



CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 62

Chemistry

1. In an experiment, 2.4 g of iron oxide on iron. In another experiment, 2.9 g of iron oxide gave 2.09

g of iron on reduction. Which law is illustrated from the above data?

- A. Law of constant proportions
- B. Law of multiple proportions
- C. Law of conservation of mass
- D. Law of reciprocal proportions

Answer: A



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2. Equivalent amounts of H_2 and I_2 are heated in a closed vessel till equilibrium is obtained. If 80 % of the hydrogen is converted to HI , the K_c at this temperature is

A. 64

B. 16

C. 0.25

D. 4

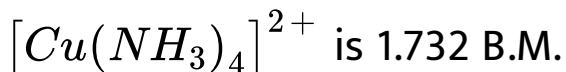
Answer: A



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3. Which of the following statements is false?

A. Permanent magnetic moment of



B. Equilibrium constant is the ratio of rate

constants of forward and backward

reactions

C. $[Ni(CO)_4]$ is tetrahedral

D. For forming NCl_5 'N' adopts sp^3d hybrid

state

Answer: D



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4. By diluting a weak electrolyte, specific conductivity (K_c) and equivalent conductivity (λ_c) change as -

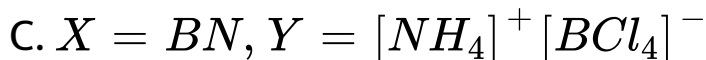
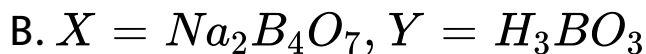
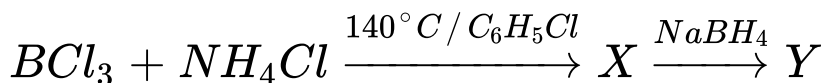
- A. both increase
- B. K_c increases, λ_c decreases
- C. K_c decreases, λ_c increases
- D. Both decrease

Answer: C



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5. Identify X and Y in the following reaction



Answer: D



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6. The following data were obtained during the first order thermal decomposition of SO_2Cl_2 at a constant volume.



Experiment	Time / s ⁻¹	Total pressure/atm
1	0	0.5
2	100	0.6

What is the rate of reaction when total pressure of 0.65 atm?

A. 0.35 atm s^{-1}

B. $2.235 \times 10^{-3} \text{ atm s}^{-1}$

C. $7.8 \times 10^{-4} \text{ atm s}^{-1}$

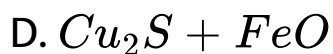
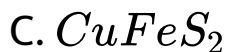
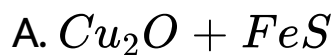
D. $1.55 \times 10^{-4} \text{ atm s}^{-1}$

Answer: C



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7. The chemical composition of slag formed during the smelting process in the extraction of copper is :-



Answer: B



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8. Benzene carbaldehyde is reacted with concentrated NaOH solution, to give the products 'A' and 'B'. The product 'B' is an aromatic

hydroxy compounds where OH group is linked to sp^3 hybridised carbon atom next to benzene ring.

The products 'A' and 'B' are respectively:

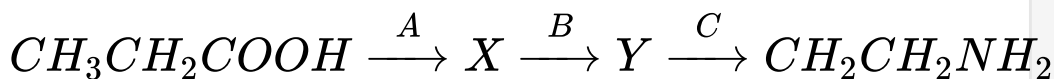
- A. Sodium benzoate and phenol
- B. Sodium benzoate and phenyl methanol
- C. Sodium benzoate and cresol
- D. Sodium benzoate and picric acid

Answer: B



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9. Identify the correct pathway to convert propanoic acid to ethylamine. The reagent represented by A, B and C are



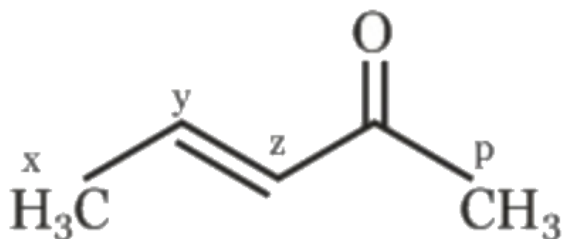
- A. A B C
 $Ca(OH)_2$ Heat Pt / H_2
- B. A B C
 $SOCl_2$ NH_3 Br_2 / KOH
- C. A B C
 HNO_2 $P + I_2$ $LiAlH_4$
- D. A B C
 HCN NH_3 Br_2 / KOH

Answer: B



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10. The abstraction of proton will be fastest from which carbon in the following compound ?



A. x

B. y

C. z

D. p

Answer: A



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11. Most of the transition metals exhibit

(i) paramagnetic behaviour

(ii) diamagnetic behaviour

(iii) variable oxidation states

(iv) formation of coloured ions

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

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

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

D. (i), (ii) and (iv)

Answer: B



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12. On treatment of 10 ml of 1M solution of the complex $CrCl_3 \cdot 6H_2O$ with excess of $AgNO_3$, 4.305 g of AgCl was obtained. The complex is

- A. $[Cr(H_2O)_3Cl_3] \cdot 3H_2O$
- B. $[Cr(H_2O)_4Cl_2]Cl \cdot 2H_2O$
- C. $[Cr(H_2O)_5Cl]Cl_2 \cdot H_2O$
- D. $[Cr(H_2O)_6]Cl_3$

Answer: D



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13. Match the columns I, II and III and mark the appropriate choice.

	Column I		Column II		Column III
(a)	Bromine	(i)	Noble metal	(p)	Amalgam
(b)	Gold	(ii)	Crystalline non-metal	(q)	$4s^2 4p^5$
(c)	Mercury	(iii)	Liquid non-metal	(r)	Transition metal
(d)	Iodine	(iv)	Liquid metal	(s)	Violet

A. (a) - (iii, q), (b) - (i,r), (c) - (iv , p), (d) - (ii, s)

B. (a) - (ii, p), (b) - (i, s), (c) - (iii, q), (d) - (iv, r)

C. (a) - (i, s), (b) - (ii, p), (c) - (iv, r), (d) - (iii, q)

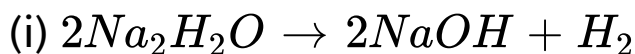
D. (a) - (iv, r), (b) - (iii, q), (c) - (ii, s), (d) - (i, p)

Answer: A



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14. Given below are two reactions of water with sodium and carbon dioxide. What is the nature of water in these reactions?



- A. In (i) water acts as an oxidising agent and
in (ii) it acts as a reducing agent
- B. In (i) water acts as an oxidising agent while
in (ii) it acts as a reducing agent
- C. In both, (i) and (ii) hydrogen acts as a
reducing agent
- D. In both, (i) and (ii) hydrogen acts as a
reducing agent

Answer: B



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15. The edge length of sodium chloride unit cell is 564 pm. If the size of Cl^- ion is 181 pm. The size of Na^+ ion will be

A. 101 pm

B. 181 pm

C. 410 pm

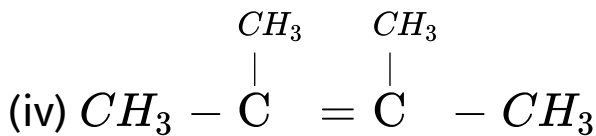
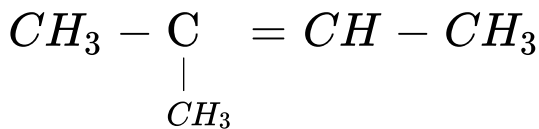
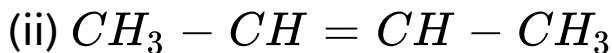
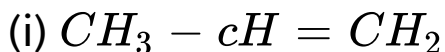
D. 202 pm

Answer: A



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16. Decreasing order of stability of following alkenes is



A. (i) > (ii) > (iii) > (iv)

B. (iv) > (iii) > (ii) > (i)

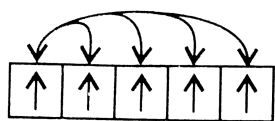
C. (iii) > (ii) > (i) > (iv)

D. (ii) > (iii) > (iv) > (i)

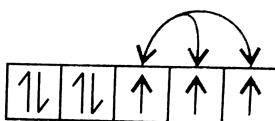
Answer: B

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17. Study the orbital diagrams of two atoms 'X' and 'Y'. Which subshell will be more stable and why?



'X'



'Y'

A. X, exchange energy is maximum, so is stability

B. Y, exchange energy is maximum, so stability is maximum

C. X, exchange energy is minimum, so stability is maximum

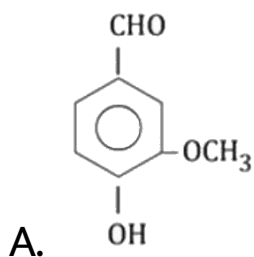
D. Y, exchange energy is minimum, so stability is maximum

Answer: A

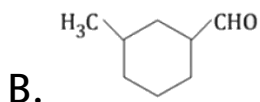


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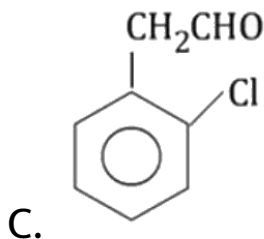
18. Study of the following names of the organic compounds is not correctly written?



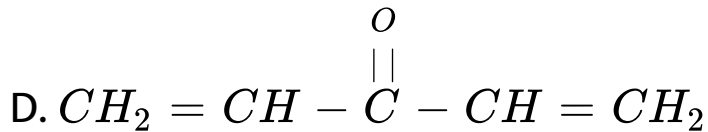
4 -hydroxy -3- methoxy benzaldehyde



5 - methyl cyclohexane carboxaldehyde



2(2-chlorophenyl) ethanal



penta -1, 4 - dien -3- one

Answer: B



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19. The decreasing order of boiling points of the following alcohols is

A. 3 - methylbutan -2- ol > 2 - methylbutan
-2- ol > pentan -1- ol

B. pentan -1- ol > 3 - methylbutan -2- ol > 2

- methylbutan -2- ol

C. 2 - methylbutan -2- ol > 3 - methylbutan

-2- ol > pentan -1- ol

D. 2 - methylbutan -2- ol > pentan -1- ol > 3

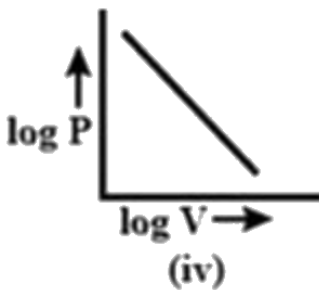
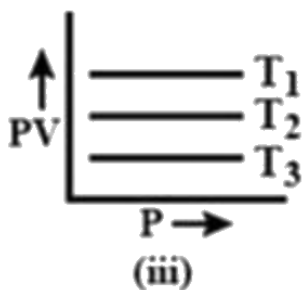
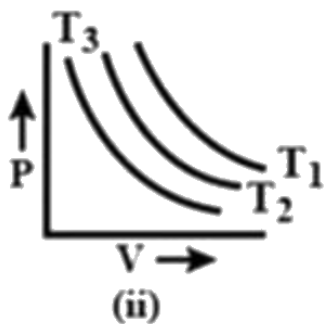
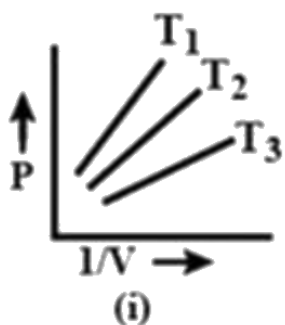
- methylbutan -2- ol

Answer: B



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20. Graph between pressure and volume are plotted at different temperature. Which of the following isotherms represent Boyle's law as $PV = \text{constant}$?



A. Only (ii) is correct representation of Boyle's law

B. Only (iv) is correct representation of Boyle's law

C. All are correct representations of Boyle's law

D. None of these representations is correct for Boyle's law

Answer: C



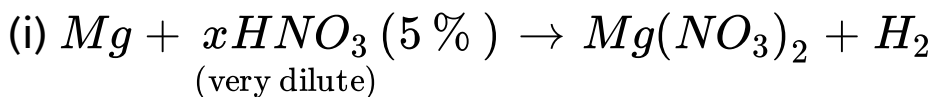
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21. How many litres of water must be added to 1L of an aqueous solution of HCl with a pH of 1 to create an aqueous solution with pH of 2?

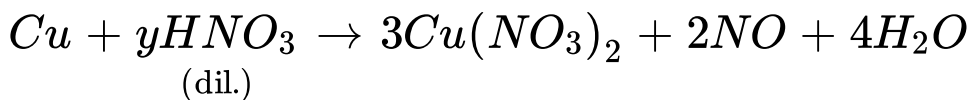


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22. Consider the equations given below and find the sum of x , y and z .



(ii)





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23. A system changes from state X to Y with a change in internal energy measuring to 25 kJ mol^{-1} , by a reversible path and returns from Y to X by an irreversible path. What will be the net change in internal energy?



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24. When a gas is bubbled through water at 298 K, a very dilute solution of gas is obtained.

Henry's law constant for the gas is 100 kbar. If gas exerts a pressure of 1 bar, the number of moles of gas dissolved in 1 litre of water is $x \times 10^{-5}$. Find the value of x here?

Report your answer upto two decimal places.



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25. How many of the following groups are ortho,para directing and ring activating?

$-NO_2$, $-CN$, $-CH_3$, $-OH$, $-NH_2$,

$-OR$, $-X$, $-CHO$, $-NHR$



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