



CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 30

Chemistry

1. Find out the percentage dissociation of an acid having conc. Of 10

M and dissociation constant 1.0×10^{-3} .

A. 0.1

B. 0.5

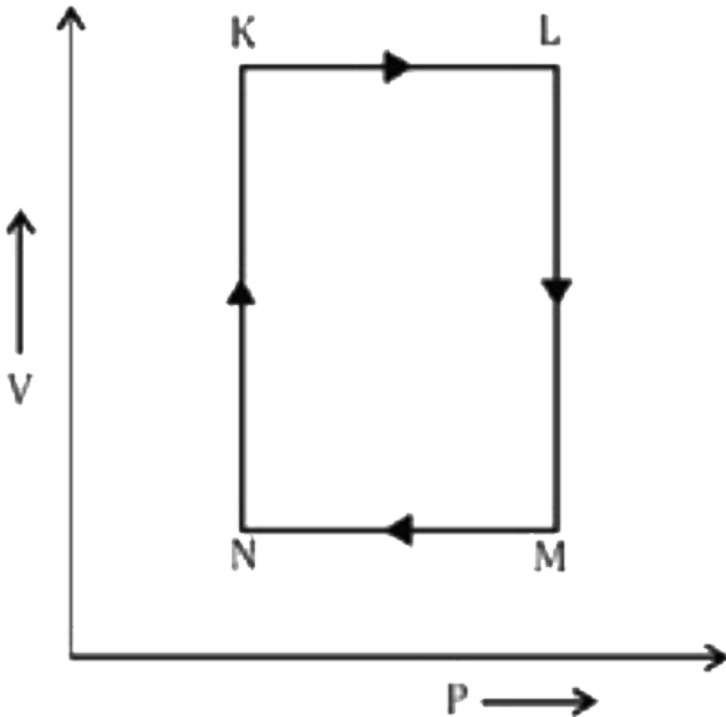
C. 1.0

D. 2.0

Answer: C

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2. A fixed mass m of a gas is subjected to transformation of states from K to L to M to N and back to K as shown in the figure.



The succeeding operation that enable this transformation of state are

- A. heating, cooling, heating, cooling
- B. cooling, heating, cooling, heating
- C. heating, cooling, cooling, heating
- D. cooling, heating, heating, cooling

Answer: C

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3. Imine formation using an aldehyde/ketone and primary amine is acid - catalyzed, yet the rate drops below pH 4.5. Why does the rate drop below this pH?

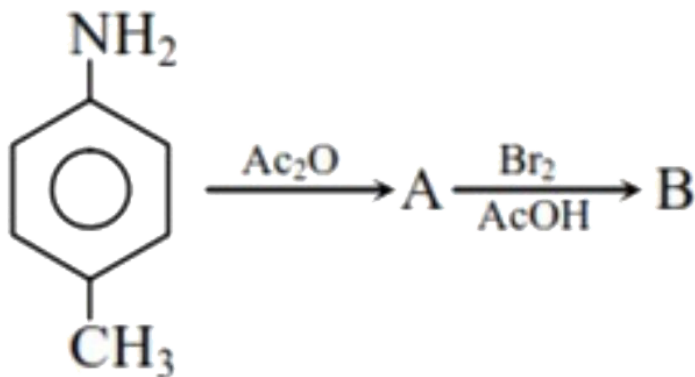
- A. The carbinolamine intermediate is stable at low pH

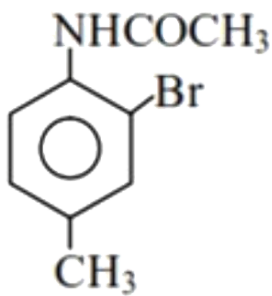
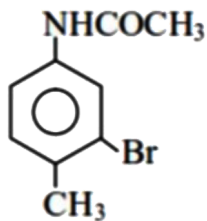
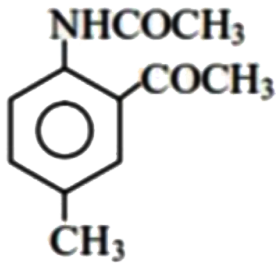
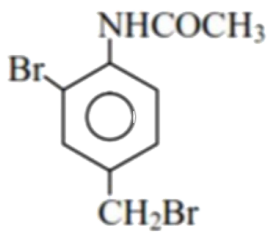
- B. The imine product is hydrolyzed at low pH
- C. Protonation of the amine decreases its nucleophilicity
- D. The amine is hydrolyzed at low pH

Answer: C

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4. In the following reaction sequence the major product B is

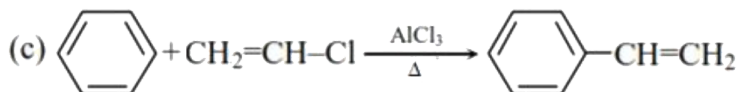
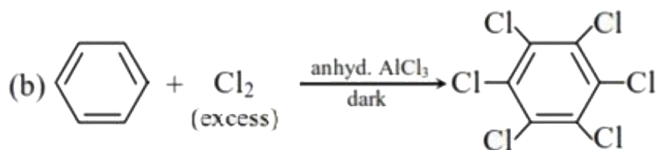
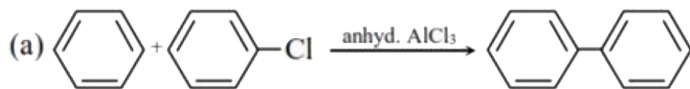




Answer: D

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5. Consider the following reaction



Which of these reactions are possible ?

A. (b), (c) and (d)

B. (b) and (d)

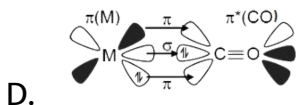
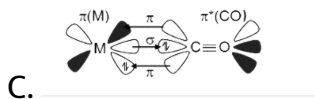
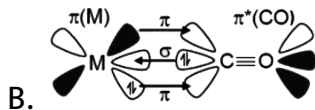
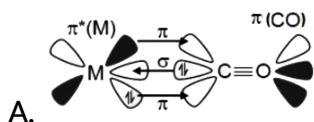
C. (a) and (d)

D. (a) and (b)

Answer: B

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6. Metal 'M' forms a carbonyl compound in which it is present in its lower valance state. Which of the following bonding is possible in this metal carbonyl?



Answer: B

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7. Acetic acid (CH_3COOH) is partially dimerised to (CH_3COOH_2) in the vapour phase. At a total pressure of 0.200 atm, acetic acid is 92.0% dimerized at 298 K. The value of equilibrium constant of dimerization under these conditions is

A. 57.5 atm^{-1}

B. 9.7 atm^{-1}

C. 97 atm^{-1}

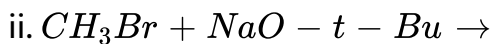
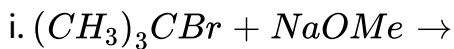
D. 194 atm^{-1}

Answer: D



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8. Which of the following is the correct method for synthesising methyl-t-butyl ether and why?



A. method 1 should be used

B. method 2 should be used

C. any of the two methods can be used

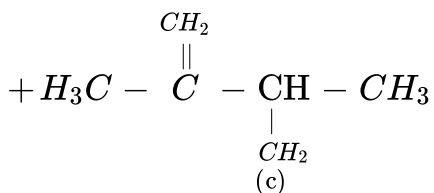
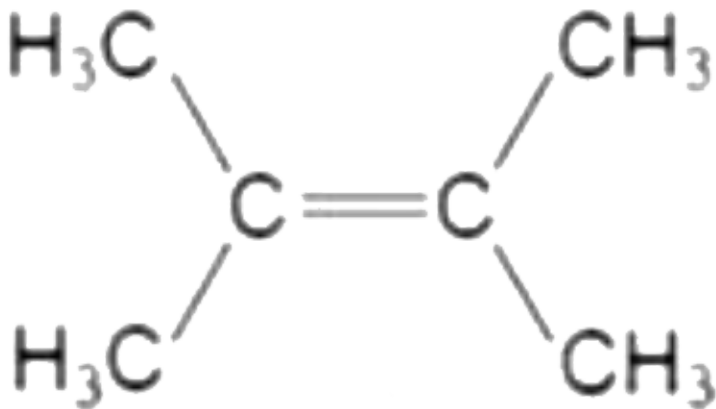
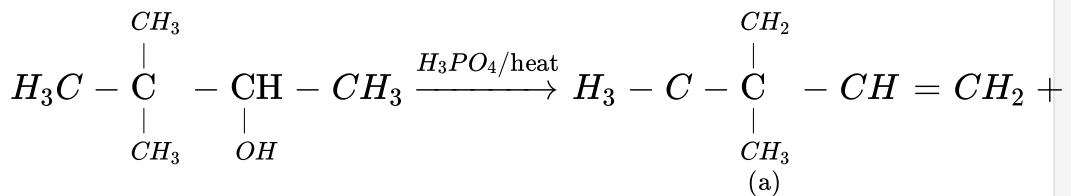
D. none of the method can be used

Answer: B



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9. In the following reaction, three product a, b, c are obtained.



A. (a) 33 % , (b) 64 % , (c) 3 %

B. (a) 3 % , (b) 64 % , (c) 33 %

C. (a)3 % , (b)33 % , (c)64 %

D. (a)64 % , (b)3 % , (c)33 %

Answer: B

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10. 100 mL of 0.3 M acetic acid is shaken with 0.8 g wood charcoal.

The final concentration of acetic acid in the solution after adsorption is 0.125 M. The mass of acetic acid adsorbed per gram of charcoal is :

A. 1.05 g

B. 0.0131 g

C. 1.31 g

D. 0.131 g

Answer: C

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11. The reaction that does not produce nitrogen is :

A. heating $(NH_4)_2Cr_2O_7$

B. NH_3 with excess of Cl_2

C. heating of NaN_3

D. heating of NH_4NO_3

Answer: B

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12. For an electron whose positional uncertainty is $1.0 \times 10^{-10}m$,

the uncertainty in the component of the velocity in ms^{-1} will be

A. 5.8×10^5

B. 10^9

C. 10^2

D. 10^{15}

Answer: A

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13. The standard electrode potentials, E° of Fe^{3+} / Fe^{2+} and Fe^{2+} / Fe at 300 K are $+0.77V$ and $-0.44V$, respectively. The E° of Fe^{3+} / Fe at the same temperature is

A. $1.21V$

B. $0.33V$

C. $-0.036V$

D. $0.036V$

Answer: C

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14. One mole crystal of a metal halide of the type MX with molecular weight 119 g having face centered cubic structure with unit cell length 6.58\AA was recrystallized. The density of the recrystallized crystal was found to be 2.44gcm^{-3} . The type of defect introduced during the recrystallization is

- A. additional M^+ and X^- ions at interstitial sites
- B. Schottky defect
- C. F - centre
- D. Frenkel defect

Answer: B

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15. Identify the correct statement :

- A. 0.1 M NaCl and 0.1 M glucose solution are isotonic
- B. 0.1 M NaCl and 0.3 M glucose solution are isotonic.
- C. The boiling point of 0.1 m aqueous urea solution is less than 0.1 m aqueous KCl solution.
- D. The freezing point of 0.1 m glucose solution is less than 0.1 m KCl solution.

Answer: C

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16. A reaction is carried out at $600K$. If the same reaction is carried out in the presence of catalyst at the same rate and same frequency factor, the temperature required is $500K$. What is the activation energy of the reaction, if the catalyst lowers the activation energy barrier by $20KJ/mol$?

- A. 100 kJ/mol
- B. 120 kJ/mol
- C. 80
- D. None of these

Answer: B



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17. The ratio of the masses of methane and ethane in a gas mixture is 4: 5. The rate of number of their molecules in the mixture is:

A. 4:5

B. 3:2

C. 2:3

D. 5:4

Answer: B



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18. Adsorption of gases on solid surface is generally exothermic because :

A. enthalpy is positive

B. entropy decreases

C. entropy increases

D. free energy increases

Answer: B

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19. Bleaching action of H_2O_2 is due to its :

- A. oxidising nature
- B. reducing nature
- C. acidic nature
- D. thermal instability

Answer: A

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20. The antibiotic used for curing tuberculosis is :

A. Penicillin

B. Streptomycin

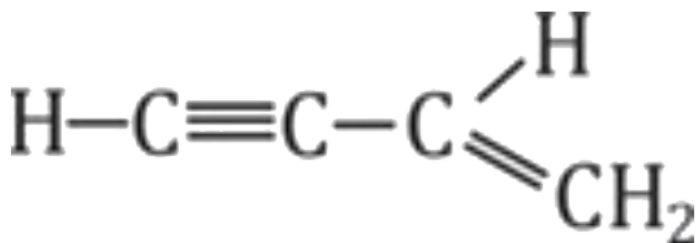
C. Tetracycline

D. Chloromycetin

Answer: B

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21. The maximum number of atoms that may will in the same plane in the following molecule are x.

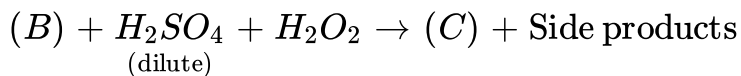
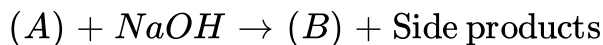
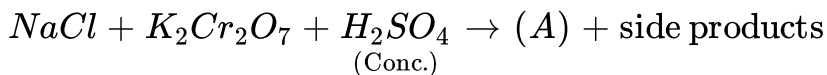


Then the value of x is :



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22. Consider the following reactions :



The sum of the total number of atoms in one molecule each of (A), (B) and (C) is _____.



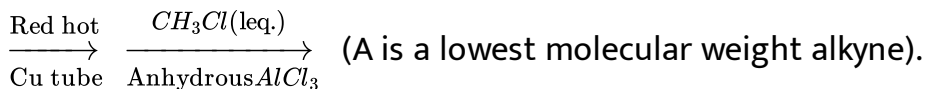
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23. The number of correctly matched combination is/are

Ore	Element
Chalcopyrite	Cu
Limestone	Ca
Corundum	Al
Magnetite	Fe
Pyrolusite	Mn
Cassiterite	Zn
Cinnabar	Hg
Calamine	Ca
Siderite	Sn
Cerussite	Pb

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24. In the following sequence of reactions the maximum number of atoms present in molecule 'C' in one plane is_____.



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25. One mole of a non-ideal gas undergoes a change of state from (2.0 atm, 3.0 L, 100 K) to (4.0 atm, 5.0 L, 250 K) with a change in internal energy, $\Delta U = 30.0 \text{ Latm}$. The change on enthalpy of process in (L - atm) is



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