

## CHEMISTRY

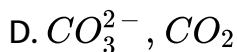
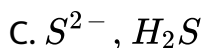
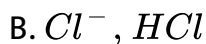
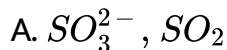
### BOOKS - NTA MOCK TESTS

#### NTA JEE MOCK TEST 60

#### Chemistry

1.  $[X] + H_2SO_4 \rightarrow [Y]$  a colourless gas with irritating smell

$[Y] + K_2Cr_2O_7 + H_2SO_4 \rightarrow$  green solution  $[X]$  and  $[Y]$  are



**Answer: A**

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2. The third line of the Balmer series, in the emission spectrum of the hydrogen atom, is due to the transition from the

- A. fourth Bohr orbit to the first Bohr orbit
- B. fifth Bohr orbit to the second Bohr orbit
- C. sixth Bohr orbit to the third Bohr orbit
- D. seventh Bohr orbit to the third Bohr orbit

**Answer: B**

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3. What will be the pH of a solution formed by mixing 10 ml 0.1 M  $NaH_2PO_4$  and 15 mL 0.1 M  $Na_2HPO_4$ ?

[Given: for  $H_3PO_4$   $Pk_{a_1} = 2.12$ ,  $Pk_{a_2} = 7.2$ ]

A. 7.0

B. 6.9

C. 7.4

D. 7.5

**Answer: C**

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4. The oxidation states of

Cr in  $[Cr(H_2O)_6]Cl_3$ ,  $[Cr(C_6H_6)_2]$  and

$K_2[Cr(CN)_2(O_2)(NH_3)]$  respectively are

A. +3, +4, and +6

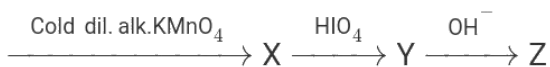
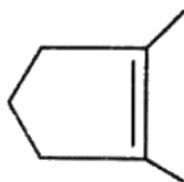
B. +3, +2, and +4

C. +3, 0 and +6

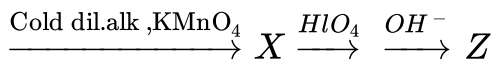
D. +3, 0 and +4

**Answer: C**

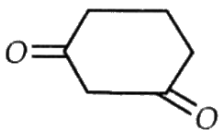
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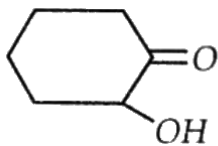
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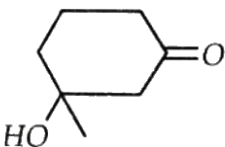
In the above sequence of reaction, Z is



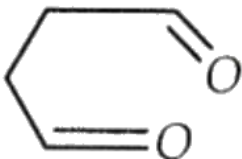
A.



B.



C.



D.

**Answer: C**

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6. Calculate the work done when 112 g iron reacts with dilute HCl at 300 K. The reaction is carried out in an open container  
(At mass of Fe = 56)

A. 600 cal

B. 300 cal

C. 200 cal

D. -1200 cal

**Answer: D**



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7. Initially, 0.8 mole of  $PCl_5$  and 0.2 mol of  $PCl_3$  are mixed in one litre vessel. At equilibrium, 0.4 mol of  $PCl_3$  is present. The value of

$K_c$  for the reaction



would be

A.  $0.13 \text{ mol L}^{-1}$

B.  $0.66 \text{ mol L}^{-1}$

C.  $0.013 \text{ mol L}^{-1}$

D.  $0.05 \text{ mol L}^{-1}$

**Answer: A**

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8. Which of the following arrangements does not represent the correct order of the property stated against it?

A.

$V^{2+} < Cr^{2+} < Mn^{2+} < Fe^{2+}$  : paramagnetic behaviour

B.  $Sc < Ti < Cr < Mn$  : number of oxidation states

C.

$Co^{3+} < Fe^{3+} < Cr^{3+} < Sc^{3+}$  : stability in aqueous solution

D.  $Ni^{2+} < Co^{2+} < Fe^{2+} < Mn^{2+}$  : ionic size

**Answer: A**

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9. A solution of ( - ) - 1 - chloro -1- phenylethane in toluene racemises slowly in the presence of a small amount of  $SbCl_5$ , due to the formation of

A. free radical

B. carbene

C. carbocation

D. carbanion

**Answer: C**

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10. For gaseous state, if most probable speed is denoted by  $C^*$  average speed by  $\bar{C}$  and root square speed by  $C$ , then for a large number of molecules, the ratios of these speeds are

A.  $C^* : \bar{C} : C = 1 : 1.225 : 1.128$

B.  $C^* : \bar{C} : C = 1.128 : 1.225 : 1$

C.  $C^* : \bar{C} : C = 1 : 1.128 : 1.225$

D.  $C^* : \bar{C} : C = 1.225 : 1.128 : 1$

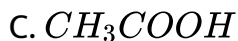
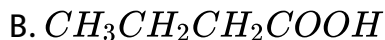
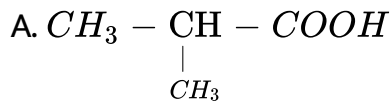
**Answer: C**



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11. An organic compound A upon reacting with  $NH_3$  gives B. On heating B gives C. C in presence of  $KOH$  reacts with  $Br_2$  to yield

$CH_3CH_2NH_2A$  is .



**Answer: D**



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12. An unknown alcohol is treated with the "Lucas reagent" to determine whether the alcohol is primary, secondary or tertiary.

Which alcohol reacts fastest and by what mechanism?

A. Tertiary alcohol by  $S_N2$

B. Tertiary alcohol by  $S_N1$

C. Secondary alcohol by  $S_N2$

D. Secondary alcohol by  $S_N1$

**Answer: B**

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13. A gaseous compound of nitrogen and oxygen is paramagnetic in nature. When it is cooled below  $0^\circ C$  its molecular mass increases and paramagnetism is lost. The behaviour is reversed on heating. The compound is

A.  $N_2O_3$

B.  $N_2O$

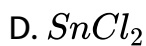
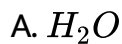
C.  $NO_2$

D.  $N_2O_4$

**Answer: C**

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**14.** In which of the following molecules/ions is the bond angle largest?



**Answer: C**

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15. Electronic configuration of few elements are given below. Mark the incorrect match.

A.  $1s^2 2s^2 2p^5$ , Most electronegative element

B.  $1s^2 2s^2 2p^3$ , An element, belonging to 3 period and 5 group

C.  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^8 4s^2$ , A d - block element

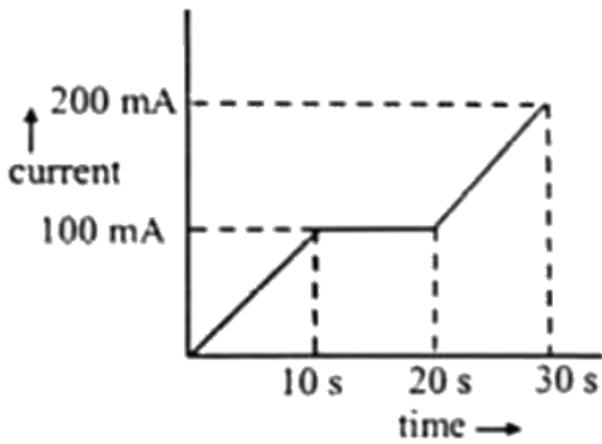
D.  $1s^2 2s^2 2p^6 3s^2 3p^6$ , An element from 18 group

**Answer: B**



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16. In a Cu - voltmeter, mass deposited in 30 s is m gm. If the time - current graph is shown in the following figure



What is the electrochemical equivalent of Cu?

- A.  $m/2$
- B.  $m/3$
- C.  $m/4$
- D.  $\frac{m}{63.5}$

**Answer: B**



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17. Chlorine gas is prepared by reaction of  $H_2SO_4$  with  $MnO_2$  and  $NaCl$ . What volume of  $Cl_2$  will be produced at STP if 50 g of  $NaCl$  is taken in the reaction?

A. 19.14 L

B. 22.4 L

C. 11.2 L

D. 9.57 L

**Answer: D**

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18. Ozone depletion in the stratosphere is primarily due to

A.  $SO_2$

B.  $NO_2$

C.  $NO$

D. Chlorofluorocarbons

**Answer: D**



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19. The number of unit cells present in 1 g cube shaped ideal crystal of solid  $A^+ B^-$  (with CCP close packing) (formula mass = 60) are

A.  $2.5 \times 10^{21}$

B.  $6.02 \times 10^{23}$

C.  $4.0 \times 10^{22}$

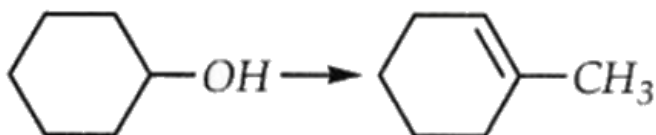
D.  $1.0 \times 10^{22}$



Answer: A

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20. The transformation given below can be performed by



A. (i) PCC (ii) MeMgBr (iii)  $POCl_3$

B. TsCl/MeMgBr

C. NaOH/Mel

D. (i) HBr (ii) Mg (iii) Mel

Answer: A

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21. The crystal field splitting energy (CFSE) for  $[CoCl_6]^{4-}$  is about  $18000\text{ cm}^{-1}$ . What would be the CFSE value for  $[CoCl_4]^{2-}$ ?

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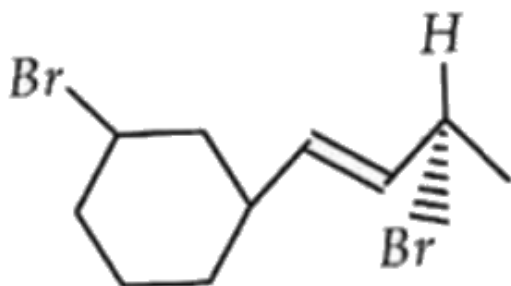
22. What is the pOH of 0.1 M KB (salt of weak acid and strong base) at  $25^\circ\text{C}$ ? (Given :  $Pk_b\text{ of }B^- = 7$ )

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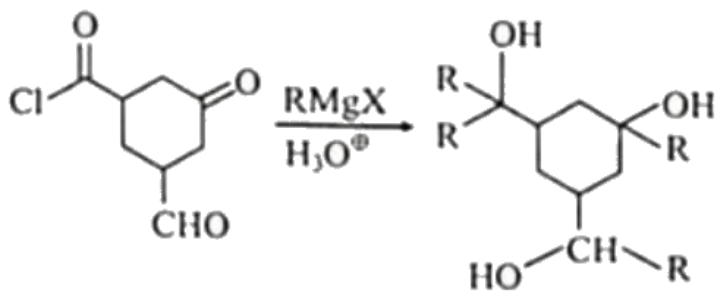
23. The reaction  $A + B + C \rightarrow$  products is found to obey the rate law,  $r = \frac{d[A]}{dt} = K[A]^2[B]^{\frac{3}{2}}[C]^{-\frac{1}{2}}$ . The overall order of the reaction is

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24. The number of stereoisomers possible for the molecule,



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25.

How many molecules of  $\text{RMgX}$  are consumed in the above given reaction?

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