



CHEMISTRY

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER 07

Section A

1. the number of tetrahedral voids per unit cell in NaCl crystal is

..... .

A. 4

B. 9

C. twice the number of octahedral voids.

D. four times the number of octahedral voids.

Answer: C

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2. Frenkel defect is not shown by:

A. AgBr

B. ZnS

C. KBr

D. AgCl

Answer: C

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3. The value of Henry's constant K_H .

- A. increase with increase in temperature
- B. decrease with increase in temperature
- C. remains constant
- D. first increase then decrease

Answer: A

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4. In the laboratory, sodium chloride is made by burning the sodium in the atmosphere of chlorine which is yellow in colour.

The cause of yellow colour is:

- A. presence of face centered cubic lattice
- B. presence of Cl^- ions in the crystal lattice
- C. presence of e^- in the crystal lattice

D. presence of Na^+ ions in the crystal lattice

Answer: C

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5. For the preparation of n-propylbenzene which of the following reactions is most suitable?

- A. Wurtz-fittig reaction
- B. Wurtz reaction
- C. Friedel-Crafts alkylation
- D. Grignard reaction

Answer: A

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6. Which is not a reducing sugar?

A. glucose

B. fructose

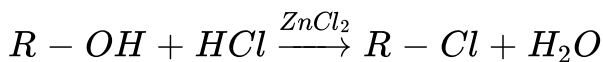
C. mannose

D. sucrose

Answer: D

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7. What is the correct order of reactivity of alcohols in the following reaction ?



A. $1^\circ > 2^\circ > 3^\circ$

B. $3^\circ > 1^\circ > 2^\circ$

C. $3^\circ > 2^\circ > 1^\circ$

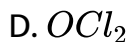
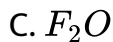
D. $1^\circ < 2^\circ > 3^\circ$

Answer: C



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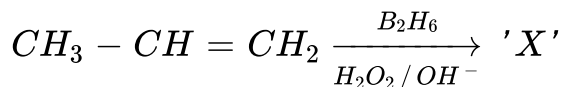
8. In which compound oxygen does not show - 2 oxidation state:



Answer: C



9. Identify X in the following reaction



- A. Propanone
- B. Propan-1-ol
- C. Propanal
- D. Propan-2-ol

Answer: B

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10. Which of the following is a liquid?

- A. F_2

B. Cl_2

C. Br_2

D. I_2

Answer: C

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11. Which of the following statement is correct for chlorobenzene?

A. less reactive than benzyl chloride

B. more reactive than dimethyl bromide

C. more reactive than isopropyl chloride

D. nearly same reactive as that of methyl chloride

Answer: A

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12. Which of the following will have lowest vapour pressure?

A. water

B. methyl alcohol

C. ether

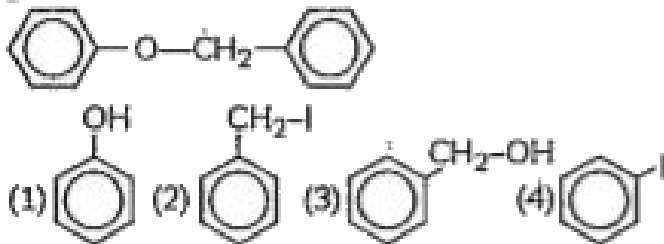
D. mercury

Answer: D

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13. What product is obtained when:

The given ether when reacts with cold HI gives:



- A. mixture of 3 and 4
- B. mixture of 2 and 3
- C. mixture of 1 and 2
- D. mixture of 1 and 4

Answer: C

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14. What is the structure of BrF_5 :

- A. Pentagonal bipyramidal
- B. Octahedral

C. Square pyramidal

D. Bent T-shape

Answer: C

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15. Coagulation of milk is:

A. hydrolysis of lactose

B. denaturation of proteins

C. breaking of peptide bonds

D. breaking of proteins into amino acid

Answer: B

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16. Calculate the number of isomeric halopropanes produced, when propane gets chlorinated is:

A. 1

B. 2

C. 3

D. 4

Answer: B

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17. According to Neil Bartlett, the first ionisation enthalpy of O_2 was similar to that of which noble gas element?

A. Xe

B. He

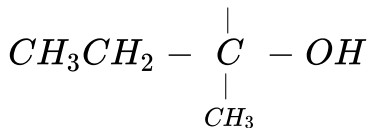
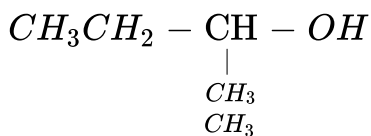
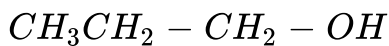
C. kr

D. Ne

Answer: A

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18. The order of reactivity of following alcohols with halogen acids is _____.



A. (A) > (B) > (C)

B. (C) > (B) > (A)

C. $(B) > (A) > (C)$

D. $(A) > (C) > (B)$

Answer: B

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19. A metal crystallizes into two cubic phases, face-centred cubic and body-centred cubic, which have unit cell lengths 3.5 and 3.0\AA , respectively. Calculate the ration of densities of fcc and bcc.

A. 2.335

B. 1.259

C. 1.555

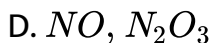
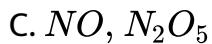
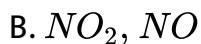
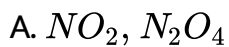
D. 2.232

Answer: B



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20. When conc. H_2SO_4 was added to an unknown salt, a brown gas 'A' was evolved, On cooling this gas 'A' changed to a colour less gas 'B'. The 'A' and 'B' are:



Answer: A



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21. DNA is different from RNA because DNA contains:

- A. ribose sugar thymine
- B. ribose sugar and uracil
- C. deoxyribose sugar and thymine
- D. deoxyribose sugar and uracil

Answer: C



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22. Which type of polymer is buna-N?

- A. Fibre
- B. Elastomer
- C. Thermoplastic polymer
- D. Thermosetting polymer

Answer: B

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23. The incorrect statement for alcohol is:

- A. The-OH group in alcohols is involved in hydrogen bonding
- B. Lower members have a pleasant smell and higher members are colourless and tasteless
- C. Lower members are insoluble in water and organic solvents but the solubility regularly increases with molecular mass
- D. Their boiling points rise fairly uniformly with rising molecular weight

Answer: B

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24. Which is the second most electronegative element in the periodic table?

- A. Oxygen
- B. Nitrogen
- C. Sulphur
- D. Phosphorus

Answer: A

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25. 18 g of sucrose is dissolved in 162 g of water. Calculate the mass percentage of solution:

A. 10 %

B. 20 %

C. 15 %

D. 18 %

Answer: A

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Section B

1. Which of the following has no units?

A. Molarity

B. Molality

C. Normality

D. Mole fraction

Answer: D

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2. Optically active alkyl halides under going S_N1 mechanism leads to:

A. retention of configuration

B. racemisation

C. inversion of configuration

D. both (a) and (c)

Answer: B

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3. I_2 is only slightly soluble in

A. $CHCl_3$

B. H_2O

C. CCl_4

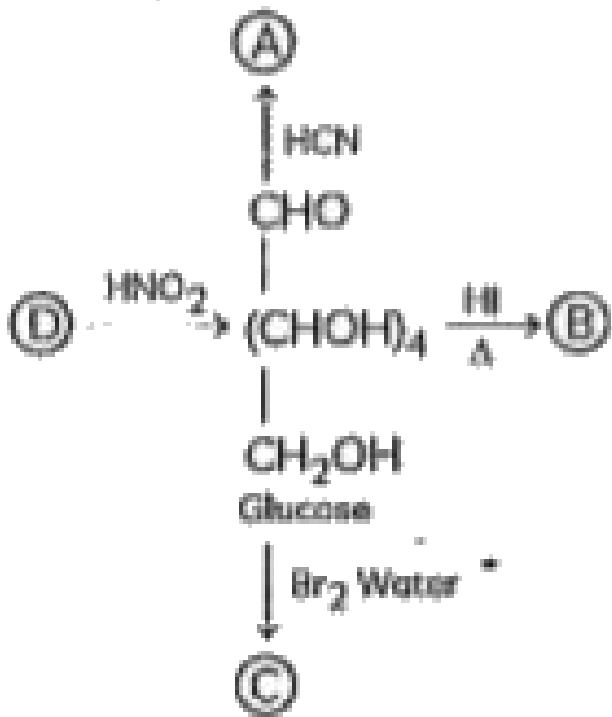
D. CS_2

Answer: B



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4. In the given reaction:



A, B, C and D respectively are:

- A. n-hexane gluconic acid, saccharic acid and glucose cyanohydrin
- B. saccharic acid, glucose cyanohydrin, n-hexane, gluconic acid
- C. glucose cyanohydrin, n-hexane, gluconic acid, saccharic acid

D. n-hexane, gluconic acid, glucose cyanohydrin, saccharic acid

Answer: C



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5. Which of the following is an amorphous solid?

A. Graphite (C)

B. Quartz glass (SiO_2)

C. Chrome alum

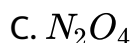
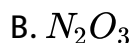
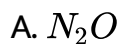
D. Silicon carbide (SiC)

Answer: B



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6. Which of the following oxides of nitrogen is the anhydride of nitrous acid?



Answer: B

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7. For a crystal having face centered cubic lattice, atom A occupies the corner position and Atom B occupies the face centre positions, if one atom of B is missing from one of the face centred point, the formula of the compound is:

A. A_2B_3

B. AB_2

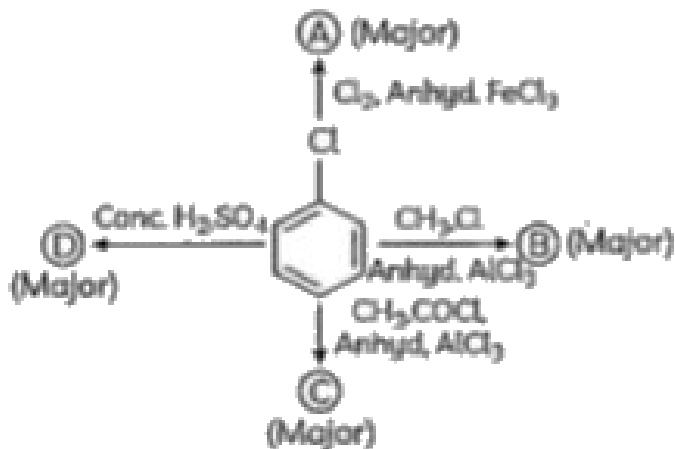
C. AB_5

D. A_2B

Answer: A

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8. Identify A, B, C and D in the following reaction,



A. 1, 4 - dichloro benzene, 1-chloro-4- methyl benzene, 4-chloro acetophenone, 4-chloro benzene sulphonic acid

B. 1, 2-chloro-benzene, 1-chloro-4-methyl benzene, 4-chloroacetophenone, 4-chlorobenzene sulphonic acid

C. 1-dichloro benzene, 2-chlorobenzene sulphonic acid, 1-chloro-2-methyl benzene, 4-chloro acetophenone.

D. 1, 2-dichloro benzene, 4-chlorobenzene, 2-chloroacetophenone, 1-chloro-2methy benzene

Answer: B



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9. When excess chlorine is used in electrophilic substitution of toluene, which of the following dichloroarenes are formed?

- A. ortho and meta
- B. ortho and para
- C. meta and para
- D. ortho, meta and para

Answer: D

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10. Osmotic pressure present in the fluid inside the blood cell is equivalent to

- A. 0.9% (m/V) Na_2SO_4 solution
- B. more than 0.9% (m/V) NaCl solution
- C. less than 0.9% (m/V) NaCl solution
- D. 0.9% (m/V) NaCl solution

Answer: D

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11. Which of the following reaction is not the evidence for presence of aldehyde:

- A. Reaction glucose with hycloroxylamine
- B. Reaction of glucose with Br_2 water
- C. Reaction of glucose HCN
- D. Reaction of glucose with acetyle chloride

Answer: A

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12. Lithium having a body centered cubic. Its density is 0.53 g cm^{-3} and its atomic mass is 7.00 g mol^{-1} . The edge length of unit cell of lithium metal is (Given: $\sqrt[3]{43.7} = 3.53$)

A. 353 pm

B. 400 pm

C. 300 pm

D. 350 pm

Answer: A



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13. Calculate the number of monochloro derivatives that formed when neo-pentane is chlorinated?

A. 1

B. 2

C. 3

D. 4

Answer: A



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14. The incorrect statement about Kolbe's reaction is?

- A. Phenoxide ion is less reactive than phenol towards electrophilic aromatic substitution
- B. Salicylic acid is formed as the main product
- C. Ortho-hydroxybenzoic acid is formed as the main product
- D. A weak electrophile CO_2 is used in this reaction

Answer: A

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15. The pK_a values of various compounds are mentioned below:

S.No.	Compound	pK_a value
1.	<i>o</i> -nitrophenol	7.2
2.	Phenol	10
3.	<i>p</i> -cresol	10.2
4.	<i>m</i> -nitrophenol	8.3

Which is the most acidic compound?

A. *o*-nitrophenol

B. *p*-cresol

C. phenol

D. *m*-nitrophenol

Answer: A



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16. The correct order of ΔH_1 values is:

A. $He < Ne > Ar = Kr > Xe > Rn$

B. $He < Ne < Ar = Kr < Xe > Rn$

C. $He > Ne > Ar > Kr > Xe > Rn$

D. $He = Ne > Ar > Kr > Xe > Rn$

Answer: C



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17. Among the following given compounds. Which of the following compounds on oxidation gives ethyl methyl ketone?

A. tert-butyl alcohol

B. 1-butanol

C. 2-butanol

D. 3-proponal

Answer: C



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18. Which reagent will you use for the following reaction?



A. Cl_2 /UV light

B. $\text{NaCl} + \text{H}_2\text{SO}_4$

C. Cl_2 gas in dark

D. Cl_2 gas in the presence of iron in dark

Answer: A



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19. Assertion (A): Noble gases have large positive values of electron gain enthalpy.

Reason (R): Noble gases have stable electronic configuration.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not the correct explanation of

A

C. A is true but R is false

D. A is false but R is true

Answer: A

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20. Assertion (A) Phenols give o-and p-nitrophenol on nitration with conc. HNO_3 and H_2SO_4 mixture.

Reason (R) – OH group in phenol is o-,p-directing.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not the correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

Answer: D



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21. Assertion (A): When scuba divers come towards surface, their capillaries get blocked which is painful and dangerous to life.

Reason (R): These occurred release of dissolved gases as the pressure decreases and leads to the formation of bubbles of nitrogen in the blood.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not the correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

Answer: A



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22. Assertion (A): Chlorine water has both oxidising as well as bleaching properties.

Reason (R): Chlorine reacts with water to evolve nascent oxygen.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not the correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

Answer: A



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23. Assertion : Acetone and aniline shows negative deviations.

Reason : H-bonding between acetone and aniline is stronger than that between acetone-acetone and aniline-aniline.

- A. Both A and R are true and R is the correct explanation of A
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- D. A is false but R is true

Answer: A

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Answer: A

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Section C

1. Match the following:

Column I	Column II
(I) Glycosidic linkage	(A) DNA
(II) Nucleotide	(B) Glucose
(III) Aldohexose	(C) Carbohydrates
(IV) Watson and Crick	(D) Nucleic Acid

Which of the following analogies is correct:

- A. (I)-(A) , (II)-B, (iii)-D, (IV)-C
- B. (I)-B , (II) -A, (III)-C, (IV)-D
- C. (I)-(D),(II)-(C) ,(III)-(A),(IV)-(B)
- D. (I)-(C),(II)-(D) ,(III)-(B) ,(IV)-(A)

Answer: A



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2. Which of the following analogies is correct:

A. HNO_3 : Oxidation state of N is +5 :: NH_3 : hybridisation sp^3

B. $Xe[PtBr_6]$ first compound of noble gas :Ne: high speed photography

C. SO_2 oxidising in nature :: O_3 :thermodynamically stable

D. P : monoclinic : : S : red sulphur

Answer: A

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3. Complete the following analogy:

Equimolar mixture of both the enantiomers: A :: Isomers which differ in configuration around C1 atom

A. A : Isomer, B: Racemic mixture

B. A: Inversion, B: Retention

C. A: RacemicMixture, B: Anomers

D. A: Enantiomers,B: Stereoisomers

Answer: C



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4. Three-dimensional close packing in solids is referred to as stacking the second square closed packing exactly above the first. In this tight packing, the spheres are horizontally and vertically correctly balanced. Similarly, we can obtain a simple cubic lattice by adding more layers, one above the other. This can be done in two ways. Three-dimensional close packing from two-dimensional square close-packed layers: By putting the second square closed

packing exactly above the first, it is possible to form three-dimensional close packing. In this tight packing, the spheres are horizontally and vertically correctly balanced. Similarly, we can obtain a simple cubic lattice by adding more layers, one above the other. Three-dimensional close packing from two-dimensional hexagonal close-packed layers: With the assistance, of two-dimensional hexagonal packed layers, three-dimensional close packing can be obtained.

The coordination number of cubic closed packing is:

- A. 6
- B. 8
- C. 12
- D. 4

Answer: A



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5. Three-dimensional close packing in solids is referred to as stacking the second square closed packing exactly above the first. In this tight packing, the spheres are horizontally and vertically correctly balanced. Similarly, we can obtain a simple cubic lattice by adding more layers, one above the other. This can be done in two ways. Three-dimensional close packing from two-dimensional square close-packed layers: By putting the second square closed packing exactly above the first, it is possible to form three-dimensional close packing. In this tight packing, the spheres are horizontally and vertically correctly balanced. Similarly, we can obtain a simple cubic lattice by adding more layers, one above the other. Three-dimensional close packing from two-dimensional hexagonal close-packed layers: With the assistance, of two-dimensional hexagonal packed layers, three-dimensional close packing can be obtained.

What will be the ratio of radii of the spheres in cubic systems

simple cubic, body centred cubic and face centred cubic systems. if

'a' stands for the edge length.

A. $\frac{1}{2}a : \frac{\sqrt{3}}{4}a : \frac{1}{2\sqrt{2}}a$

B. $\frac{1}{2}a : \sqrt{3}a : \frac{1}{\sqrt{2}}a$

C. $1a : \sqrt{3}a : \sqrt{2}a$

D. $\frac{1}{2}a : \frac{\sqrt{3}}{2}a : \frac{\sqrt{2}}{2}a$

Answer: A



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6. Three-dimensional close packing in solids is referred to as stacking the second square closed packing exactly above the first.

In this tight packing, the spheres are horizontally and vertically correctly balanced. Similarly, we can obtain a simple cubic lattice by adding more layers, one above the other. This can be done in

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The correct statement about zns crystal is:

- A. Coordinate number (6:4): hcp, Zn^{2+} ions in all octahedral voids
- B. Coordinate number (6:6): hcp, Zn^{2+} ions in all tetrahedral voids

C. Coordinate number (4:4): ccp, Zn^{2+} ions in the alternate tetrahedral voids

D. Coordinate number (4:4): ccp, Zn^{2+} ions in all tetrahedral voids

Answer: D

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