

## CHEMISTRY

### BOOKS - NTA MOCK TESTS

### NTA JEE MOCK TEST 33

#### Chemistry

1. The table below gives the results of three titrations carried out with 0.200 M HCl to determine the molarity of a given NaOH solution using phenolphthalein as indicator. NaOH was taken in the burette and HCl was taken in a conical flask for the titrations

Titration No.	$V_{\text{HCl}}(\text{mL})$	$V_{\text{NaOH}}(\text{mL})$	$M_{\text{NaOH}} \text{ mol/dm}^3$
I	21.4	19.3	0.222
II	18.6	16.8	0.221
III	22.2	21.1	0.210

The actual molarity of the prepared NaOH solution was  $0.220 \text{ mol dm}^{-3}$ .

Which among the following could be the reason for the wrong value obtained in titration III?

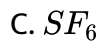
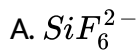
- A. Number of drops of phenolphthalein added to the titration flask was more in this titration
- B. The concentration of HCl was wrongly used as 0.250 M for the calculation of M NaOH
- C. A few drops of NaOH solution were spilled outside the titration flask during titration
- D. A few drops of the neutralized solution from titration II were left behind in the flask

**Answer: C**



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2. The species that cannot exist is



**Answer: B**



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3. The energy of an electron in Bohr's orbit of hydrogen atom is  $-13.6\text{eV}$ .

The total electronic energy of a hypothetical He atom in which there are no electron - electron repulsions or interactions is

A.  $27.2\text{ eV}$

B.  $-27.2\text{eV}$

C.  $-108.8\text{eV}$

D.  $108.\text{ eV}$

**Answer: C**



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4. When the following reaction was carried out in bomb calorimeter,  $\Delta U$

is found to be

$-740.0 \text{ kJ/mol}$  of  $\text{NH}_2\text{CN}(S)$  at 300 K  $\text{NH}_2\text{CN}_{(s)} + \frac{3}{2}\text{O}_{2(g)} \rightarrow \text{N}_{2(g)}$

Calculate  $\Delta H_{300 \text{ K}}$  for the reaction.

A.  $-738.75 \text{ kJ}$

B.  $+738.75 \text{ kJ}$

C.  $-824.75 \text{ kJ}$

D.  $-919.57 \text{ kJ}$ .

**Answer: A**



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5. For the reaction :  $3A_{(g)} \rightarrow 2B_{(g)}$ , the rate of formation of 'B' at 298 K is represented as  $\ln\left(\frac{d[B]}{dt}\right) = -4.606 + 2\ln[A]$ . The order of reaction is

A. 0

B. 1

C. 2

D. 3

**Answer: C**

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6. Assume 100 % ionisation of the following aq. Solution of

(I)  $[Pt(NH_3)_6]Cl_4$  (II)  $[Cr(NH_3)_6]Cl_3$

(III)  $[Co(NH_3)_4]Cl_2$  (IV)  $NaCl$

Increasing order of conductivity is :

A.  $I < II < III < IV$

B.  $III < IV < II < I$

C.  $IV < III < II < I$

D.  $II < III < IV < I$

**Answer: C**

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7. During an electrolysis of conc.  $H_2SO_4$ , peroxydisulphuric acid ( $H_2S_2O_8$ ) and  $O_2$  form in an equimolar amount. The moles of  $H_2$  that will be formed simultaneously will be

A. Thrice that of  $O_2$

B. Twice that of  $O_2$

C. Equal to that of  $O_2$

D. Half of the of  $O_2$

**Answer: A**



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8. 1 M  $NH_4OH$  and 1M  $HCl$  are mixed to make a total volume of 300 mL. If pH of the mixture is 9.26 and  $pK_a(NH_4^+) = 9.26$  then what would be the volume ratio of  $NH_4OH$  and  $HCl$

A. 2:1

B. 1:2

C. 2:3

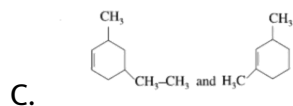
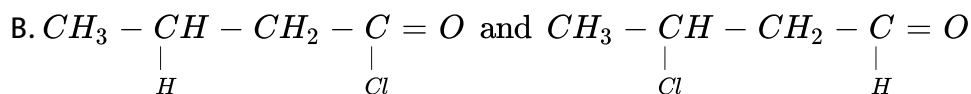
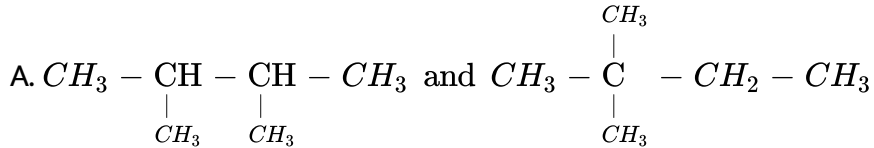
D. 3:2

**Answer: A**



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9. Which are not position isomers?

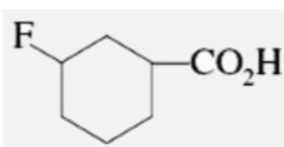


Answer: B

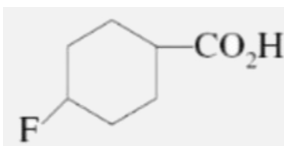
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10. Which of the following has highest  $K_a$  value?

A. 

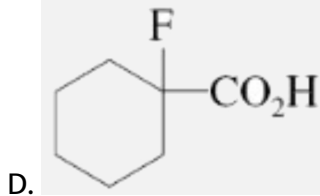


B.



C.

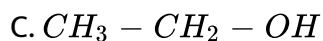
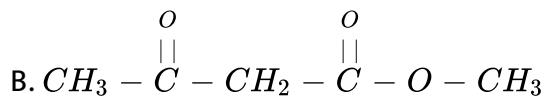
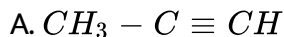




Answer: D

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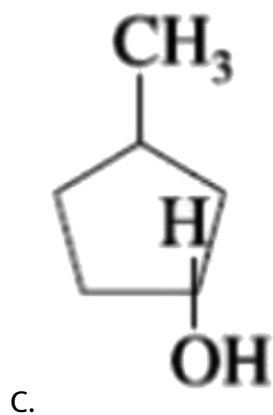
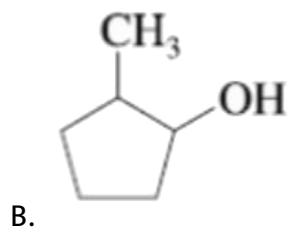
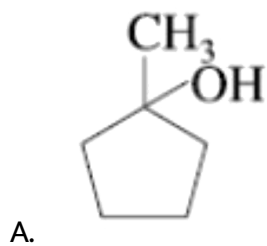
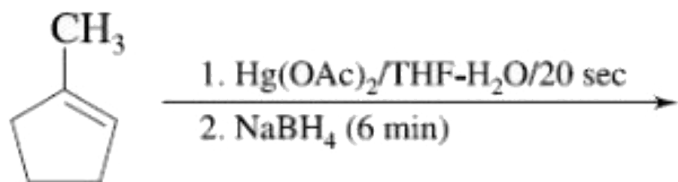
11. Which of following reagents does not give isobutane when reacted with isobutyl magnesium bromide?

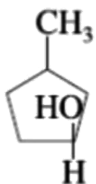


Answer: D

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12. The final product obtained in the reaction





D.

**Answer:**

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13. Which of the following will not be formed when calcium formate is distilled with calcium acetate ?

A. Propanone

B. Propanal

C. Ethanal

D. Methanal

**Answer: B**

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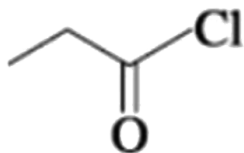
14. Which of the following chemicals can be added for sweetening of food item at cooking temperature and does not provide calories?

- A. Sucrose
- B. Glucose
- C. Aspartame
- D. Sucralose

Answer: D

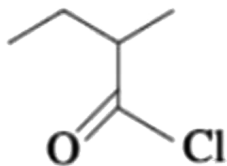
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15.  $C_4H_7OCl \xrightarrow{NH_3} C_4H_9ON \xrightarrow[KOH]{Br_2} CH_3CH_2CH_2NH_2$  Compound (X) is

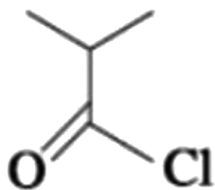


A.

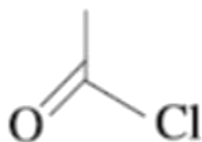
B.



C.



D.



**Answer: C**



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16. What is the simplest formula of a solid whose unit cell has the atom A at each corner, the atom B at each face centre and a atom C at the body centre.

A.  $A_2BC$

B.  $AB_2C$

C.  $AB_3C$

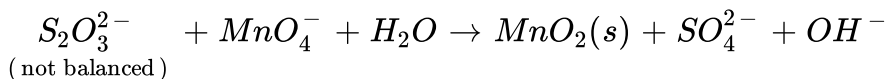
D.  $ABC_2$

**Answer: C**



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17.  $0.1M KMnO_4$  is used for the following titration. What volume of the solution in mL will be required to react with 0.158 g of  $Na_2S_2O_3$  ?



A. 26.7 mL

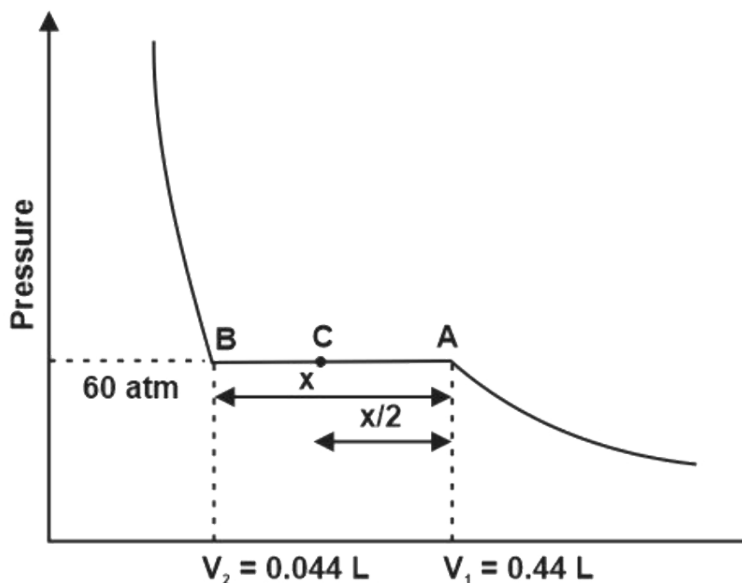
B. 50 mL

C. 65 mL

D. 75 mL

**Answer: A**

18.  $CO_2$  gas is liquefaction for 1 mole of  $CO_2$ .



Then which statement is (are) correct in gaseous phase will

- (I) The maximum density of gas is 0.1 gm/ml
- (II) The density of liquid  $CO_2$  is 1 g/ml at 60 atm.
- (III) At point C 50 % of  $CO_2$  is liquefied.
- (IV) The compressibility factor of gas at  $27^\circ C$  is always less than 1.

Which of the above is/are correct

A. only i

B. i and ii

C. i, ii and iii

D. all

**Answer: C**



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**19.** Which of the following statement about anhydrous aluminium chloride is correct?

A. It fumes is moist air.

B. It exists as dimer both in the vapour state below  $350^{\circ}C$  and in non - polar solvents

C. It is prepared by heating  $Al_2O_3$  in a stream of sulphur chloride ( $S_2Cl_2$ ) vapor and chlorine.

D. All of these



**Answer: D**



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**20.** Which one of the following is the correct statement?

A. Boric acid is a protonic acid.

B. Both  $Ti^{3+}$  and  $Al^{3+}$  ions act as oxidising agent in aqueous solution.

C. Hydrogen bonding in  $H_3BO_3$  gives it a layered structure.

D.  $B(Oet)_3$  imparts blue colour to the burner flamer.

**Answer: C**



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**21.** A solution containing 10 g of a non-volatile, higher nonelectrolyte and 400 g of water boils at  $100.256^\circ C$  at 1 atm. The molecular weight of the

solute (in g/mol) is

Given : ( $K_b$  for water  $0.512^\circ C/m$ )

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22. For the reaction  $3A \rightleftharpoons C + 2D$ , initially A was taken. At equilibrium the concentration of D is twice that of A. The value of  $K_c$  is

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23. How many of the following are polar aprotic solvents?



Diethyl ether,

Benzene,

Ethyl alcohol

[P]

[Q]

[R]

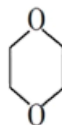
[S]

Acetone

DMSO  
(dimethyl sulphoxide)

DMF  
(dimethyl formamide)

formic acid



Petrol

[Q]

[W]

[X]

[Y]

[T]

[U]



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24. How many Cr-O bonds are equivalent in chromate dianion ?



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25. 5 ml  $As_2S_3$  is mixed with distilled water and 0.01 M solution of an electrolyte AB so that total volume is 10 ml. It was found that all solution containing more than 5 ml of AB coagulate within 5 min . What is the Flocculation value of AB for  $As_2S_3$  sol?



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