



CHEMISTRY

BOOKS - BITSAT GUIDE

QUESTION-PAPERS-2014

Chemistry

1. Formation of CO and CO_2 illustrates the law of

A. reciprocal proportion

B. conservation of mass

C. multiple proportion

D. constant composition

Answer: C



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2. The wave number of the limiting line in Lyman series of hydrogen is 109678cm^{-1} . The wave number of the limiting line in Balmer series of He^+ would be :

A. 54839cm^{-1}

B. 109678cm^{-1}

C. 219356cm^{-1}

D. 438712cm^{-1}

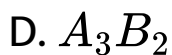
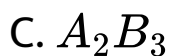
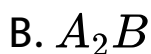
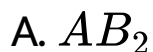
Answer: B



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3. The valency shell of element A contains 3 electrons while the valency shell of element B contains 6 electrons. If A combines with B, the

probable formula of the compound formed will be



Answer: C



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4. The enthalpy of sublimation of aluminium is 330 kJ/mol. Its 1st, 2nd and 3rd ionization enthalpies are 580, 1820 and 2740 kJ respectively. How much heat has to be supplied (in kJ) to convert 13.5 g of aluminium into Al^{3+} ions and electrons at 298 K

A. 5470

B. 2735

C. 4105

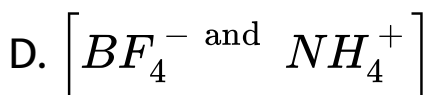
D. 3765

Answer: B



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5. Which of the following pairs is isostructural (i.e having the same shape and hybridization ?



Answer: D



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6. N_2 and O_2 are converted into monoanions N_2^- and O_2^- respectively. Which of the following statements is wrong ?

- A. In N_2 , the N-N bond weakens
- B. In O_2 , the O-O bond order increases
- C. In O_2 , bond length decreases
- D. N_2^- becomes diamagnetic

Answer: B



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7. If the enthalpy of vaporisation of water is 186.5 J mol^{-1} , then entropy of its vaporisation will be

A. $0.5 \text{ kJ K}^{-1} \text{ mol}^{-1}$

B. $1.0 \text{ kJ K}^{-1} \text{ mol}^{-1}$

C. $1.5 \text{ kJ K}^{-1} \text{ mol}^{-1}$

D. $2.0 \text{ kJ K}^{-1} \text{ mol}^{-1}$

Answer: A



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8. The heats of neutralisation of CH_3COOH , $HCOOH$, HCN and H_2S are - 13.2, - 13.4, -2.9 and - 3.8 kCal per equivalent respectively. Arrange the acids in increasing order of acidic strength.

A.



B.



C.



D.



Answer: A



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9. For the reaction $Ag(CN)_2^- + Ag^+ + 2CN^-$, the equilibrium constant at $25^\circ C$ is 4×10^{-19} . Calculate the Ag^+ concentration in a solution which was originally 0.1 molar in KCN and 0.03 molar in $AgNO_3$.

A. 7.5×10^{18}

B. 7.5×10^{-19}

C. 7.5×10^{19}

D. 7.5×10^{-18}

Answer: B



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10. The ratio of oxidation states of Cl in potassium chloride to that in potassium chlorate is

A. $\frac{+1}{5}$

B. $\frac{-1}{5}$

C. $\frac{-2}{5}$

D. $\frac{+3}{5}$

Answer: B



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11. Which of the following among alkali metal is most reactive ?

A. Na

B. K

C. Rb

D. Cs

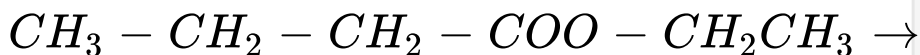
Answer: D



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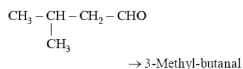
12. Which of the following compound has wrong IUPAC name?

A.

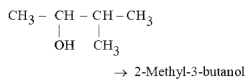


ethyl butanoate

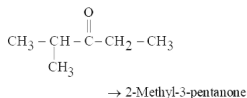
B.



C.



D.

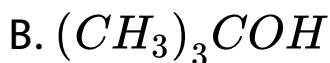


Answer: C



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13. The compound which gives the most stable carbonium ion on dehydration is

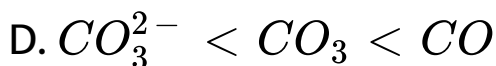
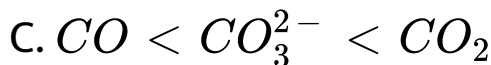
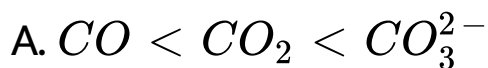


Answer: B



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14. The correct order of increasing C - O bond length CO , CO_3^{2-} , CO_2 is :



Answer: A



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15. An organic compound $A(C_4H_6Cl)$ on reaction with Na/diethyl ether gives a hydrocarbon which on monochlorination gives only one chloro derivative A is .

A. tert-butyl chloride

B. sec-butyl chloride

C. isobutyl chloride

D. n-butyl chloride

Answer: A



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16. When rain is accompanied by a thunderstorm, the collected rain water will have a pH value

A. Slightly lower than that of rain water without thunderstorm

B. Slightly higher than that when the thunderstorm is not there.

C. Uninfluenced by occurrence of thunderstorm.

D. Which depends upon the amount of dust in air.

Answer: A



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17. An elemental crystal has a density of 8570 kg/m^3 . The packing efficiency is 0.68. The closest distance of approach between neighbouring atom is 2.86 \AA . What is the mass of one atom approximately?

A. 93 amu

B. 39 amu

C. 63 amu

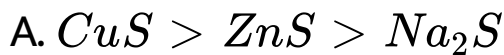
D. 29 amu

Answer: A



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18. Identify the correct order of solubility of Na_2S , CuS and ZnS in aqueous solution

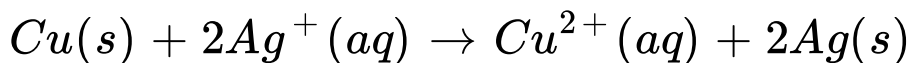


Answer: D



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19. Consider the following cell reaction



$E_{\text{cell}}^{\circ} = 0.46V$ By doubling the concentration of

Cu^{2+} , E_{cell} is

A. doubled

B. halved

C. increases but less than double

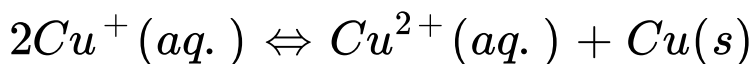
D. no change

Answer: D



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20. $Cu^{2+}(aq.)$ is unstable in solution and under goes simultaneous oxidation and reduction according to the reaction



Choose the correct E° for the above reaction if

$$E^{\circ}_{Cu^{2+}/Cu} = 0.34V \text{ and } E^{\circ}_{Cu^{2+}/Cu^{+}} = 0.15V$$

A. -0.38 V

B. $+0.49\text{ V}$

C. $+0.38\text{ V}$

D. -0.19 V

Answer: C



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21. The reduction of peroxydisulphate ion by I^- ion is expressed by

$$S_2O_8^{2-} + 3I^- \rightarrow 2SO_4^{2-} + I_3^-$$

,If rate of disappearance of I^- is $9/2 \times 10^{-3} \text{ mol } L^{-1} S^{-1}$, what is the rate of formation of SO_4^{2-} during same time ?

A. $3 \times 10^{-3} \text{ mol Lit}^{-1} s^{-1}$

B. $2 \times 10^{-3} \text{ mol Lit}^{-1} s^{-1}$

C. $10^{-3} \text{ mol Lit}^{-1} \text{ s}^{-1}$

D. $4 \times 10^{-3} \text{ mol Lit}^{-1} \text{ s}^{-1}$

Answer: A



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22. A gaseous reaction $X_2(g) \rightarrow Y + \frac{1}{2}Z(g)$.

There is increase in pressure from 100 mm to 120 mm in 5 minutes. The rate of disappearance of X_2 is

A. 8 mm min^{-1}

B. 2mmmin^{-1}

C. 16mmmin^{-1}

D. 4mmmin^{-1}

Answer: A



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23. v22

A. twice the half life of R

B. twice the half life of S

C. the half life of S

D. the half life of R

Answer: A



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24. The isoelectric point of a colloiddally dispersed material is the pH value at which

A. the dispersed phase migrate in an electric field.

B. the dispersed phase does not migrate in an electric field.

C. the dispersed phase has pH equal to 7.

D. the dispersed phase has pH equal to zero.

Answer: B



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25. Which of the following halogens exhibit only one oxidation state in its compounds ?

A. Bromine

B. Chlorine

C. Fluorine

D. Iodine

Answer: C



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26. Starch can be used as an indicator for the detection of traces of

A. glucose in aqueous solution

B. proteins in blood

C. iodine in aqueous solution

D. urea in blood

Answer: C



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27. Which one of the following arrangements represents the correct order of electron gain enthalpy of the given atomic species?

A. $S < O < Cl < F$

B. $Cl < F < S < O$

C. $F < Cl < O < S$

D. $O < S < F < Cl$

Answer: D



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28. Which form coloured salts ?

A. Non-metals

B. Metals

C. p-block elements

D. Transitional elements

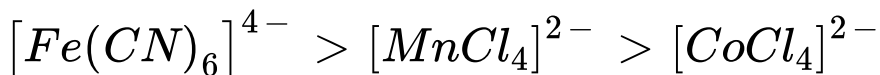
Answer: D



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29. The correct order of magnetic moments (spin values in B.M.) among is:

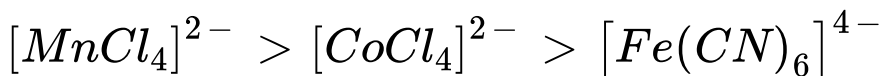
A.



B.



C.



D.



Answer: C



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30. The number of double bonds in gammexane is

A. 0

B. 1

C. 2

D. 3

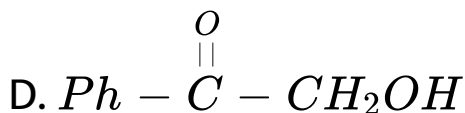
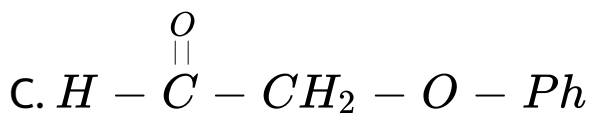
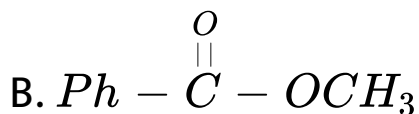
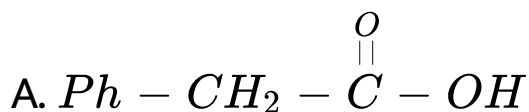
Answer: A



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31. Match the following columns

Column A	Column B
19. A symbol that occurs alone on LHS of the equality	(a) Formula
20. The symbolic form of "The sum of the angles of $\triangle ABC$ is 180° ."	(b) Subject
21. The symbolic form of "Perimeter (P) of $\triangle ABC$ is the sum of its sides."	(c) $P = AB + BC + AC$
22. An equation based on a rule	(d) $\angle A + \angle B + \angle C = 180^\circ$

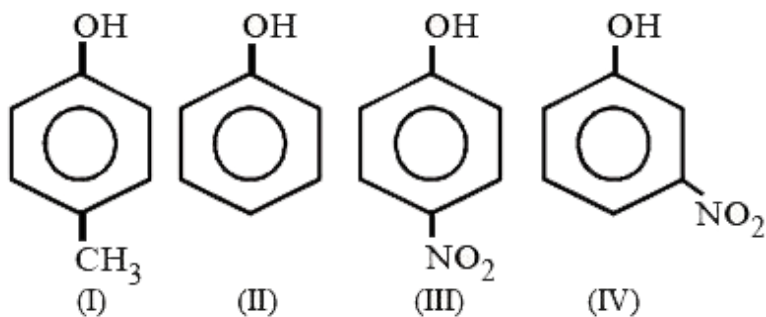


Answer: D



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32. Consider the following phenols :



The decreasing order of acidity of the above phenols is

A. III gt IV gt II gt I

B. II gt I gt IV gt III

C. I gt IV gt II gt III

D. III gt IV gt I gt II

Answer:



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33. The ionization constant of a phenol is higher than that of ethanol because

A. Phenoxide ion is bulkier than ethoxide

B. Phenoxide ion is stronger base than ethoxide

C. Phenoxide ion is stabilized through delocalization

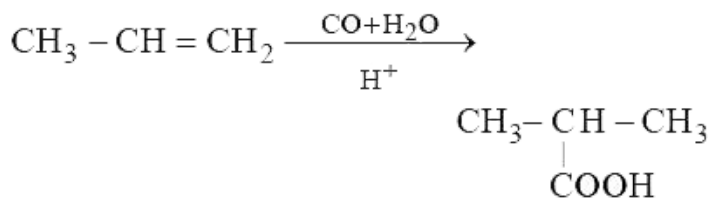
D. Phenoxide ion is less stable than ethoxide

Answer: C



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34. The reaction,



is known

as:

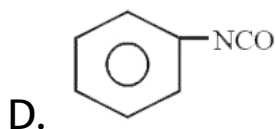
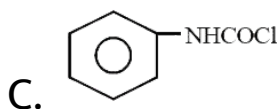
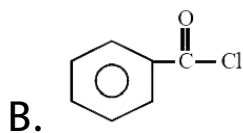
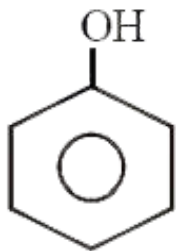
- A. Wurtz reaction
- B. Koch reaction
- C. Clemmensen reduction
- D. Kolbe's reaction

Answer: B



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35. Aniline reacts with excess of phosgene and KOH to form :

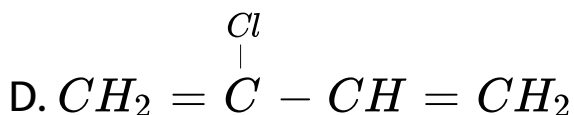
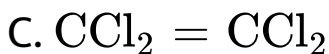
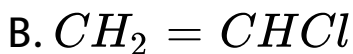
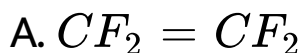


Answer: D



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36. Which one of the following monomers gives the polymer neoprene on polymerization?



Answer: D



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37. Which of the following can possibly be used as analgesic without causing addiction and modification?

A. morphine

B. N-acetyl-para-aminophenol

C. diazepam

D. tetrahydrocatenol

Answer: B



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38. Which among the following is not an antibiotic?

A. Penicillin

B. Oxytocin

C. Ofloxacin

D. Tetracycline

Answer: B



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39. Which of the following ions can be separated by aq. NH_4OH in presence of NH_4Cl

A. Al^{3+} and Fe^{3+}

B. Cr^{3+} and Al^{3+}

C. Cu^{2+} and Al^{3+}

D. none of these

Answer: C



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40. 3.92g of ferrous ammonium sulphate (FAS) react completely with 50ml $N/10$ $KMnO_4$ solution. The percentage purity of the sample is

A. 50

B. 78.4

C. 80

D. 39.2

Answer: A



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