CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 56

Chemistry

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1. The nitrosation of N, N-dimethylaniline takes place through the attack of electrophile

    A. nitronium ion

    B. protonated nitrous acid

    C. nitrous acid

    D. nitrosonium ion

Answer: D

2. For a first order reaction $A \rightarrow P$, the temperature (T) dependent rate constant (K) was found to follow the equation $\log k = -(2000)\dfrac{1}{T} + 6.0$. The pre- exponential factor A and the activation energy E_a , respectively, are :

A. $1.0 \times 10^6 s^{-1}$ and $9.2 \, \text{kJ mol}^{-1}$
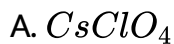
B. $6.0 s^{-1}$ and $16.6 \, \text{kJ mol}^{-1}$

C. $1.0 \times 10^6 s^{-1}$ and $16.6 \, \text{kJ mol}^{-1}$

D. $1.0 \times 10^6 s^{-1}$ and $38.3 \, \text{kJ mol}^{-1}$

Answer: D

3. Which of the following is most soluble in water?

A. $CsClO_4$
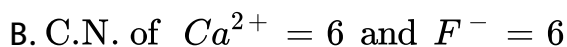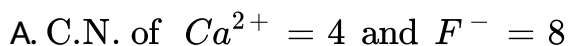
B. $NaClO_4$

C. $KClO_4$

D. $LiClO_4$

Answer: D

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4. What are the coordination number (C.N.) of Ca^{2+} and F^- ion in calcium fluoride (CaF_2) crystal structure?

A. C.N. of $Ca^{2+} = 4$ and $F^- = 8$

B. C.N. of $Ca^{2+} = 6$ and $F^- = 6$

C. C.N. of $Ca^{2+} = 8$ and $F^- = 8$

D. C.N. of $Ca^{2+} = 8$ and $F^- = 4$

Answer: D

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5. The vapour pressures of pure liquids A and B are 400 and 600 mm Hg respectively at 298 K. On mixing the two liquids, the sum of their initial volumes is equal to the volume of the final mixture. The mole fraction of liquid B is 0.5 in the mixture. The vapour pressure of the final solution, the mole fractions of components A and B in vapour phase, respectively are :

A. 500 mmHg, 0.5, 0.5

B. 450 mmHg, 0.4, 0.6

C. 450 mmHg, 0.5, 0.5

D. 500 mmHg, 0.4, 0.6

Answer: D

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6. The correct option(s) to distinguish nitrate salts of Mn^{2+} and Cu^{2+} taken separately is (Are)

(1) Mn^{2+} shows the characteristic green colour in the flame test

(2) only Cu^{2+} shows the the formation of precipitate by passing H_2S in acidic medium

(3) only Mn^{2+} shows the formation of precipitate by passing H_2S in faintly basic medium

(4) $Cu^{2+}|Cu$ has higher reduction potential then $Mn^{2+}|Mn$ (measured under similar conditions)
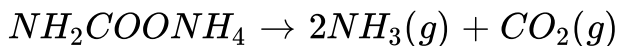
A. 1, 2

B. 1, 3

C. 2, 4

D. 1, 2, 4

Answer: C

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7. Ammonium carbamate decomposes as :

$$NH_2COONH_4 \rightarrow 2NH_3(g) + CO_2(g)$$

For the reaction, $K_P = 2.9 \times 10^{-5} atm^3$ If we start with 1 mole of

the compound, the total pressure at equilibrium would be
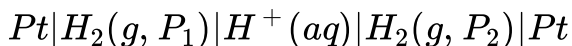
A. 0.766 atm

B. 0.0582 atm

C. 0.388 atm

D. 0.0194 atm

Answer: B

8. What will be the emf for the given cell ?

$$Pt|H_2(g, P_1)|H^+(aq)|H_2(g, P_2)|Pt$$

A. $\dfrac{RT}{F}\dfrac{\ln(P_1)}{P_2}$

B. $\dfrac{RT}{2F}\dfrac{\ln(P_1)}{P_2}$

C. $\dfrac{RT}{F}\dfrac{\ln(P_2)}{P_1}$

D. None of these

Answer: B

9. Reagent(s) which can be used to bring about the following transformation is(are)
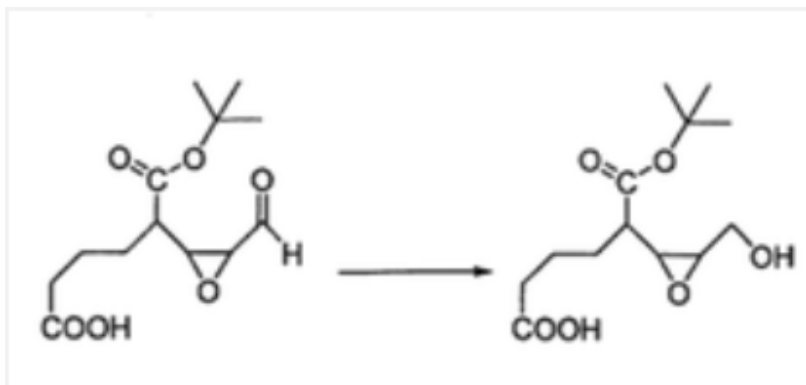
A. $LiAlH_4$ in $(C_2H_5)_2O$

B. BH_3 in THF

C. $NaBH_4$ in C_2H_5OH

D. all of these

Answer: C

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10. The correct option among the following is

A. Colloidal particles in lyophobic sols can be precipitated by electrophoresis

B. Brownian motion in colloidal solution is faster if the viscosity of the solution is very high.

C. Colloidal medicines are more effective because they have small surface area

D. Addition of alum of water makes it unfit for drinking.

Answer: A

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11. For the reaction:

$I^- + ClO_3^- + H_2SO_4 \rightarrow Cl^- + HSO_4^- + I_2$ The correct

statement(s) in the balanced equation is/are

(1) Stoichiometric coefficient of HSO_4^- is 6

(2) Iodide is oxidized.

(3) Oxidation number of chlorine changes by 5 units

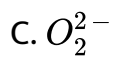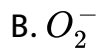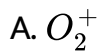(4) H_2O is one of the products

A. 1, 2

B. 1,4

C. 1, 2, 3

D. 1, 2, 4

Answer: D

12. Using MO theory predict which of the following species has

the shortest bond length ?

A. O_2^+

B. O_2^-
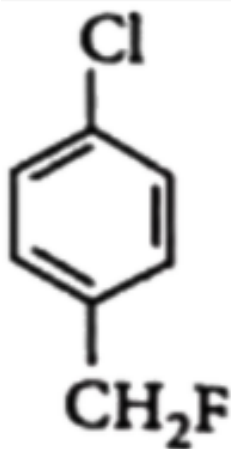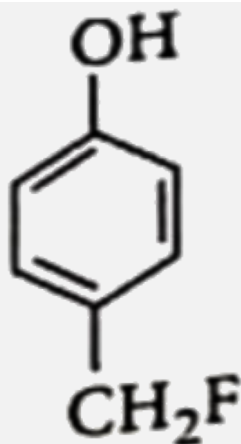
C. O_2^{2-}

D. O_2^{2+}

Answer: D

13.

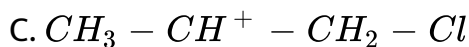What is B is the given scheme?

A.

F

CH₂F

B.

Cl

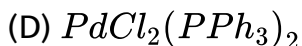CH₂F

C.

OH

CH₂F
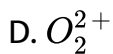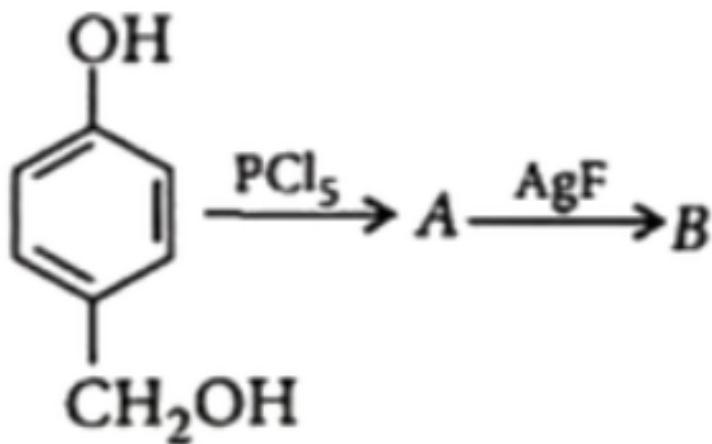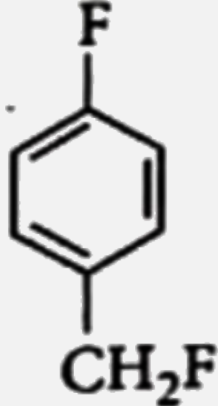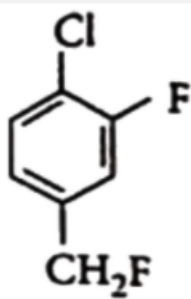
D.

Answer: C

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14. The reaction of propene with $HOCI(CI_2 + H_2O)$ proceeds through the intermediate:

A. $CH_3 - CHCl - CH_2^+$

B. $CH_3 - CH^+ - CH_2 - OH$

C. $CH_3 - CH^+ - CH_2 - Cl$

D. $CH_3 - CH(OH) - CH_2^+$
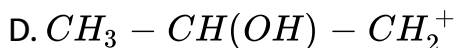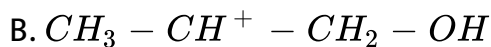
Answer: C

15. The correct order of the calculated spin - only magnetic moments of complexes (A) to (D) is :

(A) $Ni(CO)_4$

(B) $[Ni(H_2O)_6]Cl_2$

(C) $Na_2[Ni(CN)_4]$

(D) $PdCl_2(PPh_3)_2$
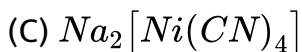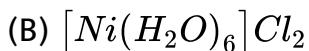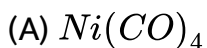
A. $(c) < (d) < (b) < (a)$

B. $(a) \approx (c) < (b) \approx (d)$

C. $(a) \approx (c) \approx (d) < (b)$

D. $(c) \approx (d) < (b) < (a)$

Answer: C

16. $MeSiCl$ is used during polymerisation of organo silicones because

    A. the chain length of organosilicon polymers can be controlled by adding $(CH_3)_3SiCl$

    B. $(CH_3)_3SiCl$ improves the quality and yield of the polymer

    C. $(CH_3)_3SiCl$ does not block the end terminal of silicone polymer

    D. $(CH_3)_3SiCl$ acts as a catalyst during polymerisation

Answer: A

17. What will the entropy change of the system when expansion of 1 mole of a gas takes place from 3 L to 6 L under isothermal conditions? Consider, $R = 2 \text{ cal K}^{-1} \text{ mol}^{-1}$ and $\log 2 = 0.30$

A. 2.84 cal K^{-1}

B. 1.386 cal K^{-1}

C. 0.37 cal K^{-1}

D. 5.26 cal K^{-1}

Answer: B

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18. IUPAC name of $C\overset{-}{C}l_3CHO$ is

A. Chloral

B. Trichloro acetaldehyde

C. 1, 1, 1 - trichloroethanal

D. 2, 2, 2- trichloroethanal

Answer: D

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19. Dacron is continuous filament yarn used in curtains, dress fabrics and pressure fire hoses. The reaction for preparing Dacron is by the combination of which of the following?

A. Hexamethylene diamene and adipic acid

B. Caprolactum

C. Phenol and formaldehyde

D. Ethylene glycol and terephthalic acid

Answer: D

20. Which carbon atom of deoxyribose sugar in DNA does not contain $-\overset{|}{\underset{|}{C}}-$ OH bond ?

A. C_5

B. C_3

C. C_2

D. C_1

Answer: C

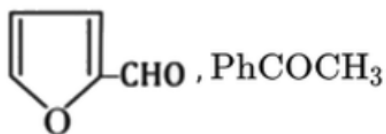**21.** If an electron of hydrogen atom moves from fourth excited state to ground state in Lyman series find the total number of spectral lines?

22. How many of these compounds can undergo cannizzaro reaction here

$CH_3CHO, CH_3COCH_3, HCHO, Ph - CHO, Ph - CO - CHO,$

$-CHO$, $PhCOCH_3$

, $PhCOCH_3$

23. To an evacuated vessel with movable piston under external pressure of 1 atm 0.1 mole of He and 1.0 mole of an unknown

compound vapour pressure 0.68 atm at $0°C$ are introduced

Considering the ideal gas behaviour the total volume (in litre) of

the gases at $0°C$ is close to .

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24. How many of these metals carbon reduction is used during

their extraction.

$Ag, Au, Fe, Sn, Zn, Pb, Al$

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25. The number of bond pairs is X and lone pairs is Y on Xe (central

atom) in XeO_3F_2. What is the sum of $X + Y$?

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