CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 31

Chemistry

1. Amongst the following statements, select the set having statements which was porposed by Dalton.

(1) All the atoms of a given element have identical properties including identical mass. Atoms of different elements differ in mass.

(2) When gases combine or reproduced in a chemical reaction they do so in a simple ratio by volume provided all gases are at the same T & P

(3) Chemical reaction involve reorganization of atoms. These are neither created nor destroyed in a chemical reaction.

(4) Matter consists of indivisible atoms

A. (1), (2), (3)

B. (1), (3), (4)

C. (1), (2), (4)

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

Answer: B

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2. The redox reaction among the following is

A. $2NaOH + Cl_2 \rightarrow NaCl + NaOCl + H_2O$

B. Formation of ozone from atmospheric oxygen in the presence of sunlight

C. reaction of $\left[Co(H_2O)_6\right]Cl_3$ with $AgNO_3$

D. reaction of H_2SO_4 with $NaOH$

Answer: A

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3. White phosphorus on reaction with concentrated NaOH solution in an inert atmosphere of CO_2, gives phosphine and compound (X). (X) on acidification with HCl gives compound (Y). The basicity of compound (Y) is:

A. 3

B. 5

C. 2

D. 1

Answer: D

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4. Arrange the following bonds according to their averge bond energies in descending order:

$C-Cl, C-Br, C-R, C-I$

A. $C-F>C-Cl>C-Br>C-I$

B. $C-I>C-Br>C-Cl>C-F$

C. $C-Br>C-I>C-Cl>C-F$

D. $C-Cl>C-Br>C-I>C-F$

Answer: A

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5. Preparation of Bakelite proceeds via reactions:

A. Electrophilic substitution and dehyeration

B. Nucleophilic addition and dehydration

C. Electrophilic addition and dehydration

D. Condensation and elimination

Answer: A

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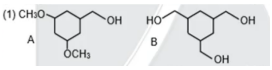
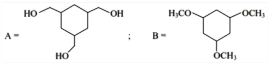
6. There are two compounds A and B of molecular formula $C_9H_{18}O_3$. A has higher boiling point than B. What are the possible structures of A and B?

A. 

B. 

C. 

D. 

Answer: D

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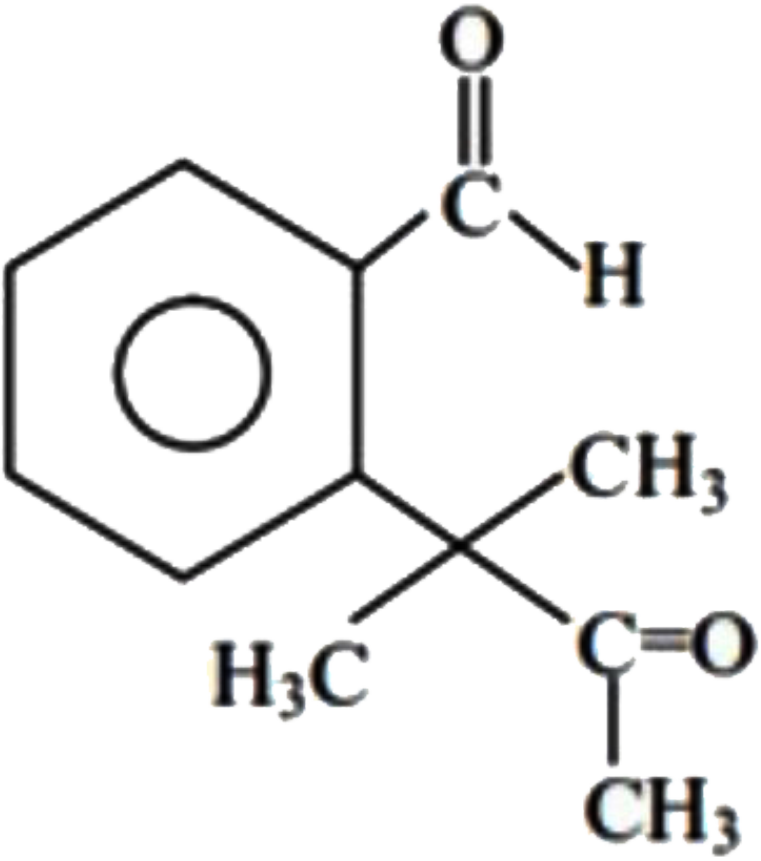
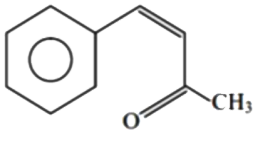
7. Identify (A) in the following reaction sequence

$$\underset{\text{Gives Positive iodoform test}}{A} \xrightarrow[\text{(iii) Conc. } H_2SO_4/\Delta]{\text{(i) } CH_3MgBr \quad \text{(ii) } H^+, H_2O} (B) \xrightarrow{O_3/Zn, H_2O}$$



A.



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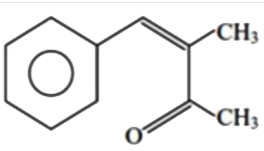
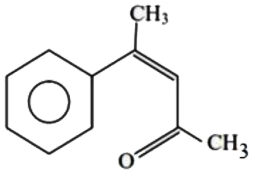
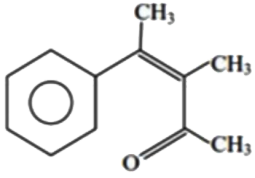


C. 

D. 

Answer: B

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8. A Complex P of compositon $Cr(H_2O)_6Br_n$ has a spin only magnetic moment of $3.83BM$. It reacts with $AgNO_3$ and shows geometrical isomerism. The IUPAC nomenclature of P is

A. Tetraaquadichlorido chromium (IV) chloride dihydrate

B. Tetraaquadichlorido chromium (III) chloride dihydrate

C. Hexaaqua chromium (III) chloride

D. Dichloridotetraaque chromium (IV) chloride dihydrate

Answer: B

9. For coagulation of arsenious sulphide sol, which one of the following salt solution will be most effective ?

A. $AlCl_3$

B. $NaCl$

C. $BaCl_2$

D. Na_3PO_4

Answer: A

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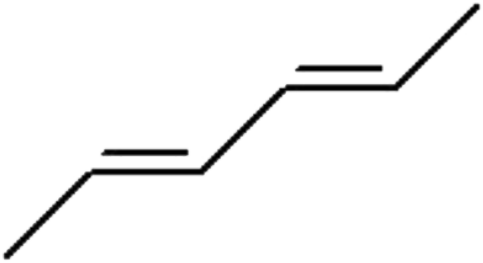
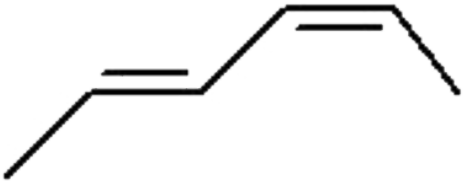
10. The correct order of heat of combustion for following alkadienes is

(i)



(ii)



(iii)

A. $(i) < (ii) < (iii)$

B. $(ii) < (iii) < (i)$

C. $(i) < (iii) < (ii)$

D. $(iii) < (ii) < (i)$

Answer: A

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11. A 0.010M solution of maleic acid, a monoprotic organic acid is 14% ionised. What is K_a for maleic acid ?

A. 2.3×10^{-3}

B. 2.3×10^{-4}

C. 2.0×10^{-4}

D. 2.0×10^{-6}

Answer: B

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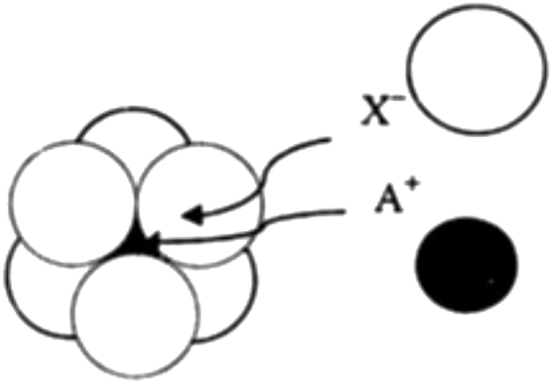
12. The arrangement of X^- ions around A^+ ion in solid AX is given in the figure (not drawn to scale). If the radius of X^- is 250 pm, the radius of A^+ is



A. 104 pm

B. 125 pm

C. 183 pm

D. 57 pm

Answer: A

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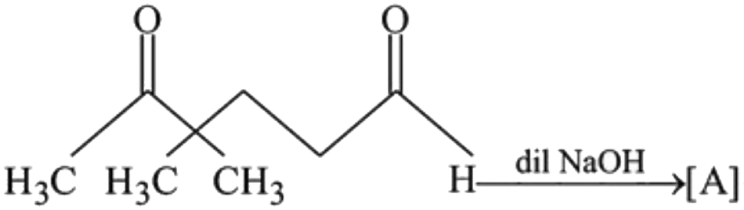
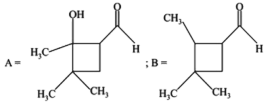
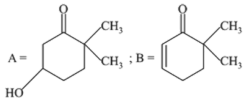
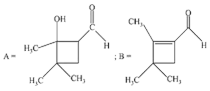
13.

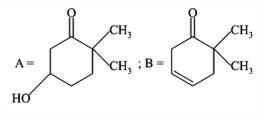


$\xrightarrow[\Delta]{H_2O^+} [B]$

A. 

B. 

C. 

D. 

Answer: D

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14. Identify the incorrect statement among the following -

A. d - block elements show irregular and erratic chemical properties among themselves.

B. La and Lu have partially filled d - orbitals and no other partially filled orbital.

C. The chemistry of various lanthanoids is very similar.

D. 4f and 5f - orbitals are equally shielded.

Answer: D

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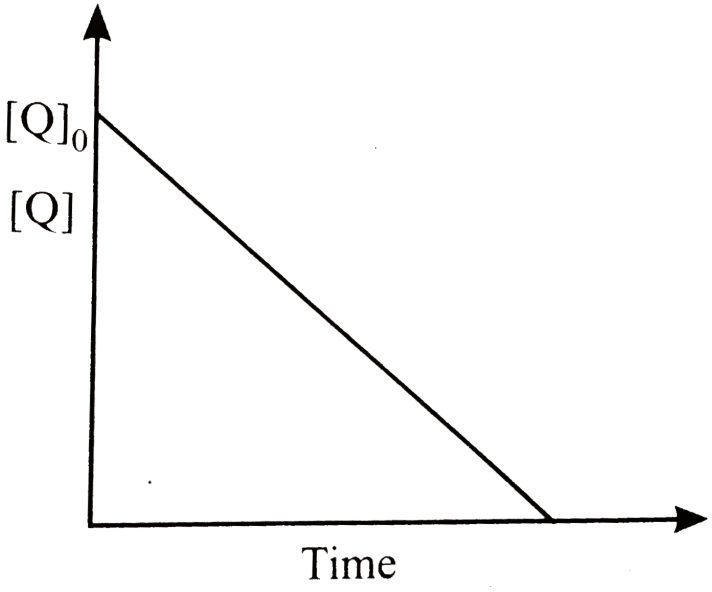
15. In the reaction, $P + Q \rightarrow R + S$

the time taken for $75\,\%$ reaction of P is twice the time taken for $50\,\%$ reaction of P. The concentration of Q varies with reaction time as shown in the figure. The

overall order of the reaction is



A. 2

B. 3

C. 0

D. 1

Answer: D

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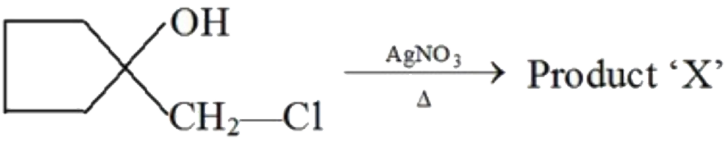
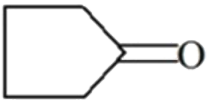
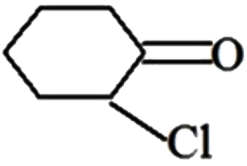
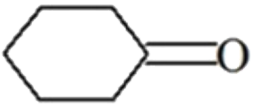


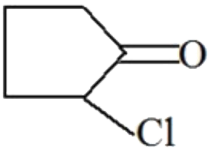
16.

The product 'X' formed in above reaction is

A. 

B. 

C. 

D. 

Answer: C

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17. The entropy change when an ideal gas under atmospheric condition at room temperature is allowed to expand from 0.5 L to 1.0 L and also is simultaneoulsy heated to 373 L will be

$\left(\text{Given}: \ C_{\text{v, m}} = 12.50 \text{ J K}^{-1}\text{mol}^{-1} \text{ and } \log 1.25 = 0.1\right)$

A. $0.18JK^{-1}$

B. $0.36JK^{-1}$

C. $0.90JK^{-1}$

D. $0.72JK^{-1}$

Answer: A

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18. Which one of the following statements regarding Henry's law is not correct?

A. The value of K_H changes with the nature of the gas.

B. Higher the value of K_H at a given pressure, higher is the sollubility of the gas in the liquids

C. The partial pressure of the gas in vapour phase is proportional to the mole fraction of the gas in the

solution.

D. Different gases have different K_H (Henry's law constant) value at the same temperature.

Answer: B

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19. Consider the following reduction processes :

$Zn^{2+} + 2e^- \rightarrow Zn(s), E^o = -0.76V$

$Ca^{2+} + 2e^- \rightarrow Ca(s), E^o = -2.87V$

$Mg^{2+} + 2e^- \rightarrow Mg(s), E^o = -2.36V$

$Ni^{2+} + 2e^- \rightarrow Ni(s), E^o = -0.25V$

The reducing power of the metals increases in the order

:

A. $Ca < Zn < Mg < Ni$

B. $Ni < Zn < Mg < Ca$

C. $Zn > Mg < Ni < Ca$

D. $Ca < Mg < Zn < Ni$

Answer: B

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20. The pair that does NOT require calcination is :

A. ZnO and MgO

B. Fe_2O_3 and $CaCO_3.MgCO_3$

C. ZnO and $Fe_2O_3.xH_2O$

D. $ZnCO_3$ and CaO

Answer: A

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21. The sum of total number of lone - pairs of electrons and sp^3 hybridized nitrogen atoms in Melamine is

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22. During the nuclear explosion, one of the products is $._{90}Sr$ with half life of 6.93 years. If μg of $._{90}Sr$ was absorbed in the bones of a newly born in place of Ca, how much time (in years) is required to reduce it by $90\,\%$. If it is not lost metabolically? Report your answer by rounding it up to a nearest whole number.

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23. The atomic masses of He and Ne are 4 and 20 amu respectively . The value of the de Broglie wavelength of He gas at $-73.^{\circ}C$ is M times that of the de Broglie wavelength of Ne at $727.^{\circ}C$. M is

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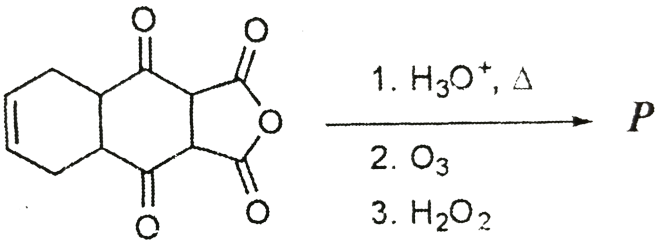
24. The total number of carboxylic acid groups in the product P is



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25. A tetrapeptide has $-COOH$ group on alanine. This produces glycine (Gly), valine (Val), phenyl alanine (Phe) and alanine (Ala), on complete hydrolyses. For this tetrapeptide, the number of possible sequences (primary

structures) with $-NH_2$ group attached to a chiral centre is

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