CHEMISTRY

BOOKS - NTA MOCK TESTS

JEE MOCK TEST 6

Chemistry

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1. At 300 K,

$$A \Leftrightarrow \quad \text{Product} \Delta G_T^\circ = \ - 200 \ \text{kJ mol}^{-1}$$

$$B \Leftrightarrow \quad \text{Product} \quad \Delta G_T^\circ = \ - 50 \ \text{kJ mol}^{-1}$$
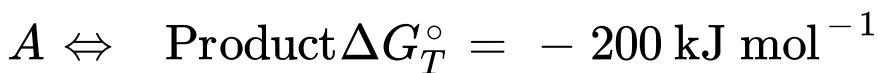
Thus, the ratio of equilibrium constant at 300 K

A. 100

B. 1000

C. 10000

D. none of these

Answer: C

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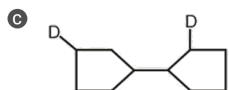
2. In the reaction,

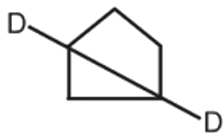

Mg/Ether (1 equivalent) → A — D$_2$O → B — Na/Ethe

The compound (C) is ?

A.

B.

C.

D.
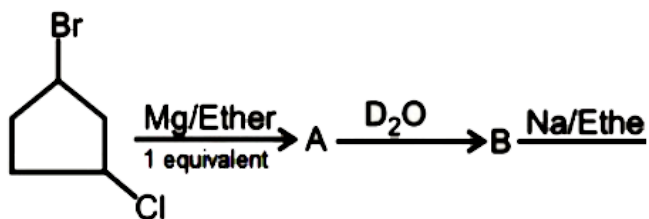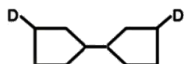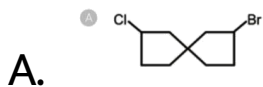
Answer: B

3. Which statement among the following are correct ?

I. Ce^{+3} is an oxidizing agent & colourless.

II. Lu^{3+} is colourless.

III. Actinoids exhibit a higher number of oxidation states than lanthanoid

IV. All 3d elements give H_2 with 1 M HCl

A. II, III

B. I, III

C. I, II, III

D. I,IV

Answer: C

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4. In curing cement plasters, water is sprinkled from time to time. This helps in

A. keeping it cool

B. developing interlocking needle-like crystals of hydrated silicates
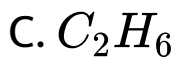
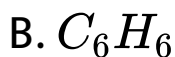C. hydrating sand and gravel mixed with cement

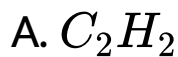D. converting sand into silicic acid

Answer: B

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5. A compound is treated with $NaNH_2$ to give sodium salt. Identify the compound-

A. C_2H_2

B. C_6H_6

C. C_2H_6

D. C_2H_4

Answer: A

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6. Identify the pollutant gases largely responsible for the discoloured and lustreless nature of marble of the Taj Mahal.

A. SO_2 and O_3

B. O_3 and CO_2

C. SO_2 and NO_2

D. CO_2 and NO_2

Answer: C

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7. The relation between pressure P and volume V is givne by $PV^{-\frac{1}{4}} =$ constant. If the percentage decrease in volume is $\dfrac{1}{4}$, then the approximate percentage increase in pressure is

A. $\dfrac{1}{16}$

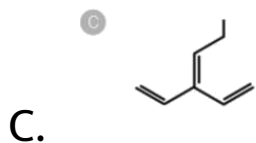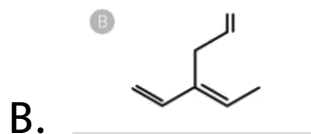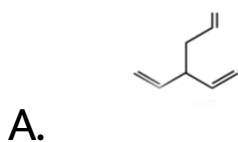B. $\dfrac{1}{4}$

C. $\dfrac{1}{8}$

D. $\dfrac{1}{2}$

Answer: A

8. Highest heat of hydrogenation is shown by which of the following compound?
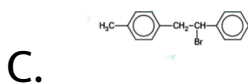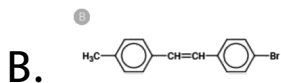
A.

B.

C.

D.

Answer: A

9. The major product (A) of the reaction given below is

H_3C—⟨⟩—$CH{=}CH$—⟨⟩

A.

$Br{-}CH_2$—⟨⟩—$CH{=}CH$—⟨⟩

B.

H_3C—⟨⟩—$CH{=}CH$—⟨⟩—Br

C.

H_3C—⟨⟩—$CH_2{-}CH$—⟨⟩

D.
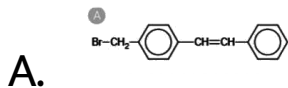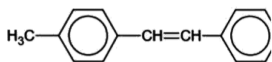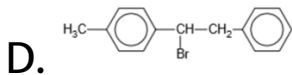
Answer: C

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10. Among the following statements:-

I. PCl_5 is trigonal bipyramidal wheras IF_5 is square pyramidal.

II. Bond enthalpy of $O - H$ bond in water and ethanol is different.

III. All carbon atoms have same hybridisation

in carbon suboxide (C_3O_2)

Find out the correct statements.

A. I & II only

B. II & III only

C. I & III only

D. I, II & III

Answer: D

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11. Electrolytic reduction method is used for the extraction of

A. are weakly electropositive

B. are moderately electropositive

C. are strongly electropositive

D. form acidic oxides

Answer: C

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12. Choose the product of the following reaction :

$$\text{ketone-chloride} \xrightarrow[\text{ether}]{CH_3MgCl}$$

A.

B.

C.

D.
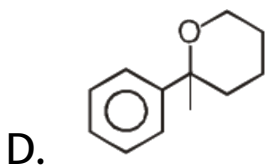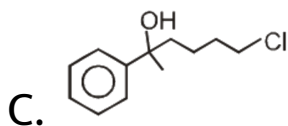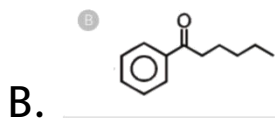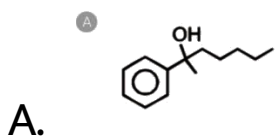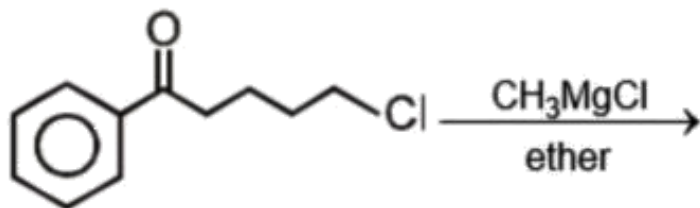
Answer: D

13. Find the rate law that corresponds to the data shown for the following reaction?

Exp	[A]	[B]	Initial Rate
1	0.012	0.035	0.10
2	0.024	0.070	0.80
3	0.024	0.035	0.10
4	0.012	0.070	0.80

A. Rate $= k[A]^{\circ}[B]^3$

B. Rate $= k[B]^4$

C. Rate $= k[A][B]^3$

D. Rate $= k[A]^2[B]^2$

Answer: A

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14. Which of the following is metalloid?

A. Sb

B. Mg

C. Zn

D. Bi

Answer: A

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15. RH_2 (ion exchange resin) can replace Ca^{2+} ions in hard water as $RH_2 + Ca^{2+} \rightarrow RCa + 2H^+$. If L of hard

water after passing through RH_2 has pH=3 then hardness in parts per million of Ca^{2+} is :

A. 10 ppm

B. 40 ppm

C. 100 ppm

D. 20 ppm

Answer: D

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16. Select correct statement :

A. Geometrical isomers of complexes may differ in dipole moment and visible / UV spectra

B. Complexes of the type $[Ma_3b_3]$ can also have facial (fac) and meridional (mer) isomer

C. No optical isomer exists for the complex trans-$[co(en)_2Cl_2]^+$

D. All are correct

Answer: D

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17. Van - Arkel process and Mond's process are respectively used for refining of :

A. Zr and Ti

B. Ni and Zr

C. Ti and Ni

D. Ni and Fe

Answer: C

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18. Gold numbers of some colloids are : Gelatin : $0.005 - 0.01$, Gum Arabic : $0.15 - 0.25$, Oleate : $0.04 - 1.0$, Starch : $15 - 25$. Which among these is a better protective Colloid ?
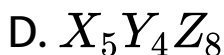
A. A

B. B

C. C
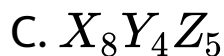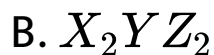
D. D

Answer: B

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19. A crystal is made up of particles X, Y, and Z. X froms f packing. Y occupies all octahedral voids of X and Z occupies all tetrahedral voids of X. If all the particles

along one body diagonal are removed. Then

the formula of the crystal would be

A. XYZ_2

B. X_2YZ_2

C. $X_8Y_4Z_5$

D. $X_5Y_4Z_8$

Answer: D

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20. The number of σ- and π-bond in 5-oxohexanoic acid respectively, is :

A. 20

B. 19

C. 21

D. 17

Answer: A

21. The number of S-S bonds in sulphur trioxide trimer (S_3O_9) is

22. The number of optically active compounds in the isomers of C_4H_9Br is

23. A $2.0g$ sample of a mixture containing sodium carbonate, sodium bicarbonate and

sodium sulphate is gently heated till the evolution of CO_2 ceases. The volume of CO_2 at $750 mmHg$ pressure and at $298K$ is measured to be $123.9 mL$. A $1.5g$ of the same sample requires $150 mL$ of $(M/10)HCl$ for complete neutralization. Calculate the percentage composition of the components of the mixture.
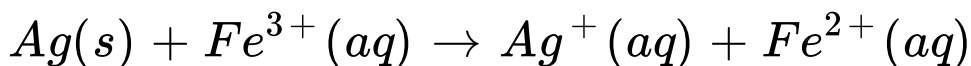
24. What is the molarity and molality of a 13% solution (by weight) of sulphric acid with a density of $1.02 mL^{-1}$? To what volume should $100mL$ of this acid be diluted in order to preapre a $1.5N$ solution?

25.

$$Ag(s) + Fe^{3+}(aq) \rightarrow Ag^+(aq) + Fe^{2+}(aq)$$

Given standard electrode potentials -

$E^{\circ}_{Fe^{3+}/Fe^{2+}} = +0.77V$ and

$E_{Ag^+/Ag(s)})^{\circ} = +0.80V$

If the reaction is feasible , enter 1.00 as answer

elewise enter 0.00.