



CHEMISTRY

BOOKS - NIKITA CHEMISTRY (HINGLISH)

MCQs FROM PREVIOUS BOARD QUESTION PAPERS

March 2013

1. In body centred cubic structure the space occupied is about

- A. 68 %
- B. 53 %
- C. 38 %
- D. 32 %

Answer: A



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2. For a gaseous reaction the unit of rate of reactions is

A. L atm s^{-1}

B. $\text{atm mol}^{-1} \text{s}^{-1}$

C. atm s^{-1}

D. mol s

Answer: C



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3. Which of the following compounds contain S=O as well as S=S bonds?

A. Sulphuric acid

B. Thiosulphuric acid

C. sulphurous acid

D. Thioulsphurous acid

Answer: B

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4. Which of the following solutions shows maximum depression in freezing point?

A. 0.5 M Li_2SO_4

B. 1 M NaCl

C. 0.5 M $Al_2(SO_4)_3$

D. 0.5 M $BaCl_2$

Answer: C

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5. For a chemical reaction, $\Delta S = -0.035 \text{ kJ/K}$ and $\Delta H = -20 \text{ kJ}$. At what temperature does the reaction turn spontaneous?

- A. 5.14 K
- B. 57.14 K
- C. 571.4 K
- D. 5714.0 K

Answer: C

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6. The standard of emf of the following cell is 0.463 V $\text{Cu} | \text{Cu}^{++} (1 \text{ M}) || \text{Ag}^+ (1 \text{ M}) | \text{Ag}$. If $E_{\text{Ag}}^{\circ} = 0.800 \text{ V}$, What is the standard potential of Cu electrode?

- A. 1.137 V
- B. 0.337 V

C. 0.463 V

D. - 0.463 V

Answer: B



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7. Fe_2O_3 is reduced to spongy iron near the top of blast furnace by

A. H_2

B. CaO

C. SiO_2

D. CO

Answer: D



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8. In which pair highest oxidation states of transition metals are found

- A. nitriles and chlorides
- B. fluorides and chlorides
- C. fluorides and oxides
- D. nitriles and oxides

Answer: C



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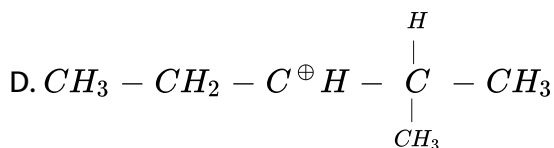
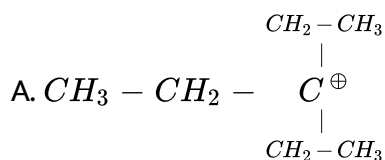
9. The complex iron $[Co(H_2O)_5(ONO)]^{2+}$ and $[Co(H_2O)_5NO_2]^{2+}$ are called

- A. linkage isomers
- B. ionization isomers
- C. coordination isomers
- D. geometrical isomers

Answer: A

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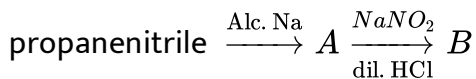
10. Which of the following carbocations is least stable



Answer: C

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11. Identify the compound 'B' in the following series of reaction



A. n-propyl chloride

B. Propanamine

C. n-propyl alcohol

D. Isopropyl alcohol

Answer: C

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12. Inflammation of tongue is due to the deficiency of _____.

A. Vitamin B_1

B. Vitamin B_2

C. Vitamin B_5

D. Vitamin B_6

Answer: B

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13. Tertiary butyl amine is a-

- A. primary amine
- B. secondary amine
- C. tertiary amine
- D. quaternary ammonium salt

Answer: A



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September 2013

1. In Van Arkel method of refining metal, impure zirconium is converted to unstable volatile compound by heating it with-

- A. oxygen

B. chlorine

C. bromine

D. iodine

Answer: D



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2. The temperature at which the vapour pressure of a liquid becomes equals to the external (atmospheric) pressure is its

A. melting point

B. boiling point

C. 273 K

D. 373 K

Answer: B



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3. Triclinic crystal has the following the cell parameters:

A. $\alpha = \beta = \gamma = 90^\circ$ and $a=b=c$

B. $\alpha \neq \beta \neq \gamma \neq 90^\circ$ and $a \neq b \neq c$

C. $\alpha = \gamma = 90^\circ, \beta \neq 90^\circ$ and $a \neq b \neq c$

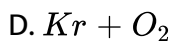
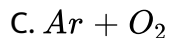
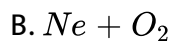
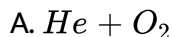
D. $\alpha = \beta = \gamma = 90^\circ$ and $a \neq b \neq c$

Answer: B



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4. Which mixture is used for respiration by deep sea divers?



Answer: A

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5. For a reaction, $2N_2O_5(g) \rightarrow 4NO_2(g) + O_2(g)$ rate of reaction is:

A. $-\frac{1}{2} \frac{d[N_2O_5]}{dt}$

B. $-\frac{1}{4} \frac{d[NO_2]}{dt}$

C. $\frac{d[O_2]}{dt}$

D. $\frac{1}{4} \frac{d[NO_2]}{dt}$

Answer: B

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6. For a certain reaction $\Delta H = -50kJ$ and $\Delta S = -80jK^{-1}$, at what temperature does the reaction turn from spontaneous to nonspontaneous?

A. 6.25 K

B. 62.5 K

C. 625 K

D. 6250 K

Answer: C



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7. What is the ratio of volumes of H_2 and O_2 liberated during electrolysis of acidified water?

A. 1 : 2

B. 2 : 1

C. 1 : 8

D. 8 : 1

Answer: C

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8. When KOH solution is added to potassium dichromate solution the colour of solution changes to yellow, because:

- A. Chromate ion changes to dichromate ion.
- B. dichromate ion changes to chromate ion.
- C. oxidation number of chromium changes from +6 to +4
- D. oxidation number of chromium changes from +4 to +6

Answer: B

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9. But-1-ene on reaction with HCl in the presence of sodium peroxide yields.

- A. n butyl chloride

- B. isobutyl chloride
- C. secondary butyl chloride
- D. tertiary butyl chloride

Answer: C

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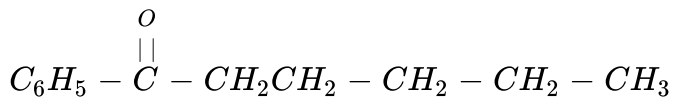
10. 3-Methylbutane-2-ol on heating with HI gives

- A. 2-iodo-3-methylbutane
- B. 2-iodo-2-methylbutane
- C. 1-iodo-3-methylbutane
- D. 1-iodo-2-methylbutane

Answer: B

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11. IUPAC name of



- A. 1-phenylhexan-2-one
- B. 6-phenylhexan-2-one
- C. 1-benzylhexan - 2-one
- D. Dodecan-5-one

Answer: A



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12. Stachyose is an example of

- A. monosaccharides
- B. disaccharides
- C. trisaccharides

D. tetrasaccharide

Answer: D



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13. The Ziegler-Natta catalyst is used in the preparation of

A. LDPE

B. PHBV

C. PAN

D. HDPE

Answer: D



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14. Iodoform is used as

- A. antiseptic
- B. antibiotic
- C. insecticide
- D. anaesthetic

Answer: A

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15. Which of the following amines gives yellow oily liquid with nitrous acid?

- A. Ethyl amine
- B. Methyl amine
- C. Diethyl amine
- D. Triethyl amine

Answer: C

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March 2014

1. To get n -type doped semiconductor, impurity to be added to silicon should have the following number of valence electrons

A. 2

B. 3

C. 4

D. 5

Answer: D

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2. Number of faradays of electricity required to liberate 12 g of hydrogen is

A. 1

B. 8

C. 12

D. 16

Answer: C



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3. What is the molecular formula of oleum?

A. H_2SO_3

B. H_2SO_4

C. $H_2S_2O_7$

D. $H_2S_2O_8$

Answer: C



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4. Purification of aluminium by electrolytic refining is carried out by

- A. Hoope process
- B. Hall process
- C. Baeyer process
- D. Serperckprocess

Answer: A



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5. The rate of reaction for certain reaction is expressed as :

$$\frac{1}{3} \frac{d[A]}{dt} = - \frac{1}{2} \frac{d[B]}{dt} = - \frac{d[C]}{dt} \text{ The reaction is:}$$

- A. $3A \rightarrow 2B + C$
- B. $2B \rightarrow 3A + C$
- C. $2B + C \rightarrow 3A$

$$D. 3A + 2B \rightarrow C$$

Answer: A



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6. A system absorbs 640 J heat and does work of 260 J, the change in internal energy of the system will be

A. +380 J

B. -380 J

C. +900 j

D. -900 J

Answer: C



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7. Which of the following is 'not' a colligative property?

- A. Vapour pressure
- B. Depression in freezing point
- C. Elevation in boiling point
- D. Osmotic pressure

Answer: A



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8. Which among the following pairs of elements 'not' an example of chemical twins?

- A. Zr and Hf
- B. Nb and Ta
- C. Mo and W
- D. Ta and Re

Answer: D



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9. IUPAC name of $K_4[Fe(CN)_6]$ is-

- A. tetrapotassium ferrocynaide
- B. potassium ferricyanide
- C. potassium ferrocyanide
- D. potassium hexacyanoferrate

Answer: D



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10. Carbon atom in methyl carbocation contains how many pairs of electrons?

A. 8

B. 4

C. 3

D. 5

Answer: C

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11. Formalin is 40 % aqueous solutions of

A. Methanal

B. Methanoic acid

C. Methanol

D. Methanamine

Answer: A

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12. Identify the weakest base amongst the following

A. p-methoxyaniline

B. o-toluidine

C. benzene-1,4-diamine

D. 4-aminobenzoic acid

Answer: D



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13. How many moles of acetic anhydride will be required to form glucose pentaacetate from 2M of glucose?

A. 2

B. 5

C. 10

D. 2.5

Answer: C



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14. Bakelite is the polymer of

- A. Benzaldehyde and phenol
- B. Acetaldehyde and phenol
- C. Formaldehyde and phenol
- D. Formaldehyde and benzyl alcohol

Answer: C



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1. Arrhenius equation is

A. $K = Ae^{\frac{RT}{Ea}}$

B. $A = Ke^{\frac{-Ea}{RT}}$

C. $K = A. e^{\frac{-RT}{Ea}}$

D. $A = E. e^{\frac{Ea}{RT}}$

Answer: D



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2. If the enthalpy of vaporization of water at 100°C is 186.5 J. mol^{-1} , the entropy of vaporization will be:-

A. $4.0\text{ J. K}^{-1}. \text{mol}^{-1}$

B. $3.0\text{ J. K}^{-1}. \text{mol}^{-1}$

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

D. $0.5\text{ J. K}^{-1}. \text{Mol}^{-1}$

Answer: D



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3. The atomicity of sulphur in orthorhombic sulphur is-

A. 8

B. 6

C. 4

D. 2

Answer: A



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4. The major binding force in diamond is-

A. Covalent bond

B. Ionic bond

C. Metallic bond

D. Co-ordinate covalent bond

Answer: A

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5. The boiling point of water at high altitude is low, because-

A. the temperature is low.

B. the atmospheric pressure is low.

C. the temperature is high.

D. the atmospheric pressure is high.

Answer: B

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6. The molar conductivity of cation and anion of salt BA are 180 AND 220 mhos respectively. The molar conductivity of salt BA at infinite dilution is-

- A. 90 mhos. $cm^2 \cdot Mol^{-1}$
- B. 110 mhos. $cm^2 \cdot Mol^{-1}$
- C. 200 mhos. $cm^2 \cdot Mol^{-1}$
- D. 400 mhos. $cm^2 \cdot Mol^{-1}$

Answer: D



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7. What is the process in which concentrated ore is reduced to the corresponding metal by heating at high temperature with a reducing agent?

- A. Polling
- B. Pyrometallurgy

C. Hydrometallurgy

D. Calcination

Answer: B



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8. Mohr's salt is-

A. Ferrous ammonium sulphate

B. Ammonium sulphate

C. Ferrous sulphate

D. Ferric sulphate

Answer: A



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9. Alkyl halide are-

- A. Mono halogen derivatives of alkanes
- B. Trihalogen derivatives of alkanes
- C. Di halogen derivatives of alkanes
- D. Tetra halogen derivatives of alkanes

Answer: A



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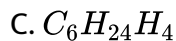
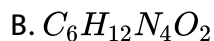
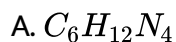
10. Which of the followings is a trihydric alcohol?

- A. n-propyl alcohol
- B. Glycerol
- C. Glycol
- D. Glycine

Answer: B

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11. Which among the following molecular formulae represents urotropine?



Answer: A

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12. Which of the following is polyimide?

- A. Teflon
- B. Terylene
- C. Nylon 6,6
- D. Bakelite

Answer: C

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13. Vitamin C belongs to the class of

- A. Vitamins of aliphatic series
- B. Vitamin of aromatic series
- C. Vitamins of alicyclic series
- D. Vitamins of heterocyclic series

Answer: A

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March 2015

1. p-type semi-conductors are made by mixing silicon with impurities of-

A. germanium

B. boron

C. arsenic

D. antimony

Answer: B



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2. Amongst the following identify the criterion for a process to be at equilibrium-

A. $\Delta G < 0$

B. $\Delta G > 0$

C. $\Delta S_{\text{total}} = 0$

D. $\Delta S < 0$

Answer: C

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3. Colligative property depends only on - in a solution.

A. Number of solute particles

B. Number of solvent particles.

C. Nature of solute particles.

D. Nature of solvent particles.

Answer: A

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4. The charge of how many coulomb is required to deposit 1.0 g of sodium metal (molar mass 23.0 g mol^{-1}) from solution ions is-

- A. 2098
- B. 96500
- C. 193000
- D. 4196

Answer: D



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5. What is the chemical composition of malachite?

- A. $\text{CuO} \cdot \text{CuCO}_3$
- B. $\text{Cu}(\text{OH})_2 \cdot \text{CuCO}_3$
- C. $\text{CuO} \cdot \text{Cu}(\text{OH})_2$
- D. $\text{Cu}_2\text{O} \cdot \text{Cu}(\text{OH})_2$

Answer: B



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6. The element that does NOT exhibit allotropy is-

A. As

B. Sb

C. Bi

D. N

Answer: C



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7. The integrated rate equation for first order reaction is $A \rightarrow \text{products}$.

A. $k = 2.303 t \frac{\log_{10}([A]_0)}{[A]_t}$

$$B. k = -\frac{1}{t} \frac{\ln([A]_t)}{[A]_0}$$

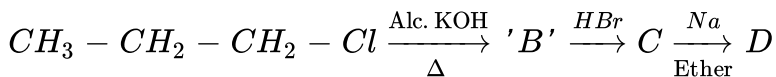
$$C. k = \frac{2.303}{t} \frac{\log_{10}([A]_t)}{[A]_0}$$

$$D. k = \frac{1}{2} \frac{\ln([A]_t)}{[A]_0}$$

Answer: B

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8. Identify the product 'D' in the following sequence of reactions:



A. 2,2-dimethylbutane

B. 2,3-dimethylbutane

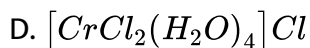
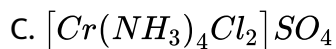
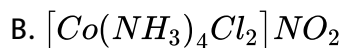
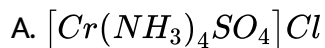
C. hexane

D. 2,4-dimethylpentane

Answer: B

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9. Which of the following complexes will give a white precipitate on treatment with a solution of barium nitrate?



Answer: C



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10. What is the geometry of chromate ion?

A. Tetrahedral

B. Octahedral

C. Trigonal planar

D. Linear

Answer: A

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11. Primary and secondary nitroalkanes containing α -H atom show property of.....

A. Chain isomerism

B. Tautomerism

C. Optical isomerism

D. Geometrical isomerism

Answer: B

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12. In phenol carbon atom attached to -OH undergoes.....

A. sp^3 hybridisation

B. sp hybridisation

C. sp^2 hybridisation

D. no hybridisation

Answer: C



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13. Identify the strongest acid amongst the following

A. chloroacetic acid

B. Acetic acid

C. Trichloroacetic acid

D. Dichloroacetic acid

Answer: C



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14. Which of the following vitamins is water soluble

A. A

B. D

C. E

D. B

Answer: D



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October 2015

1. The hybridisation of phosphorus in phosphorus pentachloride is

A. dsp^3

B. sp^3d

C. sp^3d^2

D. sp^3d^2

Answer: B



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2. The rate constant for a first order reaction is 100 S^{-1} . The time required for completion of 50 % of reaction is-

A. 0.0693 milliseconds

B. 0.693 milliseconds

C. 6.93 milliseconds

D. 69.3 milliseconds

Answer: C

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3. Silica is added to roasted copper ore during smelting process to remove-

- A. ferrous sulphide
- B. ferrous oxide
- C. cuprous sulphide
- D. cuprous oxide

Answer: B

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4. 96500 coulombs corresponds to the charge on how many electrons-

- A. 1.6×10^{19}
- B. 6.022×10^{20}

C. 6.022×10^{23}

D. 6.022×10^{24}

Answer: C

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5. For the reaction : $Cl_2(g) \rightarrow 2Cl_g$

- A. ΔH is positive, ΔS is positive.
- B. ΔH is positive, ΔS is negative.
- C. ΔH is negative, ΔS is negative
- D. ΔH is negative, ΔS is positive

Answer: A

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6. The substance 'X' when dissolved in solvent water gave molar mass corresponding to the molecular formula X_3 . The van't Hoff factor (i) is

- A. 3
- B. 0.33
- C. 1.3
- D. 1

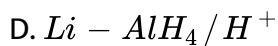
Answer: B



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7. Which among the following reducing agents is 'not' used to reduce acetaldehyde to ethyl alcohol?

- A. Na-Hg and water
- B. Zn-Hg and conc. HCl
- C. H_2 -Raney Ni



Answer: B



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8. Acetaldehyde, when treated with which among the following reagents does 'not' undergo addition reaction?

A. ammonia

B. hydroxyl amine

C. ammoniacal silver nitrate

D. semicarbazide

Answer: C



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9. What is natural rubber?

A. cis-1, 4-polyisoprene

B. neoprene

C. Trans-1, 4-polyisoprene

D. Butyl rubber

Answer: A



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10. What is salvarsan?

A. An antiseptic

B. An antibiotic

C. An antifertility drug

D. An analgesic

Answer: B



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11. Which among the following vitamins is also known as riboflavin?

A. B_1

B. B_2

C. B_6

D. B_{12}

Answer: B



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12. The amine which reacts with nitrous acid to give yellow oily compound

is:

- A. Ethyl amine
- B. Isopropyl amine
- C. Secondary butyl amine
- D. Dimethyl amine

Answer: D

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13. What is the molecular formula of chromyl chloride?

- A. CrO_2Cl_2
- B. $CrOCl_2$
- C. $CrCl_3$
- D. Cr_2OCl_2

Answer: A

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February 2016

1. The molecular formula $H_2S_2O_2$ represents which oxoacid among the following?

A. Hydrosulphurous acid

B. Thiosulphuric acid

C. Sulphuric acid

D. Pyrosulphurous acid

Answer: B



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2. Iodine exists as-

A. polar molecular solid

- B. ionic acid
- C. nonpolar molecular solid
- D. hydrogen bonded molecular solid

Answer: C

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3. Absolute entropies of solids, liquids and gases can be determined by-

- A. Measuring heat capacity of substances at various temperatures
- B. Subtracting standard entropy of reactants from products.
- C. Measuring vibrational motion of molecules.
- D. Using formula $\Delta S^\circ = S_T^\circ - S_0^\circ$.

Answer: A

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4. The determination of molar mass from elevation in boiling point is called as-

- A. cryoscopy
- B. colorimetry
- C. ebulliscopy
- D. spectroscopy

Answer: C



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5. The process of leaching alumina, using sodium carbonate is called-

- A. Bayer's process
- B. Decomposition
- C. Cyanide process
- D. Hall's process

Answer: D



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6. On calculating the strength of current in amperes if a charge of 840 C (coulomb) passes through an electrolyte in 7minutes, it will be

A. 1

B. 2

C. 3

D. 4

Answer: B



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7. $A \rightarrow B$ is a first order reaction with rate $6.6 \times 10^{-5} m. s^{-1}$. When [A] is 0.6 m, rate constant of the reaction is-

A. $1.1 \times 10^{-5} \text{ s}^{-1}$

B. $1.1 \times 10^{-4} \text{ s}^{-1}$

C. $9 \times 10^{-5} \text{ s}^{-1}$

D. $9 \times 10^{-4} \text{ s}^{-1}$

Answer: B

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8. The preparation of alkyl fluoride from alkyl chloride, in presence of metallic fluorides is known as,

A. Williamson's reaction

B. Finkelstein reaction

C. Swarts reaction

D. Wurtz reaction

Answer: C

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9. Identify the weakest acidic compound amongst the following

- A. p-nitrophenol
- B. p-chlorophenol
- C. p-cresol
- D. p-aminophenol

Answer: D

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10. On acid hydrolysis, propane nitrile gives

- A. propanal
- B. acetic acid
- C. propionamide

D. propanoic acid

Answer: D

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11. Which of the following amines yields foul smelling product with iodoform and alcoholic KOH?

A. Ethyl amine

B. Diethyl amine

C. Triethyl amine

D. Ethyl methyl amine

Answer: A

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12. Which of the following NOT present in DNA?

- A. Adenine
- B. Guanine
- C. Thymine
- D. Uracil

Answer: D



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13. Amongst the followings, identify a copolymer?

- A. Orlon
- B. PVC
- C. PHBV
- D. Teflon

Answer: C



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14. Phenelzin is used as an

- A. analgesic
- B. antiseptic
- C. antipyretic
- D. antidepressant

Answer: D



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1. An antifriction alloy made up of antimony with tin and copper, which is extensively used in machine bearings is called-

- A. Duralumin
- B. Babbitt metal
- C. Spiegeleisen
- D. Amalgams

Answer: A::B



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2. Which of the following pairs is an intensive property?

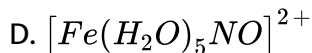
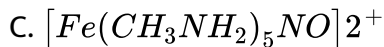
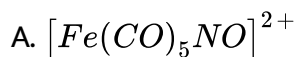
- A. Density, viscosity
- B. Surface tension, mass
- C. Viscosity, internal energy
- D. Heat capacity, volume

Answer: A::C::D



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3. Fe^{2+} ions react with nitric oxide formed from reduction of nitrate and yields a brown coloured complex-



Answer: B::D



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4. MnO_2 and $Ca_3(PO_4)_2$ present in iron ore get reduced to Mn and P in the zone of-

A. combustion

B. reduction

C. fusion

D. slag formation

Answer: C

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5. An ionic compound crystallises in FCC type structure with 'A' ions at the center of each face and 'B' ions occupying corners of the cube. The formula of compound is-

A. AB_4

B. A_3B

C. AB

D. AB_3

Answer: A::B::C

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6. On passing 1.5 F charge, the number of moles of aluminium deposited at cathode are- [Molar mass of Al = 27 gram mol⁻¹]

A. 1.0

B. 13.5

C. 0.50

D. 0.75

Answer: C

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7. For a chemical reaction, $A \rightarrow$ products, the rate of reaction doubles when the concentration of 'A' is increased by a factor of 4, the order of

reaction is-

A. 2

B. 0.5

C. 4

D. 1

Answer: B



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8. When KOH solution is added to potassium dichromate solution the colour of solution changes to yellow, because:



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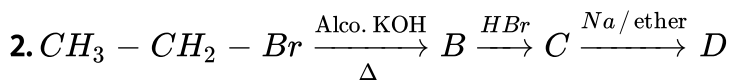
1. When primary amine reacts with $CHCl_3$ in alcoholic KOH, the product is:

- A. aldehyde
- B. alcohol
- C. cyanide
- D. an-isocyanide

Answer: A::C::D



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The compound D is:

- A. ethane
- B. propane
- C. n-butane

D. n-pentane

Answer: A::B::C



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3. Cisplatin compound is used in the treatment of

A. malaria

B. cancer

C. AIDS

D. yellow fever

Answer: A::B::C



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4. A gas when passed through $K_2Cr_2O_7$ and dil. H_2SO_4 solution turns it green, the gas is

A. CO_2

B. NH_3

C. SO_2

D. Cl_2

Answer: B::C



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5. The alcohol used in thermometers is:

A. Methanol

B. Ethanol

C. Propanol

D. Butanol

Answer: A::B



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6. Which of the following vitamins is the vitamin of alicyclic series?

A. Vitamin C

B. Vitamin K

C. Vitamin B

D. Vitamin A

Answer: A::D



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7. Which of the following is the first oxidation product of secondary alcohol?

A. Alkene

B. Aldehyde

C. Ketone

D. Carboxylic acid

Answer: C

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Mct Cet 2015 Solid State

1. Select a ferromagnetic material from the following

A. Dioxygen

B. Chromium (IV) oxide

C. Benzene

D. Dihydrogen monoxide

Answer:



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2. Identify a metalloid from the following list of elements

A. Carbon

B. Neon

C. Sodium

D. Tellurium

Answer: D



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3. Which metal among the following has the highest packing efficiency?

A. Iron

B. Tungsten

C. Aluminium

D. Polonium

Answer: C

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Mct Cet 2015 Solution And Colligative Properties

1. If M, W and V represents molar mass of solute, mass of solute and volume of solution in litres respectively, which among following equations is true?

A. $\pi = \frac{MWR}{TV}$

B. $\pi = (TMR)(WV)$

C. $\pi = \frac{TMR}{VM}$

D. $\pi = \frac{TRV}{WM}$

Answer: C

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2. What is the volume of consumed during acid hydrolysed of 1.398 kg of sucrose?

(Given: molar masses of sucrose water =18, density of water = $1\text{g}/\text{cm}^3$)

A. 0.072dm^3

B. 0.720dm^3

C. 0.18dm^3

D. 0.018dm^3

Answer: A

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3. Molarity is defined as

- A. The number of moles of solute dissolved in one dm^3 of the solution
- B. The number of moles of solute dissolved in 1 Kg of solvent
- C. the number of moles of solute dissolved in dm^3 of the solvent
- D. the number of moles of solute dissolved in 100 ml of the solvent

Answer: A

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4. Which among the following alloys is used making instruments for electrical measurements?

- A. Stainless steel
- B. Manganin
- C. Spiegeleisen
- D. Duralumin

Answer: B



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5. Van't Hoff factor of centimolal solution of $K_3[Fe(CN)_6]$ is 3.333 .

Calculate the percent dissociation of $K_3[Fe(CN)_6]$

A. 33.33

B. 0.78

C. 78

D. 23.33

Answer: C



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1. For which among the following reactions, change in entropy is less than zero?

- A. Sublimation of Iodine
- B. Dissociation of Hydrogen
- C. Formation of Hydrogen
- D. Thermal decomposition of Calcium Carbonate

Answer: C



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2. Given $R = 8.314JK^{-1}mol^{-1}$, the work done during combustion of 0.090 kg of ethane (molar mass= 30) at 300 K is

- A. -18.7 kJ
- B. 18.7 kJ
- C. $6.234kJ$

D. $-6.234kJ$

Answer: B



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3. Which among the following is a feature of adiabatic expansion ?

A. $\Delta V < 0$

B. $\Delta U < 0$

C. $\Delta U > 0$

D. $\Delta T = 0$

Answer: B



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4. Calculate the work done during compression of 2 mol of an ideal gas from a volume of 1m^3 to 10dm^3 300 K against a pressure of 100 KPa .

- A. 99 kJ
- B. -99 kJ
- C. 114.9 kJ
- D. -114.9 kJ

Answer: A

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Electrochemistry

1. The overall reaction taking place at anode during electrolysis of fused sodium chloride using suitable electrode is

- A. Oxidation of Chlorine ions

- B. Reduction of sodium ions
- C. Reductions of chlorine
- D. Oxidation of sodium atoms

Answer: A

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2. Which among the following solutions is NOT used in determination of the cell constant?

- A. 10^{-2} M KCl
- B. 10^{-1} M KCl
- C. 1 M KCl
- D. Saturated KCl

Answer: C

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Chemical Kinetics

1. For the reaction $O_{3(g)} + O_{(g)} \rightarrow 2O_{2(g)}$, if the rate law expression is $\text{rate} = k[O_3][O]$ the molecularity and order of the reaction are respectively _____.

A. 2 and 2

B. 2 and 1.33

C. 2 and 1

D. 1 and 2

Answer: A

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2. The relationship between rate constant and half life period of zero order reaction is given by _____.

A. $t_{\frac{1}{2}} = \frac{[A]_0}{2k}$

B. $t_{\frac{1}{2}} = \frac{0.693}{k}$

C. $t_{\frac{1}{2}} = \frac{[A]_0}{2k}$

D. $t_{\frac{1}{2}} = \frac{2[A]_0}{k}$

Answer: C



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General Principles And Processes Of Isolation Of Elements

1. The process in which metal surface is made inactive is called

A. Passivation

B. Galvanizing

C. Corrosion

D. Pickling

Answer: A



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2. Name the metal that is purified by placing the impure metal on sloping hearth of a reverberatory furnace and heating that above its melting point in absence of air.

A. Mercury

B. Galium

C. Zirconium

D. Copper

Answer: A



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3. How is ore of aluminium concentrated?

A. Roasting

B. Leaching

C. Froth floatation

D. Using Wilfely table

Answer: B

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4. Which among the following group 15 element forms most stable pentavalent compound ?

A. Phosphorus

B. Antimony

C. Bismuth

D. Arsenic

Answer: A

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5. What is the most abundant element on earth ?

- A. Hydrogen
- B. Nitrogen
- C. Oxygen
- D. Silicon

Answer: C

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6. What is the basicity of orthophosphorous acid ?

- A. One
- B. Two
- C. Three

D. Four

Answer: B

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7. Which halogen forms an oxoacids that contains the halogen atom in tripositive oxidation state ?

A. Fluorine

B. Chlorine

C. Bromine

D. Iodine

Answer: B

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8. Which oxoacid of sulphur contains S-S bond in its structure ?

- A. Disulphurous acid
- B. Disulphuric acid
- C. Perdisulphuric acid
- D. Hydrosulphurous acid

Answer: D



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P Block Elements

1. Electronic configuration of only one P block element is exceptional one molecule of that element consists of how many atoms of it ?

- A. One
- B. Two

C. Three

D. Four

Answer: A

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D And F Block Elements

1. Select a ferromagnetic material from the following

A. Dioxygen

B. Chromium (IV) oxide

C. Benzene

D. Dihydrogen monoxide

Answer: B

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2. Potassium dichromate is a good oxidizing agent, in acidic medium the oxidation state of chromium changes by

A. 2

B. 3

C. 4

D. 5

Answer: B



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3. The only radioactive element among the lanthanoids is

A. Gadolinium

B. Holmium

C. Promethium

D. Neodymium

Answer: C



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4. Identify a 'Chemical twin' among the following.

A. Zr-Ta

B. Nb-Tc

C. Hf-Re

D. Nb-Ta

Answer: D



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1. The correct IUPAC name of $[Co(NH_3)_3(NO_2)_3]$

- A. Triammine trinitrito - N cobalt (III)
- B. Triammine trinitrito - N cobalt (II)
- C. Triammine cobalt (III) nitrite
- D. Triammine trinitrito-N cobaltate (III)

Answer: A



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2. $[Cr(NH_3)_6]$ $[Cr(SCN)_6]$ and $[Cr(NH_3)_2(SCN)_4]$ $[Cr(NH_3)_4(SCN)_2]$ are the examples of what type of isomerism?

- A. Ionisation isomerism
- B. Linkage isomerism
- C. Coordination isomerism

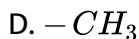
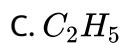
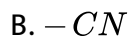
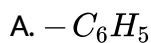
D. Solve isomerism

Answer: C

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Haloalkanes And Haloarenes

1. Which among the following functional groups has been given the highest priority while assigning R-S configuration



Answer: B

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2. What is the chemical composition of Nicol's prism?

- A. Al_2O_3
- B. $CaSO_4$
- C. $CaCO_3$
- D. Na_3AlF_6

Answer: C



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3. Chlorination of ethane is carried out in presence of

- A. anhydrous $AlBr_3$
- B. mercuric chloride
- C. ultraviolet light
- D. zinc chloride

Answer: C

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Alcohols Phenols And Ethers

1. What is the possible number of monohydroxy derivatives of hydrocarbon consisting of five carbon atoms with one methyl group as a branch?

A. 2

B. 3

C. 4

D. 5

Answer: C

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2. Which of the following compounds has highest boiling point?

A. Propan-1-ol

B. n-butane

C. Chloroethane

D. Propanal

Answer: A



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3. Reaction of which among the following ethers with HI in cold leads to formation of alcohol?

A. ethylmethyl ether

B. methyl propyl ether

C. isopropyl methyl ether

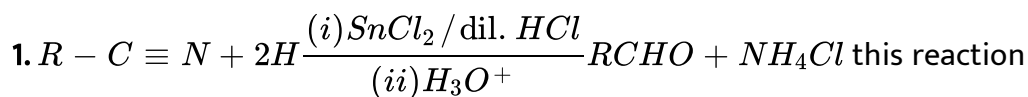
D. teri-butyl methyl ether

Answer: D



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Aldehydes Ketones And Carboxylic Acids



is known as

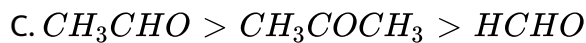
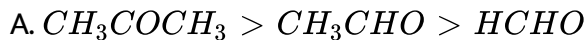
- A. Etard reaction
- B. Stephen reaction
- C. Hell-Vohlard-Zelinsky reaction
- D. Balz-Schiemann reaction

Answer: B



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2. The correct order of reactivity of aldehydes and ketones towards hydrogen cyanide is



Answer: D



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3. A mixture of benzaldehyde and formaldehyde when treated with 50 % NaOH yields.

A. Sodium benzoate and sodium formate

B. Sodium formate and benzyl alcohol

C. Sodium benzoate and methyl alcohol

D. Benzyl alcohol and methyl alcohol

Answer: B

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4. Which of the following compounds is most acidic in nature ?

A. 4-chlorobutanoic acid

B. 3-Chlorobutanoic acid

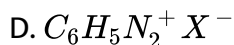
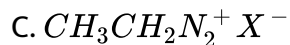
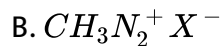
C. 2-Chlorobutanoic acid

D. Butanoic acid

Answer: C

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1. Which of the following is the most stable diazonium salt?



Answer: D



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2. The replacement of diazonium group by fluorine is known as

A. Gattermann reaction

B. Sandmeyer reaction

C. Balz-Schiemann reaction

D. Etard reaction

Answer: C

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3. Diethyl amine when treated with nitrous acid yields

A. Diethyl ammonium nitrite

B. Ethyl alcohol

C. N-nitroso diethyl amine

D. Triethyl ammonium nitrite

Answer: C

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Biomolecules

1. Which of the following proteins is globular?

A. Collagen

B. Albanium

C. Myosin

D. Fibroin

Answer: B



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2. During conversion of glucose into glucose cyanohydrin, what functional group/atom of glucose is replaced?

A. hydrogen

B. aldehyde group

C. primary alcoholic group

D. secondary alcoholic group

Answer: B

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Polymers

1. Identify the heteropolymer from the list given below :

A. Polythene

B. Nylon -6

C. Teflon

D. Nylon -6,6

Answer: D

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2. Which polymer among the following polymers does NOT soften on heating?

- A. Bakelite
- B. Polythene
- C. Polystyrene
- D. PVC

Answer: A

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Chemistry In Everyday Life

1. Which among the following is a tranquilizer?

- A. Aspirin
- B. Valium
- C. Penicillin
- D. Sulphanilamide

Answer: B



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2. Which among the following detergents is non-ionic in character?

- A. Sodiumlauryl sulphate
- B. Pentaerythrityl sterate
- C. Cetyltrimethyl ammonium chloride
- D. Sodium n-dodecyl benzene sulphonate

Answer: B



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Mht Cet 2016

1. The equation that represents van't Hoff general solution equation is

A. $\pi = \frac{n}{V}RT$

B. $\pi = nRT$

C. $\pi = \frac{V}{n}RT$

D. $\pi = nVRT$

Answer: A

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2. Which is the most stable allotrope of sulphur ?

A. Octahedral sulphur

B. Monoclinic sulphur

C. Plastic sulphur

D. Collodial sulphur

Answer: A

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3. How many Faradays of electricity are required to deposit 10 g of calcium from molten calcium chloride using inert electrodes ?

(molar mass of calcium = 40g mol^{-1})

A. 0.5 F

B. 1F

C. 0.25 F

D. 2F

Answer: A



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4. Name the reagent that is used in leaching of gold

A. Carbon

B. Sodium cyanide

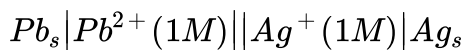
C. Carbon monoxide

D. Iodine

Answer: B

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5. In the cell represented by



the reducing agents is

A. Pb

B. Pb^{2+}

C. Ag

D. Ag^+

Answer: A

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6. Which metal crystallises in a simple cubic structure?

A. Polonium

B. Copper

C. Nickel

D. Iron

Answer: A



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7. The element that does NOT form acidic oxide is

A. Carbon

B. Phosphorus

C. Chlorine

D. Barium

Answer: D



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8. Which metal is refined by Mond process?

A. Titanium

B. Copper

C. Nickel

D. Zinc

Answer: C



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9. In face centred cubic unit cell, what is the volume occupied?

A. $\frac{4}{3}\pi r^3$

B. $\frac{8}{3}\pi r^3$

C. $\frac{16}{3}\pi r^3$

D. $\frac{64r^3}{3\sqrt{3}}$

Answer: C



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10. In dry cell, what acts as negative electrode?

A. Zinc

B. Graphite

C. Ammonium chloride

D. Manganese dioxide

Answer: A



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11. 5.0 g of sodium hydroxide (molar mass 40 g mol^{-1}) is dissolved in little quantity of water and the molarity of the resulting solution?

- A. 0.1 mol dm^{-3}
- B. 1.0 mol dm^{-3}
- C. $0.125 \text{ mol dm}^{-3}$
- D. 1.25 mol dm^{-3}

Answer: D



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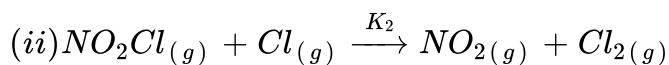
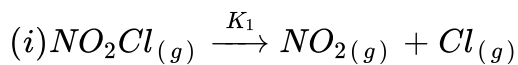
12. Which halide of magnesium has highest ionic character?

- A. Chloride
- B. Bromide
- C. Iodide
- D. Fluoride

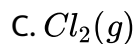
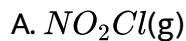
Answer: A

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13. The reaction takes place in two steps as



Identify the reaction intermediate .



Answer: D

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14. The relation between solubility of a gas in liquid at constant temperature and external pressure is stated by which law?

- A. Raoult's law
- B. van't Hoff Boyle's law
- C. van't Hoff Charle's law
- D. Henry's law

Answer: D



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15. Which among the following solids is a nonpolar solid?

- A. Hydrogen chloride
- B. Sulphur dioxide
- C. Water
- D. carbon dioxide

Answer: D

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16. What is the highest oxidation state exhibited by group 17 elements ?

A. +1

B. +3

C. +5

D. +7

Answer: D

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17. Mathematical equation of first law of thermodynamics for isochoric process is

A. $\Delta U = q_v$

B. $-\Delta U = q_v$

C. $q = -W$

D. $\Delta U = W$

Answer: A

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18. The rate constant and half - life of a first order reaction are related to each other as _____.

A. $t_{1/2} = \frac{0.693}{K}$

B. $t_{1/2} = 0.693K$

C. $K = 0.693t_{1/2}$

D. $Kt_{1/2} = \frac{1}{0.693}$

Answer: A

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19. The criterion for a spontaneous process is

A. $\Delta G > 0$

B. $\Delta G < 0$

C. $\Delta G = 0$

D. $\Delta S_{\text{total}} < 0$

Answer: D

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20. Brown ring tests is used for detection of nitrate (NO_3^-) radical.

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21. Identify the compound amongst the following of which 0.1 M aqueous solution has highest boiling point.

- A. Glucose
- B. Sodium chloride
- C. Calcium chloride
- D. Ferric chloride

Answer: D



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22. The most abundant noble gas in the atmosphere is

- A. Neon
- B. Argon
- C. Xenon
- D. Krypton

Answer: B

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23. Identify an extensive property amongst the following

- A. Viscosity
- B. Heat capacity
- C. Density
- D. Surface tension

Answer: B

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24. Average rate of reaction for the following reaction,

$2SO_2(g) + O_2(g) \rightarrow 2SO_3(g)$ is written as

A. $\frac{\Delta[SO_2]}{\Delta t}$

B. $-\frac{\Delta[O_2]}{\Delta t}$

C. $\frac{1}{2} \frac{\Delta[SO_2]}{\Delta t}$

D. $\frac{\Delta[SO_3]}{\Delta t}$

Answer: B



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25. What is the amount of work done when 0.5 mole of methane, $CH_4(g)$ is subjected to combustion at 300 K? (given, $R = 8.314 Jk^{-1}mol^{-1}$)

A. $-2494J$

B. $-4988J$

C. $+4988J$

D. $+2494J$

Answer: D

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26. If 'n' represents total number to asymmetric carbon atoms in a compound, the possible number of optical isomers of the compound is

A. $2n$

B. n^2

C. 2^n

D. $2n + 2$

Answer: C

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27. Which of the following is an analgesic?

A. Ofloxacin

B. Penicilin

C. Aminoglycosides

D. Paracetamol

Answer: D

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28. The compound which is not formed when a mixture of n-butyl bromide and ethyl bromide treated with sodium metal in the presence of dry ether is

A. Butane

B. Octane

C. Hexane

D. Ethane

Answer: D

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29. What is the general molecular formula of the products obtained on heating lanthanoids (Ln) with sulphur?

A. LnS

B. LnS_3

C. Ln_3S_2

D. $\text{Ln}(2)\text{S}_3$

Answer: D



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30. Butylated hydroxy anisole is

A. An antioxidant

B. Cleansing agent

C. Disinfectant

D. An antihistamine

Answer: A

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31. The amine 'A' when treated with nitrous acid give yellow only substance. The amine A is

A. triethylmine

B. trimethylamine

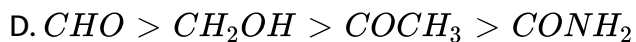
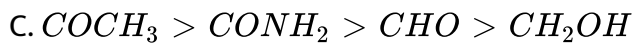
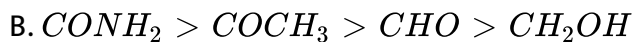
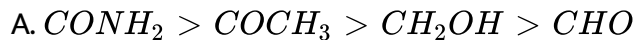
C. aniline

D. methylphenylamine

Answer: D

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32. While assigning R,S configuration the correct order of priority of groups attached to chiral carbon atom is



Answer: B



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33. Bullet proof helmets are made from

A. Lexan

B. Saran

C. Glyptal

D. Thiokol

Answer: A



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34. Isopropyl methyl ether when treated with cold hydrogen iodide gives

- A. isopropyl iodide and methyl iodide
- B. isopropyl alcohol and methyl iodide
- C. isopropyl alcohol and methyl alcohol
- D. isopropyl iodide and methyl alcohol

Answer: B



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35. Glucose on oxidation with bromine water yields gluconic acid. This reaction confirms the presence of

- A. six carbon atoms lined in straight chain
- B. secondary alcoholic group in glucose
- C. aldehyde group in glucose
- D. primary alcoholic group in glucose

Answer: C

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36. How is sodium chromate converted into sodium dichromate in the manufacture of potassium dichromate from chromite ore?

- A. By the action of concentrated sulphuric acid
- B. By roasting with soda ash
- C. By the action of sodium hydroxide
- D. By the action of lime stone.

Answer: A

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37. Select the compound which on treatment with nitrous acid liberates nitrogen.

- A. Nitroethane
- B. Triethylamine
- C. Diethylamine
- D. Ethylamine

Answer: D

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38. Which of the following compounds when treated with dibenzyl cadmium yields benzyl methyl ketone?

- A. Acetone

B. Acetaldehyde

C. Acetic acid

D. Acetyl chloride

Answer: D



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39. Which of the following aminoacids is basic in nature?

A. Valine

B. Tyrosine

C. Arginine

D. Leucine

Answer: C



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40. Which among the following phenolic compounds is most acidic in nature?

- A. p-aminophenol
- B. phenol
- C. m-nitrophenol
- D. p-nitrophenol

Answer: D



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41. Identify the metal that forms colourless compounds.

- A. Iron (Z=26)
- B. Chromium (Z=24)
- C. Vanadium (Z=23)
- D. Scandium (Z=21)

Answer: D



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42. Name the catalyst used in commercial method of preparation of phenol.

A. Silica

B. Calcium phosphate

C. Anhydrous aluminium chloride

D. Cobalt naphthenate

Answer: D



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43. What is the combining ratio of glycerol and fatty acids when they combine to form triglyceride?

A. 3:4

B. 3:2

C. 1:3

D. 1:2

Answer: C



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44. The molecular formula of Wilkinson catalyst, used in hydrogenation of alkenes is

A. $Co(CO)_3$

B. $(Ph_3P)_3RhCl$

C. $[Pt(NH_3)_2Cl_2]$

D. $K[Ag(CN)_2]$

Answer: B

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1. The reagent used in Wolff-Kishner reduction is

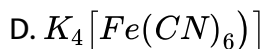
- A. $NH_2 - NH_2$ and KOH in ethylene glycol
- B. Zn-Hg /conce. HCl
- C. $NaBH_4$
- D. $Na - Hg / H_2O$

Answer: A

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2. Which of the following is a neutral complex?

- A. $[Pt(NH_3)_2Cl_2]$



Answer: A

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3. Which reagent is used in Etard reaction?

A. Chromyl chloride

B. Ethanoyl chloride

C. $SnCl_2$ and HCl

D. Cadmium chloride

Answer: A

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4. Which of the following carboxylic acids is a tricarboxylic acid?

- A. Oxalic acid
- B. Citric acid
- C. Succinic acid
- D. Adipic acid

Answer: B



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5. Correct statement for thermoplastic polymer is

- A. It does not become soft on heating under pressure
- B. It can not be remolded
- C. It is either linear or branched chain polymer
- D. It is cross-linked polymer.

Answer: C



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6. Primary nitroalkanes are obtained in good by oxidising aldoximes with the help of

- A. trifluoroperoxyacetic acid
- B. acidified potassium permanganate
- C. concentrated nitric acid
- D. Potassium dichromate and dilute sulphuric acid

Answer: A



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7. The rate constant for a first order reaction is $7.5 \times 10^{-4} \text{ s}^{-1}$. If initial concentration of reactant is $0.080M$, what is the half life of reaction ?

A. 990S

B. 79.2 s

C. 12375 S

D. 10.10×10^{-4} S

Answer: A

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8. The polymer used in making handles of cookers and frying pans is

A. bakelite

B. nylon-2-nylon-6

C. orlon

D. polyvinyl chloride

Answer: A

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9. Which halogen has the highest value of negative electron gain enthalpy ?

A. Fluorine

B. Chlorine

C. Bromine

D. Iodine

Answer: B



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10. What is the actual volume occupied by water molecules present in 20 cm^3 of water?

A. 20 cm^3

B. 10 cm^3

C. 40cm^3

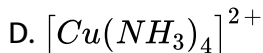
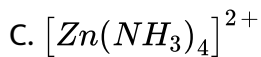
D. 24.49dm^3

Answer: B

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11. Which of the following coordinate complexes is an exception to EAN rule?

(Given At. No. Pt =78, Fe=26, Zn=30, Cu=29]



Answer: D

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12. Which of the following statements is INCORRECT in case of Hofmann bromamide degradation?

- A. Reaction is useful for decreasing length of carbon chain by one carbon atom
- B. It gives tertiary amine
- C. It gives primary amine
- D. Aqueous or alcoholic KOH is used with bromine.

Answer: B



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13. Which of the following statements is INCORRECT for pair of elements Zr-Hf?

- A. Both possess same number of valence electrons.

- B. Both have identical atomic sizes.
- C. Both have almost identical ionic radii.
- D. Both of these belong to same period of periodic table.

Answer: D

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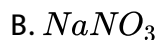
14. Aldehyde or ketones when treated with $C_6H_5 - NH - NH_2$. The product formed is

- A. semicarbazone
- B. phenylhydrazone
- C. hydrazone
- D. oxime

Answer: B

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15. Solubility of which among the following solids in water changes slightly with temperature?



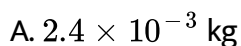
Answer: D



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16. What is the quantity of hydrogen gas liberated when 46g sodium reacts with excess ethanol ?

(Given atomic mass of $Na = 23$)



B. 2.0×10^{-3} kg

C. 4.0×10^{-3} kg

D. 2.4×10^{-2} kg

Answer: B

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17. Identify the weakest oxidising agent among the following:



Answer: A

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18. The monomers used in preparation of dexton are

- A. lactic acid and glycollic acid
- B. 3-Hydroxy butanoic acid and 3-Hydroxy pentanoic acid
- C. styrene and 1,3-Butadiene
- D. hexamethylenediamine and adipic acid

Answer: A



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19. Which among the following compounds does not act as a reducing agent?

- A. H_2O
- B. H_2S
- C. H_2Se
- D. H_2Te

Answer: A



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20. Which of the following processes is NOT used to preserve the food?

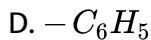
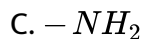
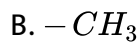
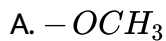
- A. Irradiation
- B. Addition of salts
- C. Addition of heat
- D. Hydration

Answer: D



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21. In case of substituted aniline the group which decreases the basic strength is



Answer: D

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22. Which of the following expression represents Arrhenius equation ?

A. $k = Ae^{Ea/RT}$

B. $k = A. e^{RT/Ea}$

C. $k = \frac{A}{e^{Ea/RT}}$

D. $k = \frac{A}{e^{\frac{R}{E}a}}$

Answer: C

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23. Which of the following compound will give positive iodoform test ?

- A. Isopropyl alcohol
- B. Propionaldehyde
- C. Ethylphenyl ketone
- D. Benzyl alcohol

Answer: A



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24. The first law of thermodynamics for isothermal process is

- A. $q = -W$
- B. $\Delta U = W$
- C. $\Delta U = qv$

D. $\Delta U = -q_v$

Answer: A

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25. The conversion of ethyl bromide using sodium iodide and dry acetone, this reaction is known as

- A. Swarts reaction
- B. Finkelstein reaction
- C. Sandmeyer reaction
- D. Stephen reaction

Answer: B

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26. What is the hybridization of carbon atoms in fullerene?

A. SP^3

B. SP

C. SP^2

D. dSP^3

Answer: C



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27. Which of the following is used as antiseptic ?

A. Chloramphenicol

B. Bithional

C. Cimetidine

D. Chlordiazepoxide

Answer: B

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28. In Preparation of sulphuric acid from sulphur dioxide in lead chamber process. What substance is used as a catalyst?

- A. Manganese dioxide
- B. Vanadium pentoxide
- C. Nitric oxide
- D. Raney Nickel

Answer: B

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29. The correct charge on an co-ordination number of 'Fe' in $K_3[Fe(CN)_6]$ is

A. +2, 4

B. +3, 6

C. +2, 6

D. +3, 3

Answer: B

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30. Which among the following reactions is an example of pseudo first order reaction?

A. Inversion of cane sugar

B. Decomposition of H_2O_2

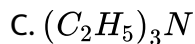
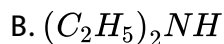
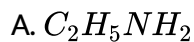
C. Conversion of cyclopropane to propene

D. Decomposition of N_2O_5

Answer: A

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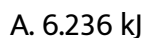
31. The amine which reacts with p-toluenesulphonyl chloride to gives a clear solution which on treating with alkali gives insoluble compound is



Answer: A

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32. The work done during combustion of 9×10^{-2} kg of ethane, $C_2H_6(g)$ at 300 K is (Given $R=8.314 \text{ J deg}^{-1} \text{ mol}^{-1}$, atomic mass C = 12, H=1)



B. -6.236 kJ

C. 18.71 kJ

D. -18.71 kJ

Answer: C



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33. What type of sugar molecule is present in DNA ?

A. D-3-deoxyribose

B. D-ribose

C. D-2-deoxyribose

D. D-Glucopyranose

Answer: C



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34. The molarity of solution containing 15.20g of urea, (molar mass = 60) dissolved in 150g of water is

- A. $1.689 \text{ mol kg}^{-1}$
- B. $0.1689 \text{ mol kg}^{-1}$
- C. $0.5922 \text{ mol kg}^{-1}$
- D. $0.2533 \text{ mol kg}^{-1}$

Answer: A



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35. The acid, which contains both -OH and -COOH groups is

- A. phthalic acid
- B. adipic acid
- C. glutaric acid
- D. salicylic acid

Answer: D



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36. Identify the compound in which phosphorus exists in the oxidation state of +1.

- A. Phosphonic acid (H_3PO_3)
- B. Phosphinic acid (H_3PO_2)
- C. Pyrophosphorus acid ($H_4P_2O_5$)
- D. Orthophosphoric acid (H_3PO_4)

Answer: B



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37. (+2)- Methylbutan-1-ol and (-2)-Methylbutan -1-ol have different values for which property?

- A. Boiling point
- B. Relative point
- C. Refractive index
- D. Specific rotation

Answer: D

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38. Which among the following is NOT a mineral iron?

- A. Haematite
- B. Magnesite
- C. Magnetite
- D. Siderite

Answer: B

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39. Nitration of which among the following compounds yields cyclonite?

- A. Formaldehyde
- B. Benzaldehyde
- C. Urotropine
- D. Acetaldehyde - ammonia

Answer: C



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40. Calculate the work done during compression of 2 mol of an ideal gas from a volume of $1m^3$ to $10dm^3$ 300 K against a pressure of 100 KPa .

- A. $-99kJ$
- B. $+99\text{ kJ}$
- C. $+22.98\text{ kJ}$

D. -22.98 kJ

Answer: B

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41. Which element among the following does form $P\pi - P\pi$ multiple bonds?

A. Arsenic

B. Nitrogen

C. Phosphorus

D. Antimony

Answer: B

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42. Tert-butyl methyl ether on treatment with hydrogen iodide in cold gives

- A. tert-butyl iodide and methyl iodide
- B. tert-butyl alcohol and methyl alcohol
- C. tert-butyl alcohol and methyl iodide
- D. tert-butyl iodide and methyl alcohol

Answer: D



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43. Name the process that is employed to refine aluminium?

- A. Hall's process
- B. Mond process
- C. Hoop's process
- D. Serperck's process

Answer: C



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44. The colour and magnetic nature of manganate ion (MnO_4^{2-}) is

- A. green, process
- B. purple, diamagnetic
- C. green, diamagnetic
- D. purple, paramagnetic

Answer: A



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45. The osmotic pressure of solution containing 34.2g of cane sugar (molar mass = 342 g mol^{-1}) in 1 L of solution at $20^\circ C$ is (Given $R = 0.082 \text{ L atm K}^{-1} \text{ mol}^{-1}$)

A. 2.40 atm

B. 3.6 atm

C. 24 atm

D. 0.0024 atm

Answer: A



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46. In assigning R-S configuration, which among the following groups has highest priority?

A. $-SO_3H$

B. $-COOH$

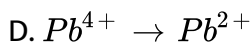
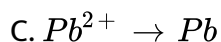
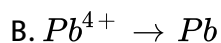
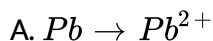
C. $-CHO$

D. $-C_6H_5$

Answer: A

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47. Which among the following equation represents the reduction reaction taking place in lead accumulator at positive electrode, while it is being used as a source of electrical energy?



Answer: D

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48. For which among the following equimolar aqueous solutions vant'Hoff factor has the lowest value?

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49. The amino acid, which is basic in nature is

A. Histidine

B. Tyrosine

C. Proline

D. Valine

Answer: A



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50. Which element among the following does NOT form diatomic molecules?

A. Argon

B. Oxygen

C. Nitrogen

D. Bromine

Answer: A



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51. A molecule of Stachyose contains how many carbon atoms?

A. 6

B. 12

C. 18

D. 24

Answer: D



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52. What is the SI unit of conductivity?

A. Sm

B. Sm^{-1}

C. Sm^2

D. Sm^{-2}

Answer: B

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53. Which of the following is Baeyer's reagent?

A. alkaline $KMnO_4$

B. Acidic $K_2Cr_2O_7$

C. alkaline $Na_2Cr_2O_7$

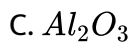
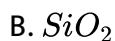
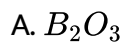
D. MnO_2

Answer: A

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Mht Cet 2070

1. What is the chief constituent of Pyrex glass?



Answer: B



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Mht Cet 2071

1. Which of the following compound has lowest boiling point?

- A. n-butyl alcohol
- B. isobutyl alcohol
- C. tert-butyl alcohol
- D. sec-butyl alcohol

Answer: C

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2. Identify the invalid equation

A. $\Delta H = \sum H(\text{Products}) - \sum H(\text{reactants})$

B. $\Delta H = \Delta U + P\Delta V$

C.

$$\Delta H^\circ(\text{reaction}) = \sum H^\circ(\text{product bonds}) - \sum H^\circ(\text{reactant bonds})$$

D. $\Delta H = \Delta U + \Delta nRT$

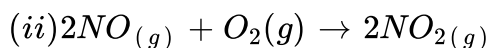
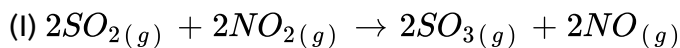
Answer: C



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Question Paper Mht Cet 2018

1. A certain reaction occurs in two steps as



In the reaction, _____.

A. $NO_2(g)$ is intermediate

B. $NO(g)$ is intermediate

C. $NO(g)$ is catalyst

D. $O_2(g)$ is intermediate

Answer: B



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2. Which among the following equations represents the first law of thermodynamics under isobaric conditions?

A. $\Delta U = q_p - p_{ex} \cdot \Delta V$

B. $q_v = \Delta U$

C. $\Delta U = W$

D. $W = -q$

Answer: A



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3. During galvanization of iron, which metal is used for coating iron surface?

A. Copper

B. Zinc

C. Nickel

D. Tin

Answer: B



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4. Formation of PCl_3 is explained on the basis of what hybridisation of phosphorus atom?

A. sp^2

B. sp^3

C. sp^3d

D. sp^3d^2

Answer: B



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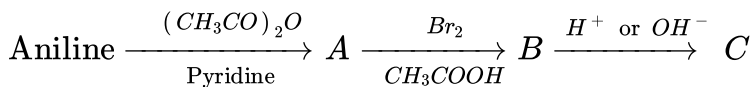
5. Identify the element that forms amphoteric oxide.

- A. Carbon
- B. Zinc
- C. Calcium
- D. Sulphur

Answer: B

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6. Identify the product 'C' in the following reaction.



- A. Acetanilide
- B. p- Bromoacetanilide
- C. p- Bromoaniline

D. o-Bromoaniline

Answer: C



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7. Identify the functional group that has electron donating inductive effect.

A. $-COOH$

B. $-CN$

C. $-CH_3$

D. $-NO_2$

Answer: C



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8. Which among the following metals crystallise as a simple cube?

A. Polonium

B. Iron

C. Copper

D. Gold

Answer: A



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9. Which among the following oxoacids of phosphorus shows a tendency of disproportionation?

A. Phosphinic acid (H_3PO_2)

B. Orthophosphoric acid (H_3PO_4)

C. Phosphonic acid (H_3PO_3)

D. Pyrophosphoric acid ($H_4P_2O_7$)

Answer: C



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10. What is the oxidation number of gold in the complex $[AuCl_4]^{1-}$?

A. +4

B. +3

C. +2

D. +1

Answer: B



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11. Which symbol replaces the unit of atomic mass, amu?

A. u

B. A

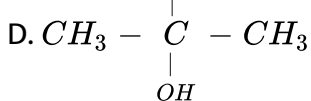
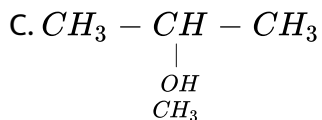
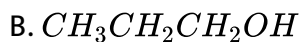
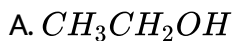
C. M

D. n

Answer: A

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12. Which of the following compounds reacts immediately with Lucas reagent ?



Answer: D

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13. What is the catalyst used for oxidation of SO_2 to SO_3 in lead chamber process for manufacture of sulphuric acid?

- A. Nitric acid
- B. Nitrous oxide
- C. Potassium iodide
- D. Dilute HCl

Answer: A



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14. The number of moles of electrons passed when current of 2 A is passed through an solution of electrolyte for 20 minutes is _____.

- A. $4.1 \times 10^{-4} \text{ mol } e^-$

B. $1.24 \times 10^{-2} \text{ mol } e^{-}$

C. $2.487 \times 10^{-2} \text{ mol } e^{-}$

D. $2.487 \times 10^{-1} \text{ mol } e^{-}$

Answer: C

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15. The molarity of urea (molar mass 60 g mol^{-1}) solution by dissolving 15 g urea in 500 cm^3 of water is

A. 2 mol dm^{-3}

B. 0.5 mol dm^{-3}

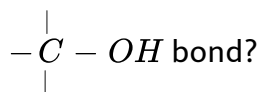
C. $0.125 \text{ mol dm}^{-3}$

D. $0.0005 \text{ mol dm}^{-3}$

Answer: B

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16. What carbon atom of deoxy ribose sugar in DNA does NOT contain



A. C_5

B. C_3

C. C_2

D. C_1

Answer: C

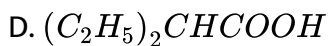


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17. Which of the following carboxylic acids is most reactive towards esterification?

A. $(CH_3)_3CCOOH$

B. $(CH_3)_2CHOOH$



Answer: C

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18. Molarity is defined as

- A. The number of moles of solute present in 1 dm^3 volume of solution
- B. The number of moles of solute dissolved in 1 kg of solvent
- C. The number of moles of solute dissolved in 1 kg of solution
- D. The number of moles of solute dissolved in 100 dm^3 volume of solution

Answer: A

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19. Which of the following is a tricarboxylic acid ?

- A. Citric acid
- B. Malonic acid
- C. Succinic acid
- D. Malic acid

Answer: A

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20. What is the number of donor atoms in dimethylglyoximate ligand?

- A. 1
- B. 2
- C. 3
- D. 4

Answer: B

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21. In which substances does nitrogen exhibit the lowest oxidation state?

A. nitrogen gas

B. ammonia

C. nitrous oxide

D. nitric oxide

Answer: C

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22. Which of the following is most reactive towards addition reaction of hydrogen cyanide to form corresponding cyanohydrin?

- A. Acetone
- B. Formaldehyde
- C. Acetaldehyde
- D. Diethylketone

Answer: B

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23. The most basic hydroxide from following is

- A. $Pr(OH)_3$ ($Z = 59$)
- B. $Sm(OH)_3$ ($Z = 63$)
- C. $Ho(OH)_3$ ($Z = 67$)
- D. $La(OH)_3$ ($Z = 57$)

Answer: D

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24. What is the SI unit of denisty?

A. $g\ cm^{-3}$

B. gm^{-3}

C. kgm^{-3}

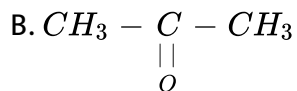
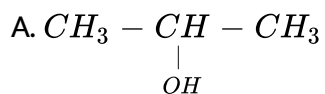
D. $kgcm^{-3}$

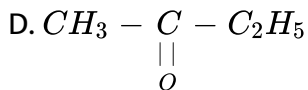
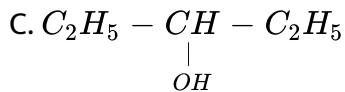
Answer: C



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25. Which of the following compounds does not undergo haloform reaction ?





Answer: C

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26. Two moles of an ideal gas are allowed to expand from a volume of 10 dm^3 to $2m^3$ at 300 K against a pressure of 101.325 kPa . Calculate the work done.

A. -201.6 kJ

B. 13.22 kJ

C. -810 J

D. -18.96 kJ

Answer: A

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27. In which among the following solids, Schottky defect is NOT observed?

A. ZnS

B. NaCl

C. KCl

D. CsCl

Answer: A



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28. What are the products of auto-photolysis of water?

A. H_2 and O_2

B. Steam

C. H_3O^+ and OH^-

D. Hydrogen peroxide

Answer: C

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29. Bauxite, the ore of aluminium, is purified by which process?

- A. Hoopes process
- B. Hall's process
- C. Mond's process
- D. Liquation process

Answer: B

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30. Phenol in presence of sodium hydroxide reacts with chloroform to form salicylaldehyde.

The reaction is known as

A. Kolbe's reaction

B. Reimer-Tiemann reaction

C. Stephen reaction

D. Etard reaction

Answer: B

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31. Which among the following elements of group -2 exhibits anomalous properties?

A. Be

B. Mg

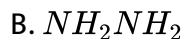
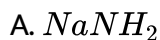
C. Ca

D. Ba

Answer: A

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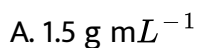
32. Excess of ammonia with sodium hypochloride solution in the presence of glue or gelatine gives.



Answer: B

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33. What is the density of solution of sulphuric acid used as an electrolyte in lead accumulator?



B. 1.2gmL^{-1}

C. 1.8gmL^{-1}

D. 2.0gmL^{-1}

Answer: B

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34. Which of the following polymers is used to manufacture clothes for firefighters?

A. Thiokol

B. Kevlar

C. Nomex

D. Dynel

Answer: C

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35. Which element is obtained in the pure form by van Arkel method

A. Aluminium

B. Titanium

C. Silicon

D. Nickel

Answer: B



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36. Which of the following is NOT a tranquilizer?

A. Meprobamate

B. Equanil

C. Chlordiazepoxide

D. Brompheniramine

Answer: D



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37. Conversion of hexane into benzene involves the reaction of

- A. hydration
- B. hydrolysis
- C. hydrogenation
- D. dehydrogenation

Answer: D



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38. The element that does NOT exhibit allotropy is

- A. phosphorus

B. arsenic

C. antimony

D. bismuth

Answer: D



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39. Which one of the following reactions is used to prepare aryl fluorides from diazonium salts and fluoroboric acid ?

A. Sandmeyer reaction

B. Balz Schiemann reaction

C. Gattermann reaction

D. Swarts reaction

Answer: B



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40. The correct relation between elevation of boiling point and molar of solute is

A. $M_2 = \frac{K_b \cdot W_2}{\Delta T_b \cdot W_1}$

B. $M_2 = \frac{K_b \cdot W_1}{\Delta T_b \cdot W_2}$

C. $M_2 = \frac{\Delta T_b \cdot K_b}{W_1 \cdot W_2}$

D. $M_2 = \frac{\Delta T_b \cdot W_1}{K_b \cdot W_2}$

Answer: A

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41. Which among the group -15 elements does NOT exist as tetra atomic molecule?

A. Nitrogen

B. Phosphorus

C. Arsenic

D. Antimony

Answer: A



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42. Identify the monosaccharide containing only one asymmetric carbon atom in its molecule.

A. Ribulose

B. Ribose

C. Erythrose

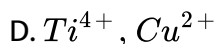
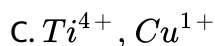
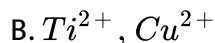
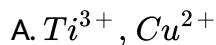
D. Glyceraldehyde

Answer: D



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43. Identify the oxidation states of titanium (Z=22) and copper (Z=29) in their colourless compounds.



Answer: C



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44. Arenes on treatment with chloride in presence of ferric chloride as a catalyst undergo what type of reaction?

A. Electrophilic substitutions

B. Nucleophilic substitution

C. Electrophilic addition

D. Nucleophilic addition

Answer: A



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45. In case of R,S configuration the group having highest priority is

A. $-NO_2$

B. $-NH_3$

C. $-CN$

D. $-OH$

Answer: D



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46. Lactic acid and glycolic acid are the monomers used for preparation of polymer

- A. Nylon -2-nylon -6
- B. Dextron
- C. PHBV
- D. Buna-N

Answer: B



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47. What is the geometry of water molecule?

- A. distorted, tetrahedral
- B. tetrahedral
- C. trigonal planer
- D. diagonal

Answer: A



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48. With which halogen the reactions of alkanes are explosives?

- A. Fluorine
- B. Chlorine
- C. Bromine
- D. Iodine

Answer: A



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49. Calculate the work done during combustion of 0.138 kg of ethanol,

C_2H_5OH at 300 K.

Given: $R = 8.314 JK^{-1}mol^{-1}$ molar mass of ethanol = $46 gmmol^{-1}$

A. -7482 J

B. 7482 J

C. -2494 J

D. 2494 J

Answer: B

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50. Slope of the straight line obtained by plotting $\log_{10} k$ against $\frac{1}{T}$ represents what term?

A. $-E_a$

B. $-2.303E_a/R$

C. $-E_a/2.303R$

D. $-E_a/R$

Answer: C



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