

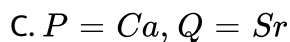
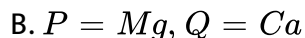
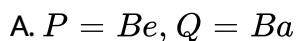
CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 65

Chemistry

1. Two metals (A) and (B) belong to the same group of the periodic table. Metal (A) forms an insoluble oxide but a soluble sulphate, metal (B) forms a soluble oxide but an insoluble sulphate. Both metals (A) and (B) form hydroxides which are soluble in alkalis. (A) and (B) are



$$D. P = Ba, Q = Mg$$

Answer: A



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2. Match the column I with column II and mark the appropriate choice.

	Column I		Column II
(p)	Liquid \rightleftharpoons vapour	(i)	Saturated solution
(q)	Solid \rightleftharpoons liquid	(ii)	Boiling point
(r)	Solid \rightleftharpoons vapour	(iii)	Sublimation point
(s)	Solute(s) \rightleftharpoons solute (solution)	(iv)	Melting point

A. (p)-(i), (q)-(iii), (r)-(ii), (s)-(iv)

B. (p)-(ii), (q)-(iv), (r)-(iii), (s)-(i)

C. (p)-(iv), (q)-(ii), (r)-(i), (s)-(iii)

D. (p)-(iii), (q)-(iv), (r)-(ii), (s)-(i)

Answer: B

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3. The molecular formula of a commercial resin used for exchanging ions in water softening is $C_8H_7SO_3Na$ (Mol.wt.206). What would be the maximum uptake of Ca^{2+} ions by the resin when expressed in mole per gram resin?

A. $\frac{2}{309}$

B. $\frac{1}{412}$

C. $\frac{1}{103}$

D. $\frac{1}{206}$

Answer: B

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4. Match the compounds given in column I with oxidation states of carbon given in column II and mark the appropriate choice.

	Column I		Column II
(p)	$C_6H_{12}O_6$	(i)	+3
(q)	$CHCl_3$	(ii)	-3
(r)	CH_3CH_3	(iii)	+2
(s)	$(COOH)_2$	(iv)	0

A. (p)-(iv), (q)-(iii), (r)-(ii), (s)-(i)

B. (p)-(i), (q)-(ii), (r)-(iii), (s)-(iv)

C. (p)-(ii), (q)-(iii), (r)-(iv), (s)-(i)

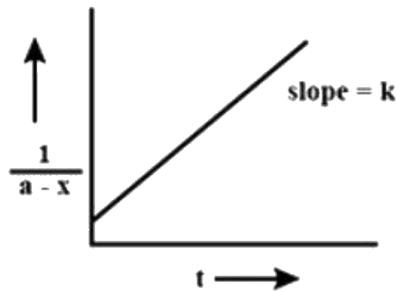
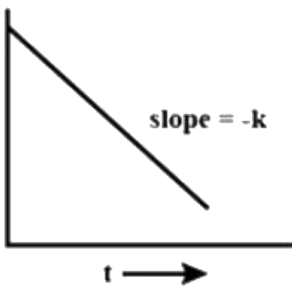
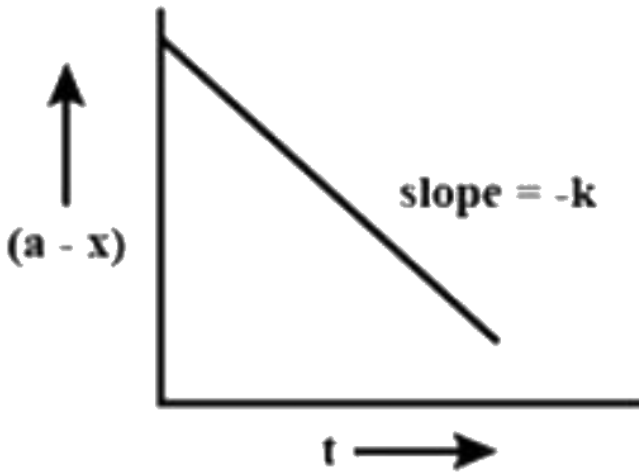
D. (p)-(iii), (q)-(ii), (r)-(i), (s)-(iv)

Answer: A



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5. Two plots are shown below between concentration and time t . Which of the given orders are shown by the graph respectively?



- A. Zero order and first order
- B. First order and second order
- C. Zero order and second order
- D. First order and first order

Answer: C

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6. Consider the following molecules O_2 , $O_2(AsF_6)$, KO_2
I II III

Choose the correct answer regarding $O - O$ bond from the following .

- A. The correct decreasing bond order is $I > III > II$
- B. The correct decreasing order of bond length is $III > I > II$
- C. The bond strength of I is less than that of III
- D. Bond dissociation energy is highest in case of III

Answer: A

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7. A 2 litre vessel is filled with air at $50^\circ C$ and pressure of 3 atm. The temperature is now raised to $200^\circ C$. A valve is now opened so that the

pressure inside drops to one atm What fraction of the total number of moles, inside escaped on opening the valve ? Assume no change in the volume of the container .

A. 7.7

B. 9.9

C. 8.9

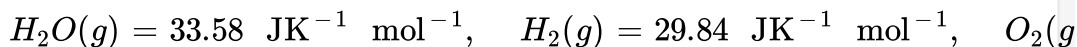
D. 0.77

Answer: D



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8. The standard enthalpy of formation of gaseous H_2O at 298 K is -241.82 kJ/mol. Calculate ΔH° at 373 K given the following values of the molar heat capacities at constant pressure :



Assume that the heat capacities are independent of temperature :

A. $-242.6 \text{ kJ mol}^{-1}$

B. $-485.2 \text{ kJ mol}^{-1}$

C. $-121.3 \text{ kJ mol}^{-1}$

D. $-286.4 \text{ kJ mol}^{-1}$

Answer: A



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9. The ionisation constant of benzoic acid ($PhCOOH$) is 6.46×10^{-5} and K_{sp} for silver benzoate is 2.5×10^{-3} . How many times is silver benzoate more soluble in a buffer of $pH 3.19$ compared to its solubility in pure water?

A. 4

B. 3.32

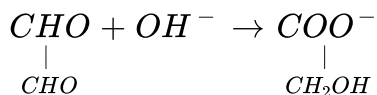
C. 3.01

D. 2.5

Answer: B

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10. Consider the following reaction.



Select the incorrect statement.

- A. It is not a disproportionation reaction
- B. It is intramolecular redox reaction
- C. OH^- is a reducing as well as oxidising agent

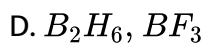
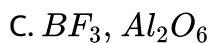
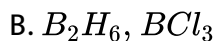
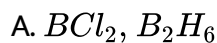
- D. $\begin{array}{c} \text{CHO} \\ | \\ \text{CHO} \end{array}$ is a reducing as well as oxidising agent

Answer: C

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11. Compound (X) on reduction with $LiAlH_4$ gives a hydride (Y) containing 21.72 % hydrogen along with other products. The compound (Y) reacts with air explosively resulting in formation of boron trioxide. Identify (X) and (Y).

Give balanced reactions involved in the formation of (Y) and its reaction with air. Give the structure of (Y).

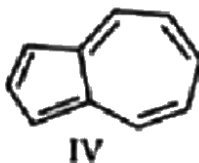
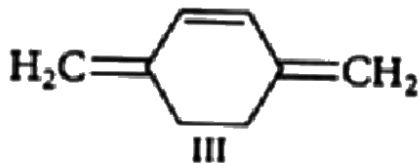
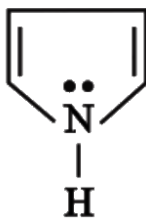
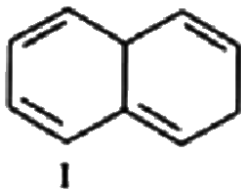


Answer: A



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12. Which of the following will exhibit aromatic character?



A. I, III

B. III, IV

C. II, IV

D. II, III

Answer: C

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13. Sea water is 3.5 % by mass of a salt and has a density 1.04gcm^{-3} at 293K . Assuming the salt to be sodium chloride, calculate the osmotic pressure of sea water. Assume complete ionisation of the salt-

A. 25.45 atm

B. 11.56 atm

C. 29.98 atm

D. 30.20 atm

Answer: C



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14. 0.02 mole of $[Co(NH_3)_5Br]Cl_2$ and 0.02 mole of $[Co(NH_3)_5Cl]SO_4$ are present in 200 cc of a solution X. The number of moles of the precipitates Y and Z that are formed when the solution X is treated with excess silver nitrate and excess barium chloride are respectively

A. 0.02, 0.02

B. 0.01, 0.02

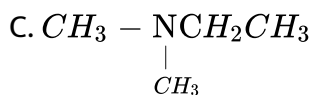
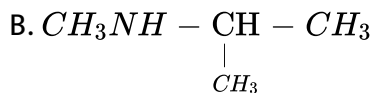
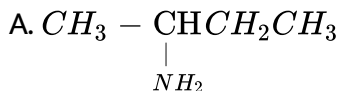
C. 0.02, 0.04

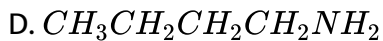
D. 0.04, 0.02

Answer: D

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15. When an optically active amine 'A' having molecular formula $C_4H_{11}N$ is subjected to Hoffmann's exhaustive methylation followed by hydrolysis, an alkene 'B' is produced which upon ozonolysis and subsequent hydrolysis yields formaldehyde and propanal. The amine 'A' is

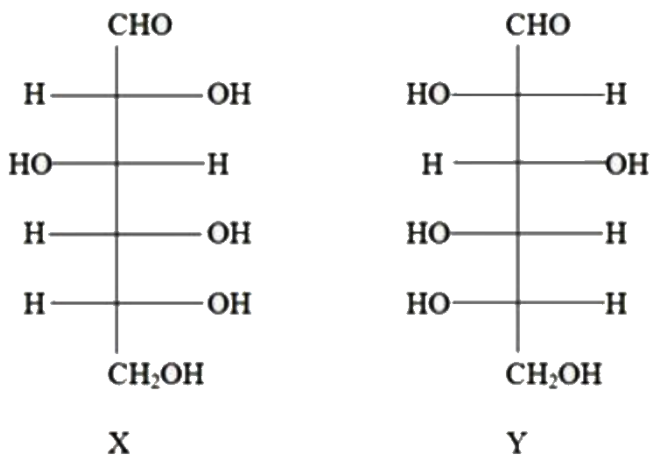




Answer: A

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16. Among the following statements about the molecules X and Y, which is incorrect?



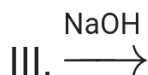
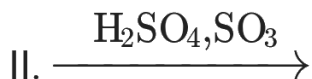
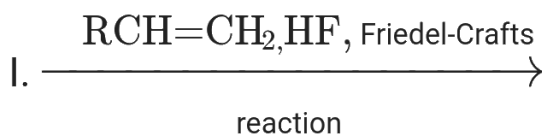
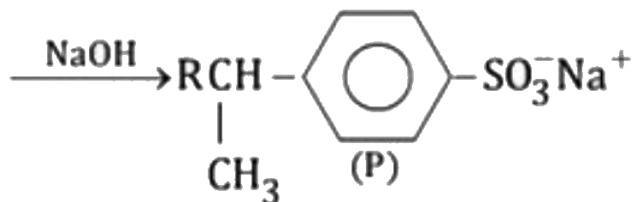
- A. X and Y are diastereomers
- B. X and Y are enantiomers
- C. X and Y are both aldohexoses

D. X is a D - sugar and Y is an L - sugar

Answer: A

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17. For the preparation of a detergent 'P' from benzene, The following steps are involved



These steps should be in sequence of

A. I, II, III

B. II, I, III

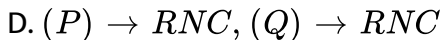
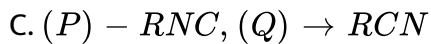
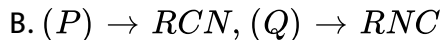
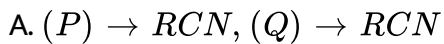
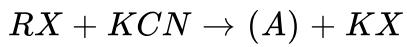
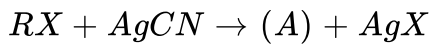
C. II, III, I

D. I, III, II

Answer: A

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18. Identify the products (A) and (B) in the reactions.



Answer: C

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19. Transition metals make the most efficient catalysts because of their ability to

- A. adopt multiple oxidation states and to form complexes
- B. form coloured ions
- C. show paramagnetism due to unpaired electrons
- D. form a large number of oxides

Answer: A

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20. The density of copper is 8.94 g mL^{-1} . Find the charge needed to plate an area of $10 \times 10 \text{ cm}^2$ to a thickness of 10^{-2} cm using a CuSO_4

solution as electrolyte

(atomic weight of Cu = 63.6 g/mol).

A. $2.7 \times 10^4 C$

B. $8.8 \times 10^4 C$

C. $18.3 \times 10^4 C$

D. $1.7 \times 10^4 C$

Answer: A



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21. How many of these acids are monobasic here?

H_3PO_2 , H_3PO_3 , H_2CO_3 , H_2SO_4 , $H_2S_2O_4$, H_2CrO_4 , H_3BO_3 , HNO_2

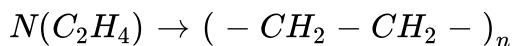
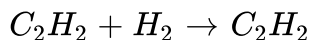
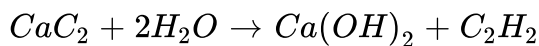


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22. If in 4F the number of radial nodes and angular nodes are X and Y respectively. Find the sum of $X + Y$?

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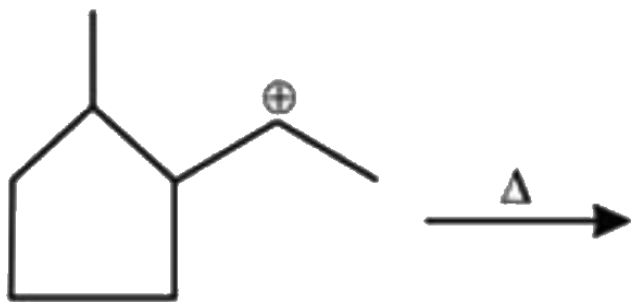
23. Formation of polyethylene from calcium carbide takes place as follows



The amount of polyethylene obtained from 64.1 kg CaC_2 is

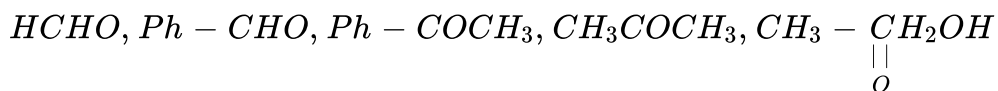
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24. How many more stable carbocations are possible after rearrangement in the following carbocation.



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25. How many of these compounds can reduce Tollen's reagent here?



Glucose, CH_3CH_2OH

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