29. Phenol can be distinguished from ethanol by the following reagents except

A. NaOH

B. $FeCl_3$

C. Br_2H_2O

D. Na

Answer: D

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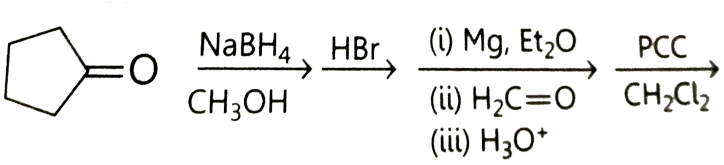
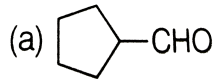
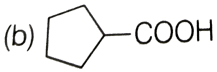
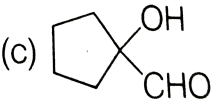
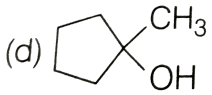
30. What is the product of the following sequence of reactions?



A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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31. In the preparation of sulphuric acid, V_2O_5 is used in the reaction, which is

A. $SO_2 \rightarrow SO_2$

B. $2SO_2 + O_2 \rightarrow 2SO_3$

C. $SO_2 + H_2O \rightarrow H_2SO_3$

D. $N_2 + 3H_2 \rightarrow 2NH_3$

Answer: B

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32. In the incorrect statement/s among the following is/are

I. NCl_5 does not exist while PCl_5 does

II. Lead prefers to form tetravalent compound as compare to bivalent.

III. The three C-O bonds are not equal in the carbonate ion

IV. Both O_2^+ and NO are paramagnetic

A. I,III and IV

B. I and IV

C. II and III

D. I and III

Answer: C

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33. Which of the following cannot be explained by CFC?

A. Electrovalency

B. Covalency

C. Secondary valency

D. Oxidation number

Answer: B

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34. SN^1 reaction of alkyl halides leads to

A. retention of configuration

B. racemisation

C. inversion of configuration

D. None of the above

Answer: B

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35. Which of the following compounds gives brisk effervescence of CO_2 when treated with sodium bicarbonate?

A. Phenol

B. Acetic acid

C. Both (a) and (b)

D. None of these

Answer: B

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36. Ethyl amine will be obtained by the

A. reduction of CH_3NC

B. hydrolysis of CH_3CH_2NCO

C. hydrolysis of $CH_3CH_2CONH_2$

D. reduction of $CH_3CH_2CONH_2$

Answer: B

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37. Primary amine and aldehyde react to give

A. amide

B. imine

C. nitrite

D. nitro compound

Answer: B

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38. The IUPAC name of

$$CH_3 - \overset{\overset{CH_2CHO}{|}}{C} H - CH_2 - CHO$$ is

A. 3-(formyl methyl) hexane 1,3-dial

B. 3-methyl pentane 1,5-dial

C. 3-(formyl methyl) butanal

D. 2-(formyl methyl) butanal

Answer: B

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39. The catalyst used in the manufacture of high density polyethylene is

A. titanium tetrachloride and trimethyl aluminium

B. titanium tetrachloride and triphyl aluminium

C. titanium dioxide

D. titanium isoperoxide

Answer: A

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40. X is heated with soda lime and gives ethane. X is

A. ethanoic acid

B. methanoic acid

C. propanoic acid

D. either (a) or (c)

Answer: C

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41. When Cl_2 gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from

A. zero to +1 and zero to -5

B. zero to -1 and zero to +5

C. zero to -1 and zero to +3

D. zero to +1 and zero to -3

Answer: B

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42. Which one of the following behaves both as acid and base?

A. HCO_3^-

B. NO_3^-

C. CO_3^{2-}

D. SO_4^{2-}

Answer: A

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43. According to Werner's theory, the secondary valencies of the central metal atom correspond to its

A. oxidation state

B. coordination number

C. either (a) or (b)

D. Neither (a) nor (b)

Answer: B

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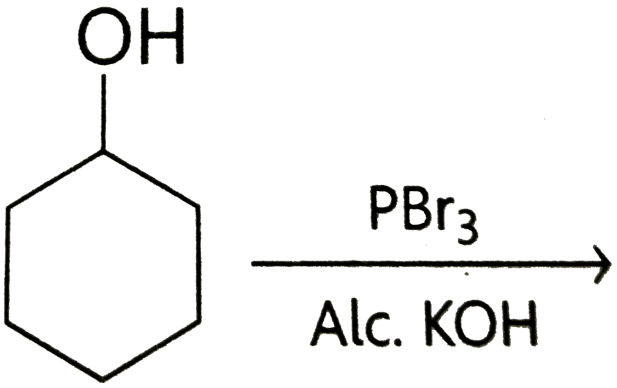
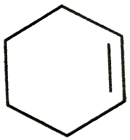
44. Identify the product in the following reaction



A. (a) 

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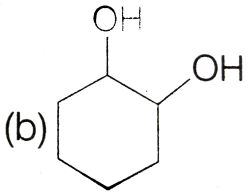

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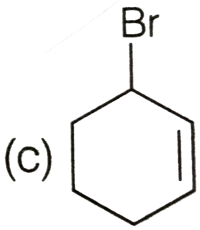
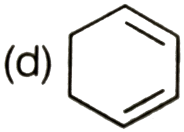


D.



Answer: A

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45. Among the acids which have lowest pK_a value ?

A. CH_3COOH

B. $CH_2 - CH_2 - COOH$

C. $CH_3 - \underset{\underset{|}{NO_2}}{C}H - COOH$

D. $CH_3_\underset{\underset{|}{COOH}}{C}H - COOH$

Answer: C

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46. Benzene diazonium chloride on treatment with hypo phosphorous acid and water in presence of Cu^+ as catalyst produce

A. benzene

B. toluene

C. aniline

D. chlorobenzene

Answer: A

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47. It is best to carry out reaction with sugers in neutral or acidic medium and not is alkaline medium because in alkaline medium sugars undergo?

A. racemisastion

B. decomposition

C. inversion

D. rearrangement

Answer: D

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48. Plexiglass (PMMA) is a polymer of

A. acrylic acid

B. methyl acrylate

C. methylmethacrylate

D. none of these

Answer: C

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49. Which of the following is/are bactericidal drugs?

A. Penicillin

B. Ofloxacin

C. Both (a) and (b)

D. none of the above

Answer: C

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50. A plot of log x/m versus log p for the adsorption of a gas on a solid gives a straight line with slope equal to:

A. $-\log k$

B. n

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

D. $\log k$

Answer: C

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