

## CHEMISTRY

### BOOKS - NTA MOCK TESTS

#### NTA JEE MOCK TEST 79

#### Chemistry

1. The radius of the first orbit of hydrogen atom is  $0.52 \times 10^{-8} \text{ cm}$ . The radius of the first orbit of helium atom is

A.  $0.26 \times 10^{-8} \text{ cm}$

B.  $0.52 \times 10^{-8} \text{ cm}$

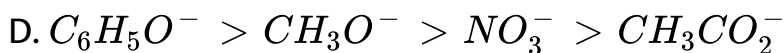
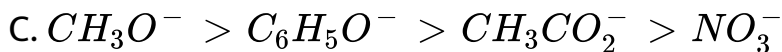
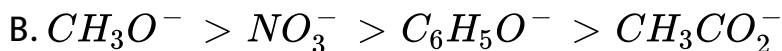
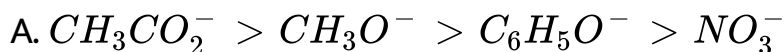
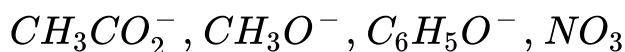
C.  $1.04 \times 10^{-8} \text{ cm}$

D.  $2.08 \times 10^{-8} \text{ cm}$

**Answer: A**

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2. The decreasing order of nucleophilicity for the following anions is

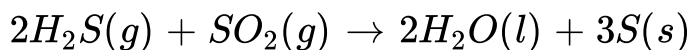


**Answer: C**



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3. At STP, 2.8 litres of hydrogen sulphide were mixed with 1.6 litres of sulphur dioxide and the reaction occurred according to the equation



Which of the following shows that volume of the gas remaining after the reaction?

A. 0.2 litres of  $SO_2(g)$

B. 0.4 litres of  $H_2(S)$

C. 1.2 litres of  $H_2S(g)$

D. 1.2 litres of  $SO_2(g)$

**Answer: A**



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**4. Which of the following statements are correct?**

1. A  $\sigma$  bond is stronger than a  $\pi$  bond
  2. A covalent bond is stronger than a hydrogen bond
  3. HF is more polar than HCl
  4. There is one electrovalent bond and three covalent bonds in methylene chloride
- Select the correct answer using the codes given below

A. 2, 3 and 4

B. 1 and 3

C. 1, 2 and 4

D. 1, 2 and 3

**Answer: D**



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5. Calculate the work done when 2.5 mol of  $H_2O$  vaporizes at 1.0 atm and  $25^\circ C$ . Assume the volume of liquid  $H_2O$  is negligible compared to that of vapour.

Given  $1 \text{ L atm} = 101.3 \text{ J}$  and  $R = 0.082 \text{ L atm mol}^{-1} K^{-1}$ .

A. 6190 kJ

B. 6.19 kJ

C. 61.1 kJ

D. 5.66 kJ

Answer: B



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6. Which of the following would not give 2 - phenylbutane as the major product in a Friedel - Crafts alkylation reaction with benzene?

A. 1 - butene + HF

B. 2 - butanol +  $H_2SO_4$

C. Butanoylchloride +  $AlCl_3$  then  $Zn - Hg / HCl$

D. Butyl chloride +  $AlCl_3$

Answer: C



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7. Which of the following statements is correct?

A.  $BCl_3$  and  $AlCl_3$  are both Lewis acids and  $BCl_3$

B. Both  $BCl_3$  and  $AlCl_3$  are Lewis acids and  $AlCl_3$  is stronger than  $BCl_3$

C. Both  $BCl_3$  and  $AlCl_3$  are equally strong Lewis acids

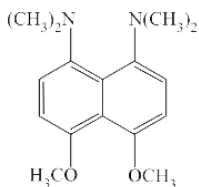
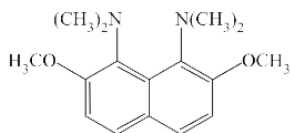
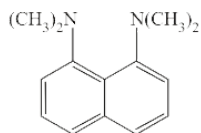
D. Both  $BCl_3$  and  $AlCl_3$  are not Lewis acids

**Answer: A**



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8. The increasing order basicity among the following is



A. Y lt X lt Z

B. Y lt Z lt X

C. X lt Z lt Y

D. X lt Y lt Z

**Answer: A**



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9. In a first order reaction, the concentration of the reactant, decreases from 0.8 M to 0.4 M in 15 minutes. The time taken for the concentration to change from 0.1 M to 0.025 M is -

- A. 30 minutes
- B. 15 minutes
- C. 7.5 minutes
- D. 60 minutes

**Answer: A**



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10. Benzoic acid can prepared by reacting phenyl magnesium bromide with

A. N, N - dimethylformamide

B. carbon dioxide

C. formaldehyde

D. ethyl chloroformate

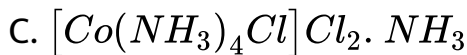
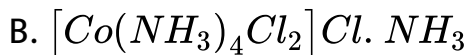
**Answer: B**



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11. One mole of complex compound  $Co(NH_3)_5Cl_3$  gives 3 moles of ions on dissolution in water. One mole of same complex reacts with two moles of  $AgNO_3$  to yield two moles of  $AgCl(s)$ . The complex is:

A.  $[Co(NH_3)_3Cl_2]2NH_3$



**Answer: D**

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12. Which option is not matched in correct sequence

A.  $d^5, d^3, d^1, d^4 \rightarrow$  increasing magnetic moment

B.

$MO, M_2O_3, MO_2, M_2O_5 \rightarrow$  decreasing basic strength

C.

$Sc, V, Cr, Mn \rightarrow$  increasing number of oxidation state

D.  $Co^{2+}$ ,  $Fe^{+3}$ ,  $Cr^{+3}$ ,  $Sc^{+3} \rightarrow$  increasing stability

**Answer: A**



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**13.** At high temperature, the following reaction occurs



Consider the following statements regarding reaction

1.  $K_p = P_{O_2}$

2.  $K_p$  depends upon the amounts of  $CuO$  and  $Cu_2O$

3.  $K_p < < K_c$

4.  $K_p > K_c$

Of the statements

A. 1 and 2 are correct

B. 1, 2 and 3 are correct

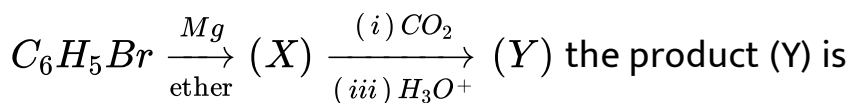
C. 1 and 4 are correct

D. 2 and 3 are correct

**Answer: C**

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**14.** In the sequence of reactions



A. biphenyl

B. m - bromobenzoic acid

C. benzoic acid

D. benzyl alcohol

Answer: C



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15. Pick out the incorrect statement.

A. The geometry around 'N' atom in trimethylamine is pyramidal

B. The geometry around N atom in trisilylamine is planar

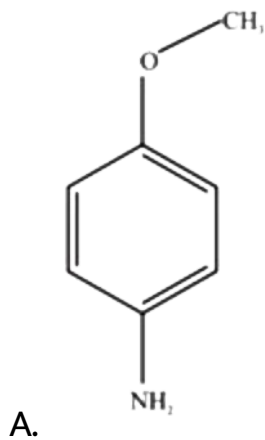
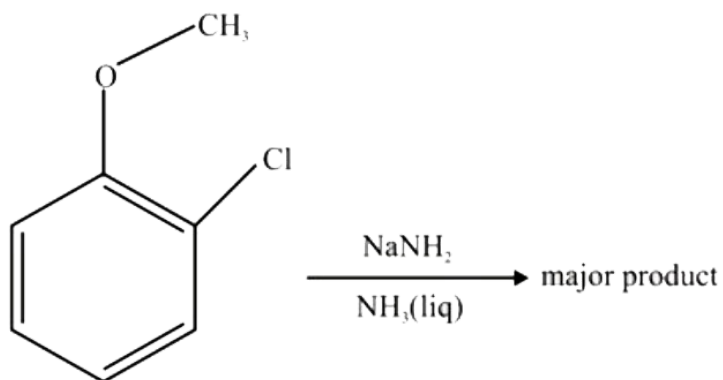
C. The nitrogen atom in trimethylamine is  $sp^3$  – hybridized, whilst in trisilylamine it is  $sp^2$  – hybridized.

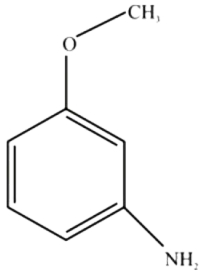
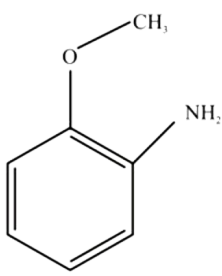
D. Trisilylamine has donor properties whilst trimethylamine has no donor properties

Answer: D

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16. Complete the following reaction





D. All

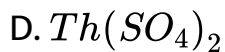
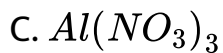
**Answer: C**

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17. The best electrolyte for coagulating  $As_2S_3$  sol is

A.  $NaCl$





**Answer: D**



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**18.** Match List I with List II and select the correct answer using codes given below the lists.

	List I		List II
(p)	Potassium sulphate	1.	Acidic
(q)	Sodium acetate	2.	Neutral
(r)	Ammonium chloride	3.	Alkaline
(s)	Calcium formate	4.	Cannot be predicted

A. (p) - 1, (q) - (2), (r) - 3, (s) - 4

B. (p) - 2, (q) - 1, (r) - 3, (s) - 4

C. (p) - 3, (q) - 4, (r) - 2, (s) 1

D. (p) - 2, (q) - 3, (r) - 1, (s) - 4

**Answer: D**



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19. The freezing point of a 3% aqueous solution 'A' is equal to the freezing point of 9% aqueous solution 'B'. If the molecular weight of 'A' is 60, then the molecular weight of 'B' will be

A. 191.9

B. 90

C. 45

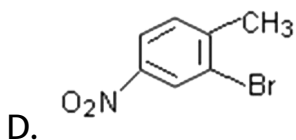
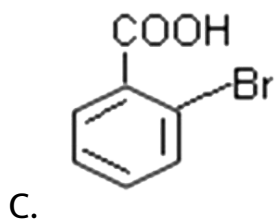
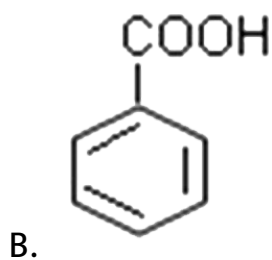
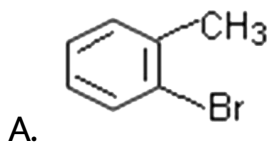
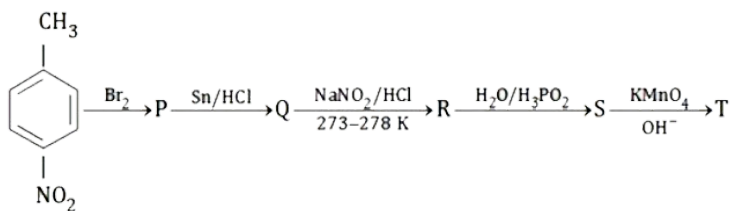
D. 20

**Answer: A**



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20. Identify the product (T) in the following sequence of reactions.



**Answer: C**

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21. An open flask containing air is heated from  $300K$  to  $500K$ . What percentage of air will be escaped to the atmosphere, if the pressure is kept constant ?

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22. The number of chiral carbons in  $\beta - D(+) -$  glucose is:  
is:

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23. If the number of  $\sigma$  and  $\pi$  bonds in vinyl acetate are  $x$  and  $y$  respectively. What is the sum of  $x + y$ ?

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24. When 1 mole of an ideal monoatomic gas is compressed adiabatically the internal energy change involved is 24 cal. The temperature rise (in kelvin) is

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25. The equivalent conductance of monobasic acid at infinite dilution is  $348 \text{ ohm}^{-1} \text{ cm}^2 \text{ eq}^{-1}$ . If the resistivity of the solution containing 15 g acid (mol. Wt 49) in litre is 18.5 ohm

cm. What is the % degree of dissociation of acid? Report your answer up to two decimal places without rounding up.



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