



## CHEMISTRY

### BOOKS - NTA MOCK TESTS

#### NTA JEE MOCK TEST 52

#### Chemistry

1. A metallic element crystallizes into a lattice contained sequence of layers  $ABABAB$ . . . . Any packing of sphere leaves out voids in the lattice. The percentage by volume of this lattice as empty space is

A. 26 %

B. 74 %

C. 50 %

D. 85 %

**Answer: A**



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2. The pH of a solution obtained by mixing equal volume of solution having pH = 3 and pH = 4.

$$[\log 5.5 = 0.7404]$$

A. 3.26

B. 3.5

C. 4.0

D. 3.42

**Answer: A**

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3. Suppose the elements P and Q combine to form two compounds  $PQ_2$  and  $P_3Q_2$ . When 0.1 mole of  $PQ_2$  weight 10 g and 0.05 mole of  $P_3Q_2$  weight 9 g, the atomic weights of P and Q are

A. 40, 30

B. 60, 40

C. 20, 30

D. 30, 20

**Answer: A**

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4. How much amount of NaCl should be added to 600 g of water ( $\rho = 1.00\text{g/mL}$ ) to decrease freezing point of water to  $-0.2^\circ\text{C}$ ? \_\_\_\_\_ . (The freezing point depression constant for water =  $2\text{Kkgmol}^{-1}$ )

A. 2.14 g

B. 0.88 g

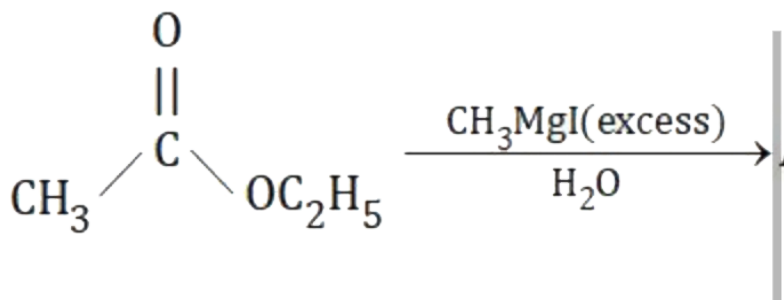
C. 1.96 g

D. 1.76 g

Answer: D

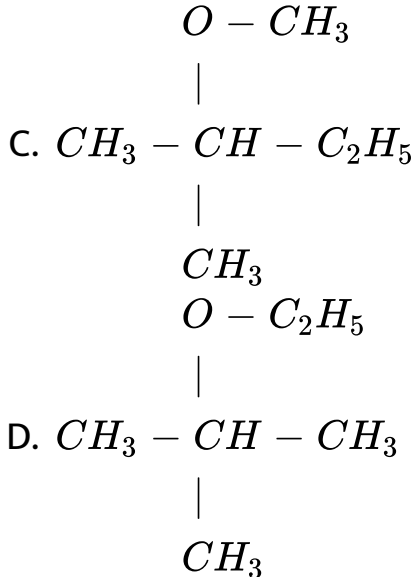
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5. Consider the following sequence of reaction.



The final product C is

- A. 
$$\begin{array}{c} \text{O} - \text{C}_2\text{H}_5 \\ | \\ \text{CH}_3 - \text{CH} - \text{CH}_3 \\ | \\ \text{OH} \end{array}$$
- B. 
$$\begin{array}{c} \text{CH}_3 - \text{C} - \text{CH}_3 \\ | \\ \text{CH}_3 \end{array}$$



Answer: D

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6. The degree of dissociation of  $PCl_5(\alpha)$  obeying the equilibrium,  $PCl_5 \rightleftharpoons PCl_3 + Cl_2$  is related to the pressure at equilibrium by :

A.  $a \propto P$

B.  $\alpha \propto \frac{1}{\sqrt{P}}$

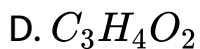
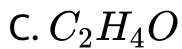
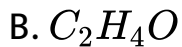
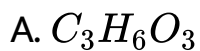
C.  $\alpha \propto \frac{1}{p^2}$

D.  $\alpha \propto \frac{1}{p^4}$

**Answer: B**

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7. The ration of mass per cent of C and H of an organic compound ( $C_xH_yO_z$ ) is 6 : 1. If one molecule of the above compound ( $C_xH_YO_z$ ) contains half as much oxygen as required to burn one molecule of compound  $C_xH_Y$  completely to  $CO_2$  and  $H_2O$ . The empirial formula of compound  $C_xH_yO_z$  is:



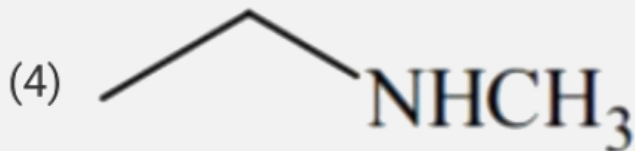
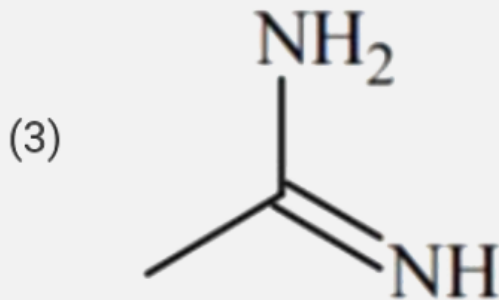
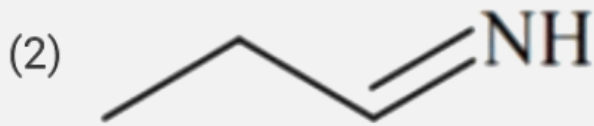
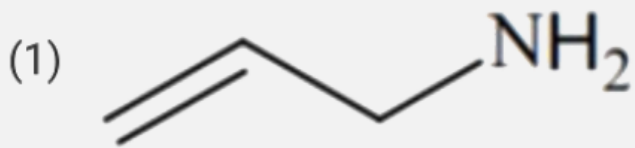
**Answer: A**



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**8.** The increasing order of basicity of the following compounds is





A. (4) lt (2) lt (1) lt (3)

B. (1) lt (2) lt (3) lt (4)

C. (2) lt (1) lt (3) lt (4)

D. (2) It (1) It (4) It (3)

**Answer: D**



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**9. Which of the following statement is/are correct?**

I. The ligand thiosulphate,  $S_2O_3^{2-}$  can give rise to linkage isomers.

II. In metallic carbonyls the ligand CO molecule acts both as donor and acceptor.

III. The complex  $[Pt(Py)(NH_3)(NO_2)ClBr]$  exists in eight different geometrical isomeric forms

IV. The complex ferricyanide ion does not follow effective atomic number (EAN) rule.

A. I and II only

B. II and IV only

C. I, II and III

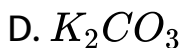
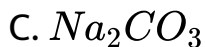
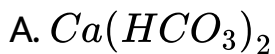
D. I, II and IV

**Answer: D**



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**10.** A solid compound X on heating gives  $CO_2$  gas and a residue. The residue mixed with water forms Y. On passing excess of  $CO_2$  through Y in water, a clear solution Z is obtained. On boiling Z, compound X is reformed. The compound X is



**Answer:**



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**11. Match List I (substance) with List II (processes) employed in the manufacture of the substances and**

select the correct option

List I (Substances)	List II (Processes)
1. Sulphuric acid	(i) Haber's process
2. Steel	(ii) Bessemer's process
3. Sodium hydroxide	(iii) Leblanc process
4. Ammonia	(iv) Contact process

A. 1 - (i), 2 - (iv), 3 - (ii), 4 - (iii)

B. 1 - (i), 2 - (ii), 3 - (iii), 4 - (iv)

C. 1 - (iv), 2 - (iii), 3 - (ii), 4 - (i)

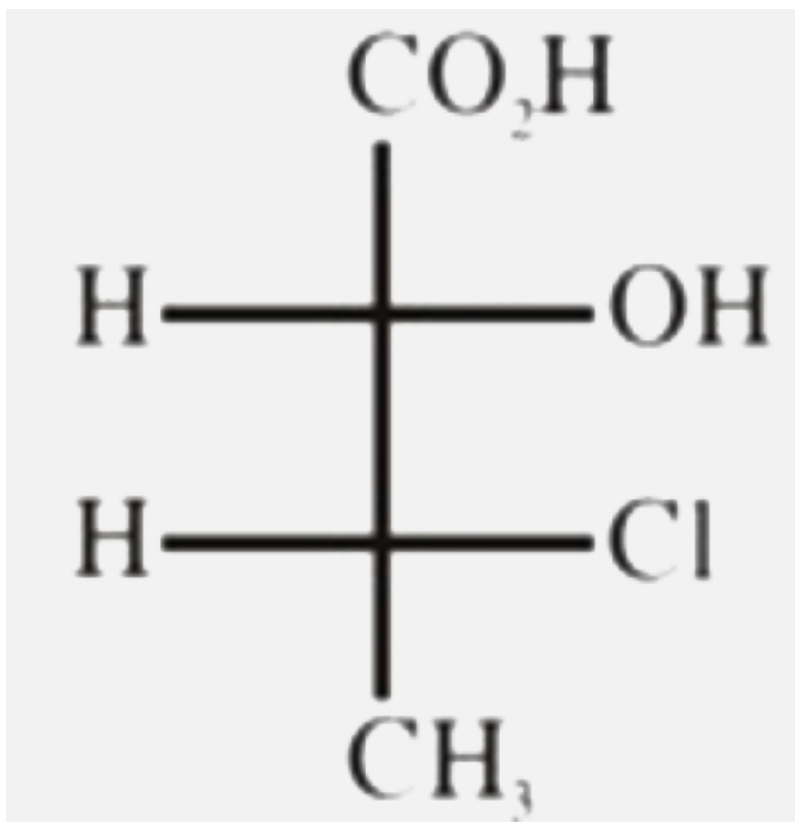
D. 1 - (iv), 2 - (ii), 3 - (iii), 4 - (i)

**Answer: D**



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12. The absolute configuration of



is

A. (2R, 3R)

B. (2R, 3S)

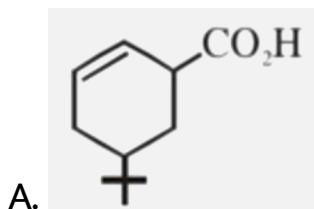
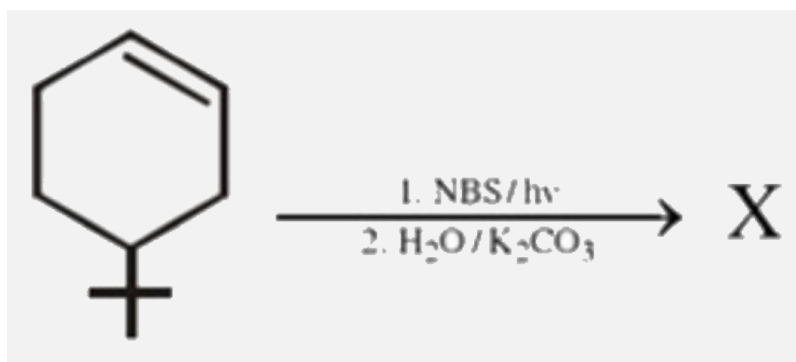
C. (2S, 3R)

D. (2S, 3S)

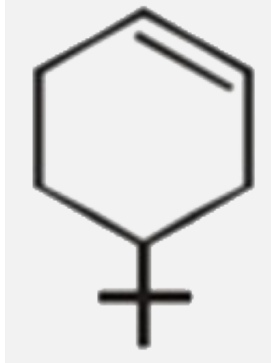
Answer: C

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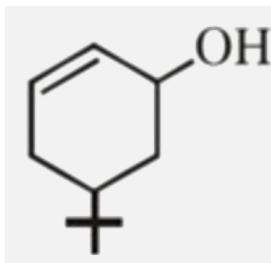
13. The product of the reaction given below is



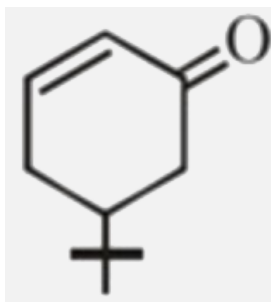
B.



C.



D.

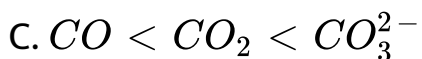
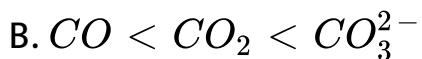
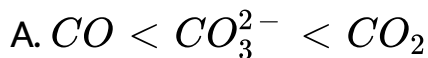


**Answer: C**

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14. The correct order of  $C - O$  bond length among  $CO$ ,  $CO_3^{2-}$ ,  $CO_2$  is

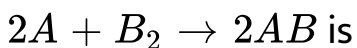


**Answer: C**



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15. The experiment data for the reaction



Experiment	$[A]M$	$[B_2]M$	Initial rate ( $molL^{-1}s^{-1}$ )
<i>I</i>	0.50	0.5	$1.6 \times 10^{-4}$
<i>II</i>	0.50	1.0	$3.2 \times 10^{-4}$
<i>III</i>	1.00	1.0	$3.2 \times 10^{-4}$

Write the most probable rate equation for the reacting giving reason for you answer.

A. Rate =  $k[A]^2[B]^2$

B. Rate =  $k[A]^2[B]$

C. Rate =  $k[B_2]$

D. Rate =  $[B_2]^2$

**Answer: C**



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16. Which one of the following is used to make 'non-stick' cookware?

A. poly-ethylene terephthalate

B. polytetrafluoroethylene

C. PVC

D. polystyrene

**Answer: B**



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17. Which of the following statements, about the advantage of roasting of sulphide ore before reduction is

not true?

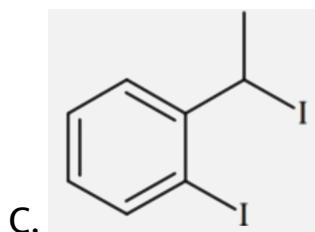
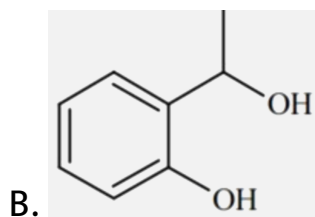
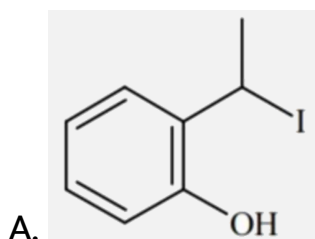
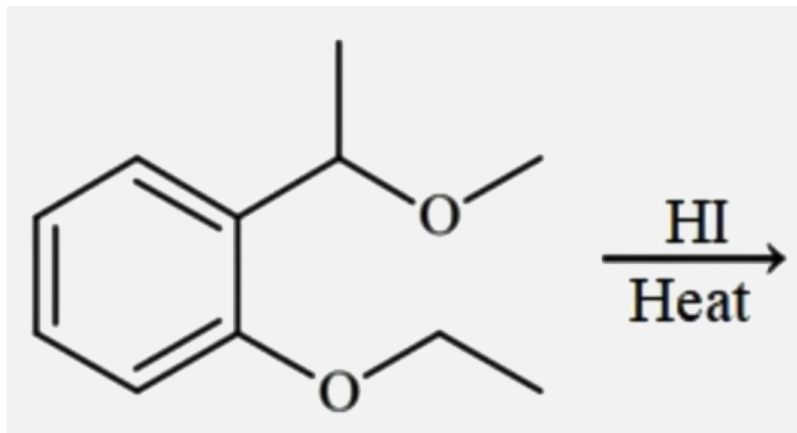
- A. the magnitude of  $\Delta G_f^\circ$  of the sulphide is greater than those for  $CS_2$  and  $H_2S$
- B. the  $\Delta G_f^\circ$  is negative for roasting of sulphide ore to oxide
- C. roasting of the sulphide to the oxide is thermodynamically feasible
- D. carbon and hydrogen are suitable reducing agents for metal sulphides

**Answer: D**

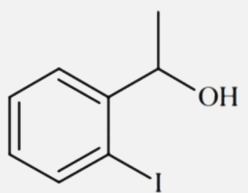


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18. The major product formed in the following reaction is



D.



**Answer: A**

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**19.** RNA and DNA are chiral molecules, their chirality is due to

- A. chiral bases
- B. chiral phosphate ester units
- C. D-sugar component
- D. L-sugar component

**Answer: C**



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20. A certain metal when irradiated to light ( $\nu = 3.2 \times 10^{16} \text{ Hz}$ ) emits photoelectrons with twice kinetic energy as did photoelectrons when the same metal is irradiation by light ( $\nu = 2.0 \times 10^{16} \text{ Hz}$ ). The  $\nu_0$  Threshold frequency ) of the metal is

A.  $1.2 \times 10^{14} \text{ Hz}$

B.  $8 \times 10^{15} \text{ Hz}$

C.  $1.2 \times 10^{16} \text{ Hz}$

D.  $4 \times 10^{12} \text{ Hz}$

**Answer: B**

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21. All the energy released from the reaction  $X \rightarrow Y$ ,  $\Delta_r G^\circ = -193 \text{ kJ mol}^{-1}$ , is used for oxidizing  $M^+$  as  $M^+ \rightarrow M^{3+} + 2e^-$ ,  $E^\circ = -0.25 \text{ V}$ . Under standard conditions, the number of moles of  $M^+$  oxidized when one mole of  $X$  is converted to  $Y$  is  $[F = 96,500 \text{ C mol}^{-1}]$

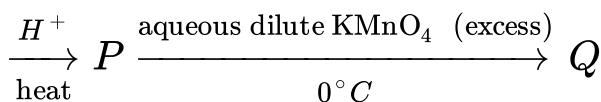
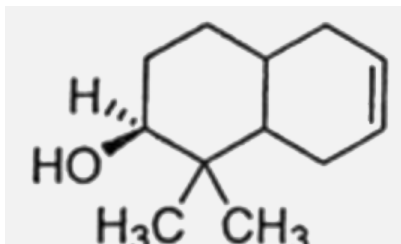
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22. In Borax ( $Na_2B_4O_7 \cdot 10H_2O$ ) if number of  $sp^2$  hybridised B- atoms are X and number of  $sp^3$  hybridised B- atom are Y. What is the value of  $X + Y$ ?

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23. The number of hydroxyl group(s) in Q is



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24. In neutral or faintly alkaline solution, 8 moles of permanganate anions to produce X moles of a sulphur containing product. The magnitude of X is .....

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25. The work done (in Cal) in adiabatic compression of 2 moles of an ideal monatomic gas by the constant external pressure of 2 atm starting from an initial pressure of 1 atm and an initial temperature of 300 K is :

$$[R = 2\text{cal/mol} \cdot \text{K}]$$

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