



CHEMISTRY

BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

PRACTICE SET 14

Paper 1 Physics Chemistry

1. Total number of atoms represented by the compound $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ are

A. 27

B. 21

C. 5

D. 8

Answer: B



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2. The incorrect expression among the following is

A.
$$\frac{\Delta G_{\text{system}}}{\Delta S_{\text{total}}} = -T$$

B. In isothermal process,

$$W_{\text{reversible}} = -nRT \ln \frac{V_t}{V_i}$$

$$\text{C. } \ln K = \frac{\Delta H^\circ - T\Delta S^\circ}{RT}$$

$$\text{D. } K = e^{-\Delta G^\circ / RT}$$

Answer: C



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3. Some statement(s) is/are given below.

I. Rust is hydrated ferric oxide

II. Saline water slows down rusting

III. Pure metals undergo corrosion faster than impure metals

IV. Fe does not undergo corrosion when placed in

vacuum

Among the above

A. I, II and III are true

B. I and III are false

C. I and IV are true

D. II and IV are false

Answer: C



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4. If the rate constant of a reaction is 2×10^{-3} per second. What is the order of a reaction ?

A. 0

B. 1

C. 2

D. 3

Answer: B



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5. Analysis shows that a metal oxide has the empirical formula $M_{0.96}O_{1.00}$. Calculate the percentage of M^{2+} and M^{3+} ions in the sample.

A. 5.08 %

B. 7.01 %

C. 4.08 %

D. 6.05 %

Answer: C



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6. The sides of safety matches contains

A. red phosphorus + sand powder

B. P_4S_3

C. $Ca_3(PO)_4$ + glass pieces

D. $KClO_3$, KNO_3 , sulphur + antimony

Answer: A



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7. Which of the following has covalent bond ?

A. Na_2S

B. $AlCl_3$

C. NaH

D. $MgCl_2$

Answer: B



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8. Which metal has the highest melting point?

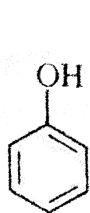
- A. Tungsten
- B. Scandium
- C. Manganese
- D. Zinc

Answer: A

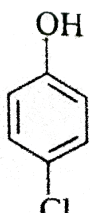


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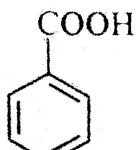
9. The correct acidity order of the following is



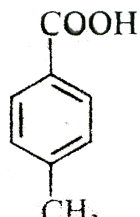
(I)



(II)



(III)



(IV)

A. III > IV > II > I

B. IV > III > I > II

C. III > II > I > IV

D. II > III > IV > I

Answer: A



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10. Ether on carbonylation gives

- A. alkanolic acid
- B. alkanone
- C. alkyl alkanoate
- D. alkanal

Answer: C



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11. X_A and X_B are the mole fraction of A and B respectively in liquid phase y_A and y_B are the mole fraction of A and B respective in vapour phase. Find out the slope of straight line if a graph is plotted $\frac{1}{y_A}$ along Y-axis against $\frac{1}{x_A}$ along X-axis gives straight line [p_A° and p_B° are vapour pressure of pure components A and B].



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12. Slope between pV and p at constant temperature is

A. slope between pV and p is zero

B. slope between pV and p is 1

C. slope between pV and p is $\frac{1}{2}$

D. slope between pV and p is $\frac{1}{\sqrt{2}}$

Answer: A



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13. Which metal will dissolve if the cell work



A. Cu

B. Ag

C. Both (a) and (b)

D. None of these

Answer: A



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14. In a hypothetical reaction $X \rightarrow Y$, the activation energies for the forward and reverse reactions are 15 kJ mol^{-1} and 9 kJ mol^{-1} respectively. The potential energy of X is 10 kJ mol^{-1}

A. Threshold energy of the reaction is 25 kJ mol^{-1}

B. The potential energy of Y is 16 kJ mol^{-1}

C. Heat of reaction is 6 kJ

D. The reaction is exothermic

Answer: D



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15. Graphite belongs to

A. cubic system

B. tetragonal system

C. rhombohedral system

D. hexagonal system

Answer: D



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16. The incorrect statement among the following is

A. oxides of highly electropositive metals can be reduced by carbon at high temperature

B. in smelting to get tin from SnO_2 , excess lime must be avoided

C. anodising is done to produce an oxide coating on a metal surface by making it anode during

electrolysis

D. slag is usually lighter and floats on the surface
of the molten metal

Answer: C



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17. Liquid ammonia bottles are opened after cooling them in ice for sometime. It is because liquid NH_3

A. brings tears to the eyes

B. has a high vapour pressure

C. is a corrosive

D. is a mild explosive

Answer: C



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18. The oxidation number and the electronic configuration of sulphur in H_2SO_4 is

A. +4, $1s^2, 2s^2, 2p^6, 3s^2$

B. +2, $1s^2, 2s^2, 2p^6, 3s^2$

C. +3, $1s^2, 2s^2, 2p^6, 3s^2, 3p^1$

D. $+6, 1s^2, 2s^2, 2p^6$

Answer: D



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19. Propylene on hydrolysis with sulphuric acid forms

A. n-propyl alcohol

B. iso-propyl alcohol

C. ethyl alcohol

D. butyl alcohol

Answer: B



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20. The product formed on heating calcium acetate is

A. formaldehyde

B. acetone

C. acetaldehyde

D. ethyl acetate

Answer: B



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21. The normality of 20 volume hydrogen peroxide solution is

A. 3.57 N

B. 0.68 N

C. 5.60 N

D. 5.35 N

Answer: A



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22. Which of the following expression represents, the first law of thermodynamics ?

A. $q = \Delta E - W$

B. $\Delta E = q - W$

C. $\Delta E = q + W$

D. $\Delta E = q + pd \quad V$

Answer: B



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23. The specific conductance at 289 K of AgCl is $1.826 \times 10^{-6} \text{ ohm}^{-1} \text{ cm}^{-1}$. The ionic conductance of Ag^+ and Cl^- are 61.92 and 61.92 and 76.36 respectively. What is the solubility of AgCl in water?

A. $2.1 \times 10^{-4} \text{ g/L}$

B. $2.1 \times 10^{-5} \text{ g/L}$

C. $1.9 \times 10^{-3} \text{ g/L}$

D. $2.1 \times 10^{-6} \text{ g/L}$

Answer: C



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24. The reaction $2N_2O_5(g) \rightarrow 4NO_2(g)$ is first order w.r.t. N_2O_5 . Which of the following graphs would yield a straight line?

A. $(P_{NO_2})^{-1}$ vs time

B. $\log_{10} P_{N_2O_5}$ vs time with a positive slope

C. $P_{N_2O_5}$ vs time

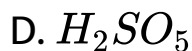
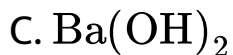
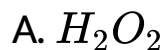
D. $\log_{10} P_{N_2O_5}$ vs time with a negative slope

Answer: D



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25. H_2SO_4 is added to 20% cold aqueous solution of BaO_2 . The product formed is



Answer: A



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26. X is heated with soda lime and gives ethane, X is

- A. ethanoic acid
- B. methanoic acid
- C. propanoic acid
- D. None of these

Answer: C



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27. Complete the following reactions by filling the appropriate choice.



- A. (i) (ii) (iii)
 F_2 H_2O $XeOF_4$
- B. (i) (ii) (iii)
 $24HF$ $3O_2$ XeO_3
- C. (i) (ii) (iii)
 $2HF$ $2H_2O$ XeO
- D. (i) (ii) (iii)
 HF H_2O Xe_2O_3

Answer: B



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28. Consider the following statements:

(I) $La(OH)_3$ is the least basic among the hydroxides of lanthanoids.

(II) Zr^{4+} and Hf^{4+} possess almost same ionic radii.

(III) Cr^{4+} can act as an oxidising agent .

which of the above statement is/ are true?

A. I and III

B. II and III

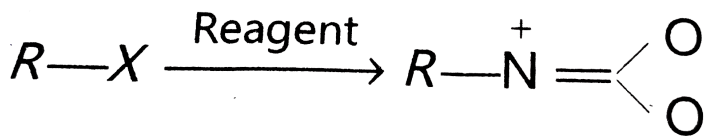
C. Only I

D. I and II

Answer: B



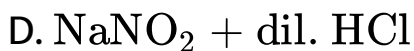
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29.

for

the completion of the reaction suitable reagent is

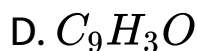
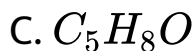
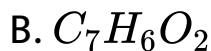
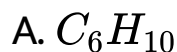


Answer: C



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30. In an organic compound, $C = 68.5\%$ and $H = 4.91\%$. Which empirical formula is correct for it ?



Answer: B



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31. Hair cream is :-

A. gel

B. sol

C. aerosol

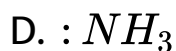
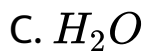
D. emulsion

Answer: D



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32. Which of the following ligands can show linkage isomerism?

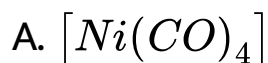


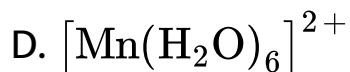
Answer: A



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33. In which compound synergic effect is present ?



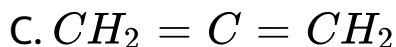
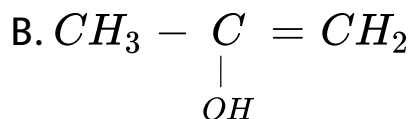
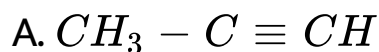
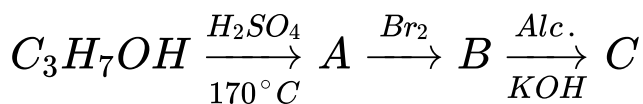


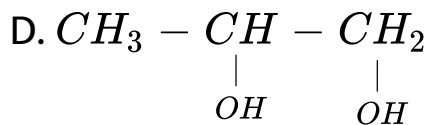
Answer: A



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34. The end product in the sequence would be



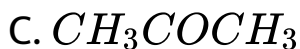
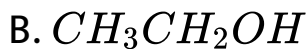
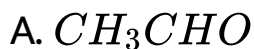


Answer: A



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35. Which of the following compounds on oxidation gives an acid with less of carbon atoms ?



Answer: C



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36. Amine not showing Hofmann's mustard oil reaction is

- A. 1-butanamine
- B. 2-butanamine
- C. 2-methyl-1-propanamine
- D. N-methyl-1-propanamine

Answer: D





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37. Alkyl cyanides can be obtained by

- A. hydrolysis of alkanamide
- B. oxidation of alkanamine
- C. reduction of aldoximes
- D. reaction of alkyl halide with metal cyanide

Answer: D



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38. A nucleoside on hydrolysis gives

- A. an aldopentose and a heterocyclic base
- B. an aldopentose and a orthophosphoric acid
- C. a heterocyclic base and a orthophosphoric acid
- D. an aldopentose, a heterocyclic base and a orthophosphoric acid

Answer: A



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39. Orlon is a polymer of

A. tetra fluoroethene

B. acrylonitrile

C. acetic acid

D. benzene

Answer: B



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40. Histamine stimulates the secretion of ...A...and...B...
in the stomach. In the sentence A and B are

A. sulphuric acid and pepsin

B. pepsin and sulphuric acid

C. hydrochloric acid and pepsin

D. sodium hydroxide and pepsin

Answer: C



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41. Consider the following substances :

1. OF_2 2. Cl_2O 3. Br_2O

The correct sequence X - O - X bond angle is

A. $1 > 2 > 3$

B. $2 > 1 > 3$

C. $1 > 3 > 2$

D. $3 > 2 > 1$

Answer: D



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42. What are the reagent and reaction conditions used for converting ethyl chloride to ethyl nitrite (as the major product)?



B. $\text{NaNO}_2, \text{HCl}, 0^\circ \text{C}$

C. $\text{KCN}, \text{H}_2\text{O}, \Delta$

D. $\text{AgNO}_2, \text{C}_2\text{H}_5\text{OH}, \text{H}_2\text{O}, \Delta$

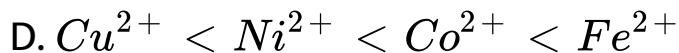
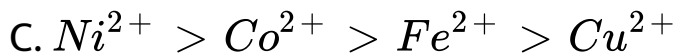
Answer: A

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43. The stability of complexes of Cu^{2+} , Ni^{2+} , Co^{2+} and Fe^{2+} varies in the order

A. $\text{Cu}^{2+} > \text{Ni}^{2+} > \text{Co}^{2+} > \text{Fe}^{2+}$

B. $\text{Cu}^{2+} > \text{Fe}^{2+} > \text{Ni}^{2+} > \text{Co}^{2+}$



Answer: D



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44. Intramolecular hydrogen bonding is found in :

A. m-nitrophenol

B. p-nitrophenol

C. o-nitrophenol

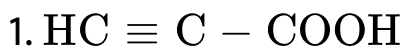
D. Phenol

Answer: C



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45. Among the acids



The acidic strength follows the order

A. $3 < 2 < 1$

B. $3 = 2 < 1$

C. $1 < 2 < 3$

D. $1 < 2 = 3$

Answer: C

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46. Which of the following compounds on treatment first with NaNO_2/HCl and then coupled with phenol produces p-hydroxyazobenzene ?

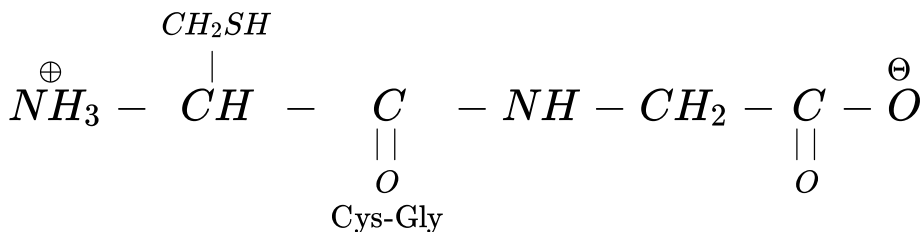
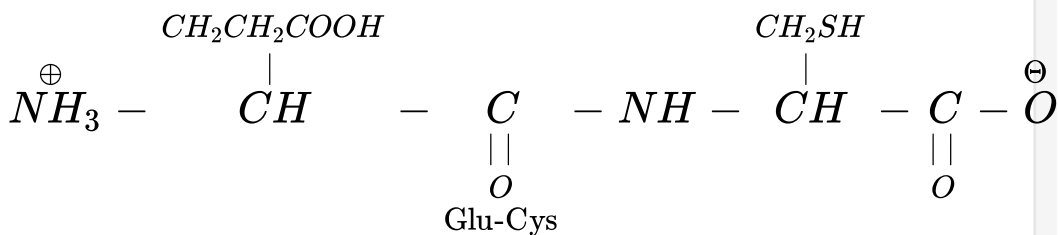
- A. Nitrobenzene
- B. Phenol
- C. Phenyl isocyanide

D. Aniline

Answer: D

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47. A tripeptide (X) on partial hydrolysis gave the dipeptides Gly-Cys and Cys-Gly, i.e.



Identify the tripeptide.

A. Gly-Glu-Cys

B. Gly-Glu-Cys

C. Cys-Gly-Glu

D. Cys-Glu-Gly

Answer: A



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48. Biodegradable polymers are used in

A. orthopaedic devices

B. implants

C. drug release materials

D. All of these

Answer: D



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49. The detergent which is used as a germicide is :

A. Cetyltrimethyl ammonium chloride

B. p-do decylbenzene sulphonate

C. Sodium lauryl alkyl sulphonate

D. Butylated hydroxy toluene

Answer: A



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50. The strongest base in aqueous solution among the following amines is :

- A. N-N-diethylethanamine
- B. N-ethylethanamine
- C. N-methylmethanamine
- D. ethanamine

Answer: B





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