



CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 109

Chemistry

1. If $a = \frac{h}{4\pi^2 m e^2}$ then correct expression for calculate of the first orbit of hydrogen atom is

A. $\sqrt{4\pi h\alpha}$

B. $\sqrt{2\pi h\alpha}$

C. $\sqrt{4h^2\pi\alpha}$

D. Both A and C

Answer: D



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2. To neutralize completely 20 mL of 0.1 M aqueous solution of phosphorus acid, the volume of 0.1 M aqueous $NaOH$ solution required is

A. 20 mL

B. 30 mL

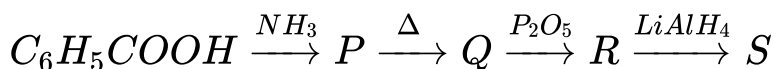
C. 40 mL

D. 60 mL

Answer: C

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3. Name the end product in the following series of reactions



- A. Aniline
- B. Benzylamine
- C. Acetonitrile
- D. Acetamide

Answer: B

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4. Which one of the following relationships when graphed does not give a straight line for helium gas?

I. K.E. and T at constant pressure and volume

II. $P \propto V$ at constant temperature for a constant mass

III. $V \propto 1/T$ at constant pressure for a constant mass

A. III

B. I and III

C. II

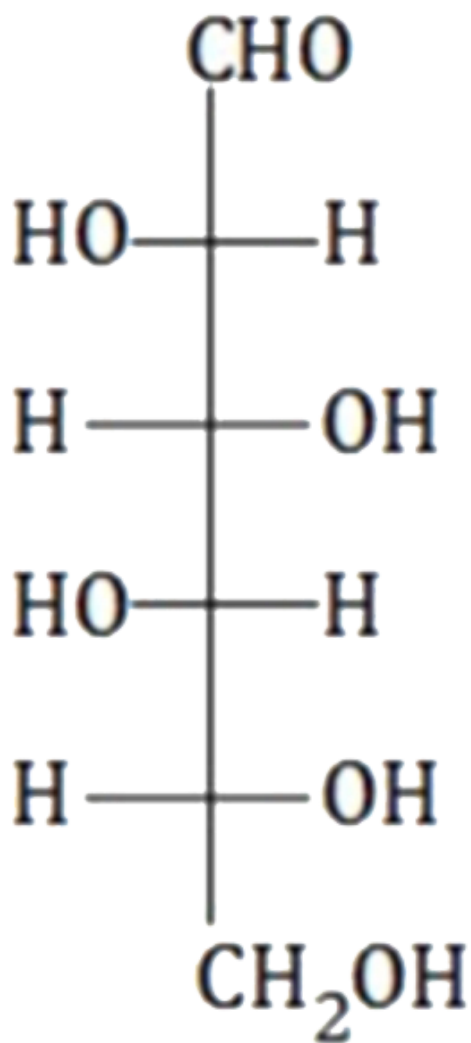
D. II and III

Answer: D

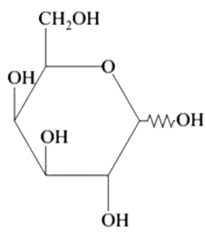


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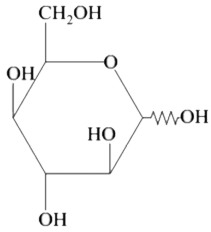
5. Which of the following structures is the correct Haworth representation of D - aldose?



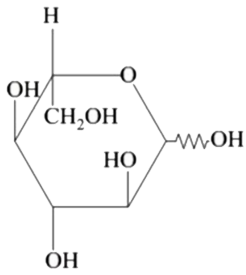
D-idose



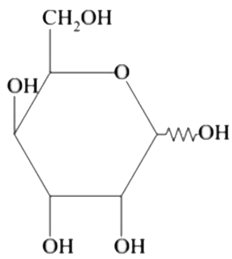
A.



B.



C.



D.

Answer: B

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6. N_2 and O_2 are converted into monocations, N_2^+ and O_2^+ respectively. Which of the following is wrong?

A. 3, 4

B. 1, 4

C. 1, 3, 4

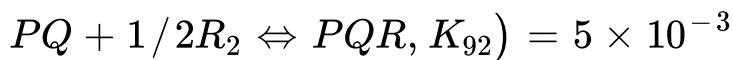
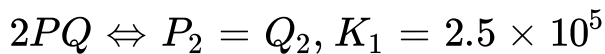
D. 1, 2, 3, 4

Answer: C

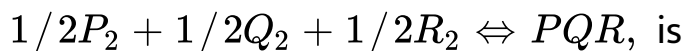


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7. Consider the following reactions in which all the reactants and the products are in gaseous state.



The value of K_2 for the equilibrium



A. 3×10^3

B. 6×10^3

C. 1.0×10^{-5}

D. 5×10^{-3}

Answer: C



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8. The first ($\Delta_i H_1$) and second ($\Delta_i H_2$) ionization enthalpies (in kJ mol^{-1}) and the electron gain enthalpy ($\Delta_{eg} H$) (in kJ mol^{-1}) of the elements I, II, III, IV and V are given below

Element	$\Delta_i H_1$	$\Delta_i H_2$	$\Delta_{eg} H$
I	520	7300	-60
II	419	3051	-48
III	1681	3374	-328
IV	1008	1846	-295
V	2372	5251	+48

the least reactive non - metal and the most reactive metal of these are respectively

A. IV and V

B. II and V

C. V and III

D. V and II

Answer: D



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9. Equal volumes of 0.1 M NaCl and 0.06 M $CaCl_2$ solutions are separated by a semi - permeable membrane in container. For this system, choose the correct answer

A. Water flows from NaCl solution towards $CaCl_2$ solution

B. There is no movement of any solution across the membrane

C. Osmotic pressure of 0.1 M NaCl is lower than the osmotic pressure of $CaCl_2$ (Assume complete dissociation)

D. Water flows from $CaCl_2$ solution towards NaCl solution

Answer: D



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10. The correct match between Item I and Item II is

Item I	Item II
(1) Norethindrone	(P) Anti-biotic
(2) Ofloxacin	(Q) Anti-fertility
(3) Equanil	(R) Hypertension
(4) Aspirin	(S) Analgesics

A. 1 - R, 2- R, 3 - S, 4 - Q

B. 1 - Q, 2 - R, 3 - R, 4 - S

C. 1 - Q, 2 - P, 3 - R, 4 - S

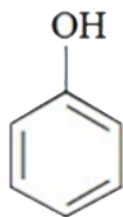
D. 1-Q, 2-P, 3-R, 4-S

Answer: D



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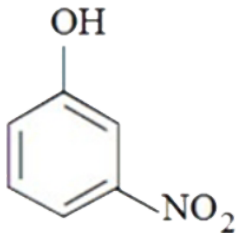
11. The increasing order of the pK_a value of the following compounds is



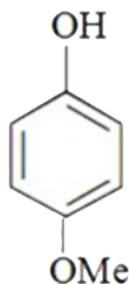
A



B



C



D

A. $C < B < A < D$

B. $B < C < A < D$

C. $D < A < C < B$

D. $B < C < D < A$

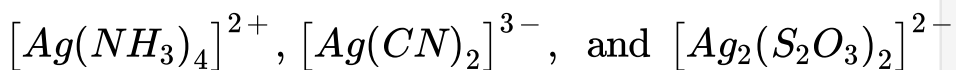
Answer: B



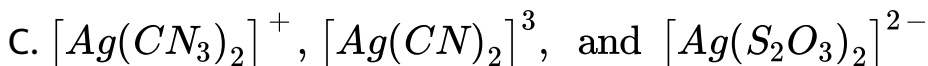
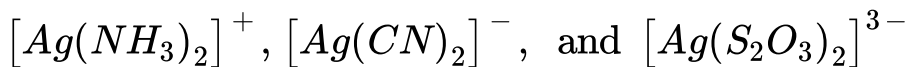
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12. $AgCl$ dissolved in excess of NH_3 , KCN and $Na_2S_2O_3$ solutions the complex produces ions

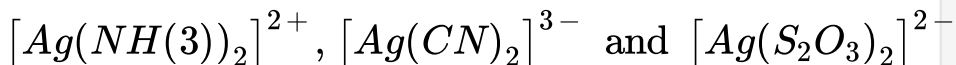
A.



B.



D.



Answer: B



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13. Considered the following statements :

1. Zeolites are aluminosilicates

2. Aluminium can occupy two adjacent sites in zeolites.

Which of the following statements is correct ?

A. 1, 2

B. 2, 4

C. 1, 2, 3

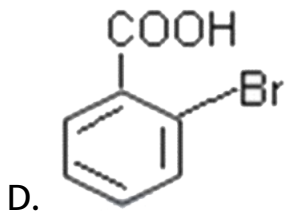
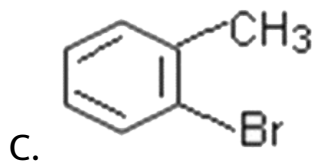
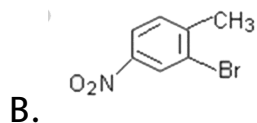
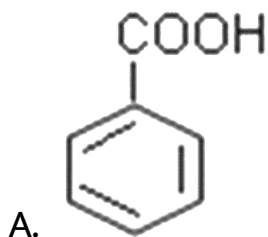
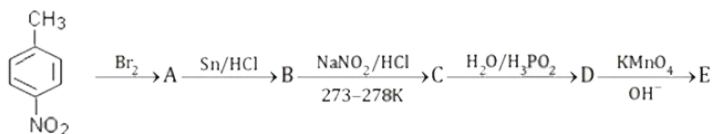
D. 1, 2, 4

Answer: D



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14. Identify the final product 'E' in the given sequence of reactions here



Answer: D

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15. The flocculating power of the given ions for the specified colloidal sols will be such that:

Arsenic sulphide sol

Ferric hydroxide sol

- (a) $[\text{Fe}(\text{CN})_6]^{4-} > \text{PO}_4^{3-} > \text{SO}_4^{2-} > \text{Cl}^-$ $\text{Al}^{3+} > \text{Ba}^{2+} > \text{Na}^+$
- (b) $\text{Al}^{3+} > \text{Ba}^{2+} > \text{Na}^+$ $[\text{Fe}(\text{CN})_6]^{4-} > \text{PO}_4^{3-} > \text{SO}_4^{2-} > \text{Cl}^-$
- (c) $\text{Na}^+ > \text{Ba}^{2+} > \text{Al}^{3+}$ $\text{Cl}^- > \text{SO}_4^{2-} > \text{PO}_4^{3-} > [\text{Fe}(\text{CN})_6]^{4-}$
- (d) $\text{Cl}^- > \text{SO}_4^{2-} > \text{PO}_4^{3-} > [\text{Fe}(\text{CN})_6]^{4-}$ $\text{Na}^+ > \text{Ba}^{2+} > \text{Al}^{3+}$

A.

Arsenic sulphide sol	Ferric hydroxide sol
$[\text{Fe}(\text{CN})_6]^{4-}$	
$> \text{PO}_4^{3-}$	$\text{Al}^{3+} > \text{Ba}^{2+}$
$> \text{SO}_4^{2-} > \text{Cl}^-$	$> \text{Na}^+$

B.

Arsenic sulphide sol	Ferric hydroxide sol
	$[\text{Fe}(\text{CN})_6]^{4-}$
$\text{Al}^{3+} > \text{Ba}^{2+}$	$> \text{PO}_4^{3-}$
$> \text{Na}^+$	$> \text{SO}_4^{2-} > \text{Cl}^-$

C.

Arsenic sulphoid sol	Ferric hydroxide sol
$\text{Na}^+ > \text{Ba}^{2+}$	$\text{Cl}^- > \text{SO}_4^{2-}$
$> \text{Al}^{3+}$	$> \text{PO}_4^{3-}$
	$> [\text{Fe}(\text{CN})_6]^{4-}$

D.

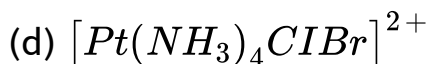
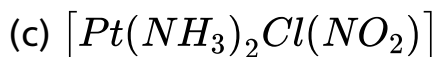
Arsenic sulphoid sol	Ferric hydroxide sol
$\text{Cl}^- > \text{SO}_4^{2-}$	$\text{Na}^+ > \text{Ba}^{2+}$
$> \text{PO}_4^{3-}$	$> \text{Al}^{3+}$
$> [\text{Fe}(\text{CN})_6]^{4-}$	

Answer: B



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16. Among (a) -(d) the complexes that can display geometrical isomerism are :



A. 4 and 1

B. 2 and 3

C. 3 and 4

D. 1 and 2

Answer: C



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17. The correct match between Item 'I' and Item 'II' is

Item I (Compound)	Item II (Reagent)
(1) Lysine	(P) 1-naphthol
(2) Furfural	(Q) ninhydrin
(3) Isopropyl alcohol	(R) KMnO_4
(4) Vinyl benzene (Styrene)	(S) Ceric ammonium Nitrate

A. 1-R, 2-R, 3-Q, 4-S

B. 1-Q, 2-P, 3-R, 4-S

C. 1-Q, 2-R, 3-S, 4-P

D. 1-Q, 2-P, 3-S, 4-R

Answer: D



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18. Mark the correct statements(s)

(1) Manganese exhibits +7 oxidation state

(2) Zinc forms coloured ions

(3) $[CoF_6]^{3-}$ is diamagnetic

(4) Sc forms +4 oxidation state

(5) Zn exhibits only +2 oxidation state

A. (i), (ii) and (iii)

B. (ii), (iii) and (iv)

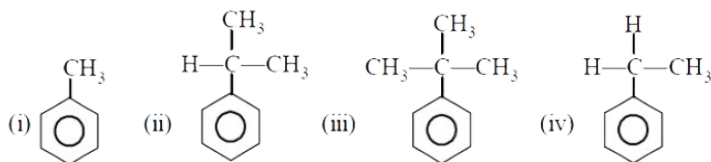
C. (i), (iii) and (iv)

D. (i), (iii) and (v)

Answer: B

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19. Arrange following compounds in decreasing order of rate of electrophilic substitution.



A. $i > ii > iii > iv$

B. $iii > iv > ii > i$

C. $i > iv > ii > iii$

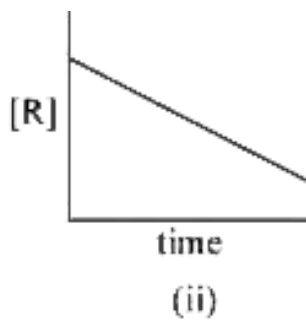
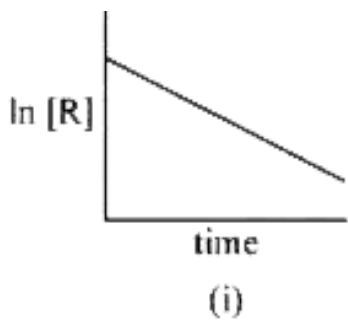
D. $i > ii > iv > iii$

Answer: C



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20. The given plots represent the variation of the concentration of a reactant R with time for different reactions (i) and (ii). The sum of orders of the reactions is



A. 1, 0

B. 0, 2

C. 0, 1

D. 1, 1

Answer: C



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21. Chlorine reacts with hot and concentrated $NaOH$ and produces compounds (P) and (Q). Compound (P) gives white precipitate with silver nitrate solution. The average bond order between Cl and O atoms in (Q) is Report your answer up to two decimal places.

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22. In the Kjeldahl's method for estimation of nitrogen present in a soil sample, ammonia evolved from 0.75 g of sample neutralized 10 mL of 1 M H_2SO_4 . The percentage of nitrogen in the soil is

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23. pH of saturated solution of $Ba(OH)_2$ is 12. The value of solubility product (K_{sp}) of $Ba(OH)_2$ is

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24. The number of stereo isomers possible for a compound of the molecular formula is $CH_3 - CH = CH - CH(NH_2) - CH_3$ is

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25. The percentage of p -character in the orbitals forming $p - p$ bonds in P_4 is

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