



CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 46

Chemistry

1. If the unit cell of a mineral has cubic close packed (ccp) array of oxygen atoms with m fraction of octahedral holes occupied by aluminium ions and n fraction of tetrahedral holes occupied by magnesium ions, m and n respectively, are

A. $\frac{1}{2}, \frac{1}{8}$

B. $1, \frac{1}{4}$

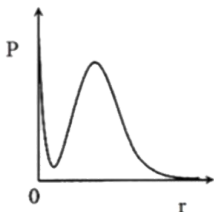
C. $\frac{1}{2}, \frac{1}{4}$

D. $\frac{1}{4}, \frac{1}{8}$

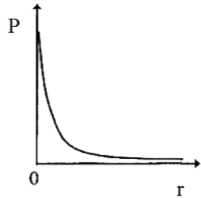
Answer: A

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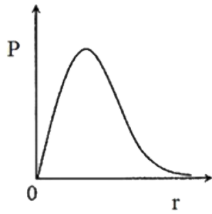
2. P is the probability of finding the $1s$ electron of hydrogen atom in a spherical shell of infinitesimal thickness, dr , at a distance r from the nucleus. The volume of this shell is $4\pi r^2 dr$. The qualitative sketch of the dependence of P on r is



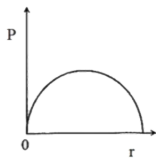
A.



B.



C.



D.

Answer: C



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3. At $100^{\circ}C$ and $1atm$, if the density of the liquid water is $1.0gcm^{-3}$ and that of water vapour is $0.0006gcm^{-3}$, then the

volume occupied by water molecules in $1L$ of steam at this temperature is

A. $6cm^3$

B. $60cm^3$

C. $0.6cm^3$

D. $0.06cm^3$

Answer: C



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4. one mole of an ideal gas at $300k$ in thermal contact with surroundings expands isothermally from $1.0 L$ to $2.0 L$ against a constant pressure of $3.0 atm$. In this process. The change in

entropy of surroundings (ΔS) in J^{-1} is

(1 L atm = 101.3 J)

A. 5.763

B. 1.013

C. - 1.013

D. - 5.763

Answer: C



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5. For the following electrochemical cell at 298K



$$E_{cell} = 0.092V \text{ when } \frac{[M^{2+}(aq)]}{[M^{4+}(aq)]} = 10^x$$

Given, $E_{M^{4+}/M^{2+}}^{\circ} = 0.151V$, $2.303\frac{RT}{F} = 0.059$

The value of x is-

A. - 2

B. - 1

C. 1

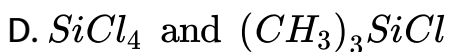
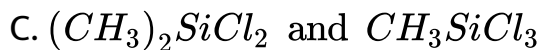
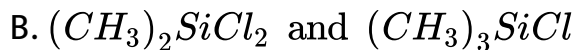
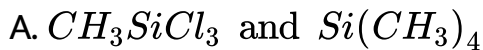
D. 2

Answer: D



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6. Under hydrolysis conditions, the compounds used for preparation of linear polymer and for chain termination, respectively are

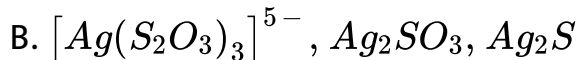
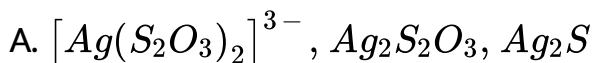
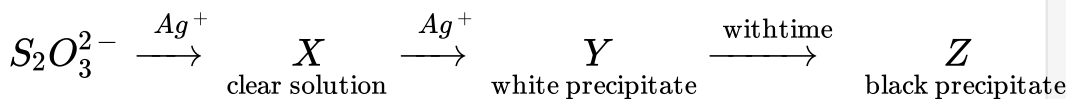


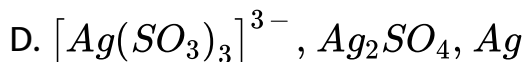
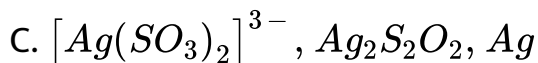
Answer: B



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7. In the following reaction sequence in aqueous solution, the species X, Y and Z, respectively





Answer: A

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8. The distillation technique most suited for separating glycerol from spent lye in the soap industry is

A. Distillation under reduced pressure

B. simple distillation

C. Fractional distillation

D. Steam distillation

Answer: A



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9. Benzamide on reaction with $POCl_3$ gives.

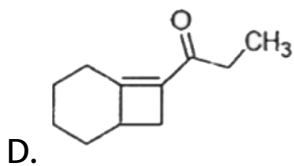
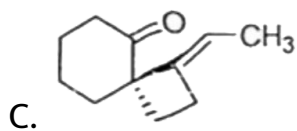
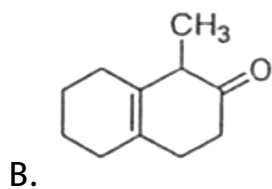
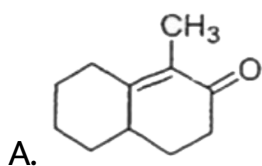
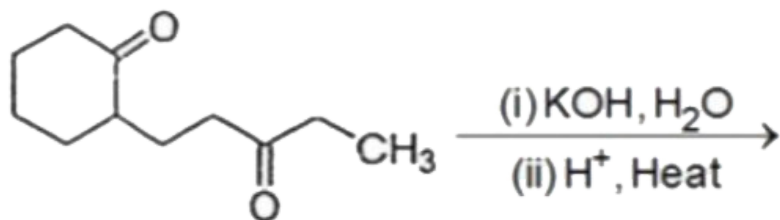
- A. aniline
- B. chlorobenzene
- C. benzyl amine
- D. benzonitrile

Answer: D



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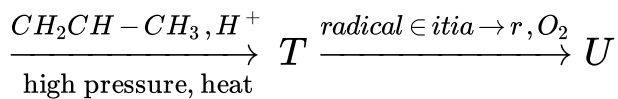
10. The major product of the following reaction is

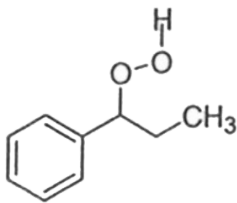


Answer: A

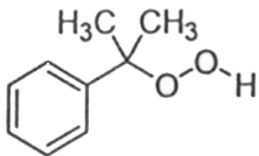
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11. The major product U in the following reactions is





A.



B.

C. 

D. 

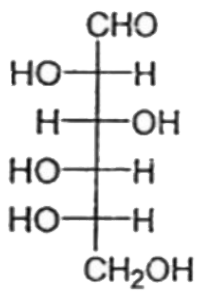
Answer: B

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12. The structure of $D - (+) -$ glucose is

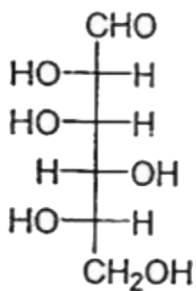


The structure of $L - (-) -$ glucose is



A.

B. 



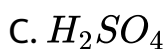
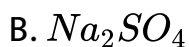
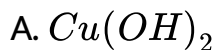
C.

D. 

Answer: A

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13. Which substance is obtained in the solution on electrolysis of aqueous $CuSO_4$ solution using graphite electrodes?



Answer: C



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14. Which one of the following statements about water is false ?

- A. Ice formed by heavy water sinks in normal water
- B. Water oxidized to oxygen during photosynthesis
- C. Water can act both as an acid and as a base
- D. There is extensive intramolecular hydrogen bonding in the condensed phase

Answer: D



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15. The correct order of acidity for the following compounds is



A. I gt II gt III gt IV

B. III gt I gt II gt IV

C. III gt IV gt II gt I

D. I gt III gt IV gt II

Answer: A

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16. Which of the following statement are correct when a mixture of $NaCl$ and $K_2Cr_2O_7$ is gently warmed with conc. H_2SO_4 ?

A. 1, 2, 4

B. 1, 2, 3

C. 2, 3, 4

D. all are correct

Answer: A



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17. A water sample has ppm level concentration of following anions

$$F^- = 10, SO_4^{2-} = 100, NO_3^- = 50$$

the anion/anions that make/makes the water sample unsuitable for drinking is/are

A. only F^-

B. only SO_4^{2-}

C. only NO_3^-

D. both SO_4^{2-} and NO_3^-

Answer: A



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18. Decomposition of H_2O_2 follows a first order reaction. In 50 min the concentration of H_2O_2 decreases from 0.5 to 0.125 M in one such decomposition. When the concentration of H_2O_2 reaches 0.05 M, the rate of formation of O_2 will be

A. $1.34 \times 10^{-2} \text{ mol min}^{-1}$

B. $6.93 \times 10^{-2} \text{ mol min}^{-1}$

C. $6.93 \times 10^{-4} \text{ mol min}^{-1}$

D. 2.66 L min^{-1} at STP

Answer: C



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19. On complete hydrogenation, natural rubber produces

A. ethylene - propylene copolymer

B. vulcanised rubber

C. polypropylene

D. polybutylene

Answer: A



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20. Food preservatives prevent spoilage of food due to microbial growth. The commonly used preservatives are :

A. table salt, sugar

B. vegetable oils and sodium benzoate

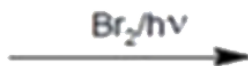
C. C_6H_5COONa

D. all of the above

Answer: D

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21.



The number of

The

number of possible mono bromo products are (excluding stereo isomers)

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22. The total number of lone pair of electrons in N_2O_3 is

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23. For the octahedral complexes of Fe^{3+} in SCN^- (thiocyanato -S) and in CN^- ligand environments, the difference between the spin only magnetic moments in Bohr magnetons (when approximated to the nearest integer) is [atomic number of $Fe = 26$]

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24. The mole fraction of a solute in a solutions is 0.1. At $298K$ molarity of this solution is the same as its molality. Density of

this solution at 298 K is 2.0gcm^{-3} . The ratio of the molecular weights of the solute and solvent, $\frac{MW_{\text{solute}}}{MW_{\text{solvent}}}$ is

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25. The diffusion coefficient of an ideal gas is proportional to its mean free path and mean speed. The absolute temperature of an ideal gas is increased 4 times and its pressure is increased 2 times. As a result, the diffusion coefficient of this gas increases x times. The value of x is.....

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