CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 34

Chemistry

1. The correct order of acidic strength of the following is

(I) Oxalic acid $HOOC - COOH$

(II) Malonic acid

$$HOOC - CH_2 - COOH$$

(III) Succinic acid

$$HOOC - (CH_2)_2 - COOH$$

(IV) Glutaric acid

$$HOOC - (CH_2)_3 - COOH$$

A. $I > II > III > IV$

B. $I > III > II > IV$

C. $IV > III > II > I$

D. $IV > II > III > I$

Answer: A

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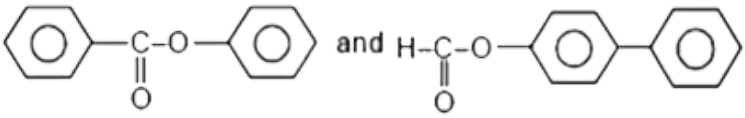
2. 

are

A. Position isomers

B. Chain isomers

C. Functional isomers

D. Metamers

Answer: D

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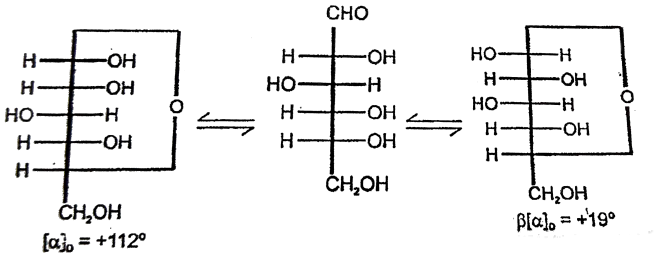
3.



The above process in which α and β form remain in equilibrium with acyclic form and a change in optical rotation is observed which is known as —

A. Mutarotation

B. Epimerisation

C. Condensation

D. Inversion

Answer: A

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4. $0.1MNaOH$ is titrated with $0.1M, 20mLHA$ till the point. $K_a(HA) = 6 \times 10^{-6}$ and degree of dissociation of HA is neglible (small) as compared to unity. Calculate the pH of the

resulting solution at the end point [Use $\log 6 \approx 0.8$]

A. 6.23

B. 9.22

C. 7.21

D. 8.95

Answer: D

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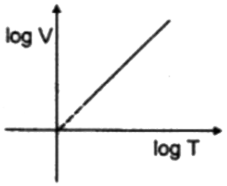
5. Which of the following sketches is an isobars (Given : $\frac{nR}{P} > 1$)

A.



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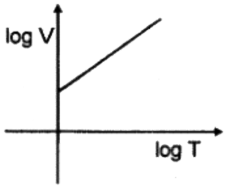

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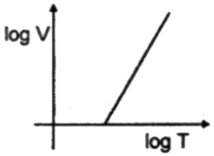
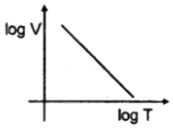


D.



Answer: B

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6. Analysis show that nickel oxide consists of nickel ion with $96\,\%$ ions having d^8 configuration and $4\,\%$ having d^7 configuration. Which amongst the following best represents the formula of the oxide?

A. $Ni_{1.02}O_{1.00}$

B. $Ni_{0.96}O_{1.00}$

C. $Ni_{0.98}O_{0.98}$

D. $Ni_{0.98}O_{1.00}$

Answer: D

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7. In which compound does vanadium have an oxidation number of $+4$?

A. NH_4VO_2

B. $K_4\left[V(CN)_6\right]$

C. VSO_4

D. $VOSO_4$

Answer: D

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8. Among the following, the species that is both paramagnetic and coloured is :

A. $[MnO_4]^{2-}$

B. $K_4[V(CN)_6]$

C. $[VO_4]^{3-}$

D. CrO_2Cl_2

Answer: A

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9. Select the correct statement about elements of group 15th.

A. The order or stability of oxidation state for $+3$ is $Bi^{3+} > Sb^{3+} > As^{3+}$ and

for $+5$ is $Bi^{5+} < Sb^{5+} < As^{5+}$

B. In the case on nitrogen, all oxiation states from $+1$ to $+4$ tend to disproportioanate in acid solution.

C. There is considerale in covalent radius from N to P but from As to Bi only a small increase in covalent radius is observed.

D. All of these

Answer: D

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10. Which of the following compounds does not give N_2 on heating?

A. NaN_3

B. $(NH_4)_2SO_4$

C. NH_4NO_2

D. $(NH_4)_2Cr_2O_7$

Answer: B

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11. A brown coloured mixture of two gases is obtained by the reduction of 6N nitric acid with metallic copper. Condeness to a blue liquid which on freezing at $-30^{\circ}C$ gives a blue solid. The correct choice for blue liquid or solid is .

A. It is referred to as the anhydride of nitrous acid

B. It is an acidic oxide and hence dissolves in alaklies producing nitries.

C. It can also be prepared by the action of $50\,\%\,HNO_3$ on arsenious oxide and then cooling to 250 K.

D. All of these

Answer: D

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12. Which one of the following compounds on reduction with $LiAIH_4$ yeilds a secondary amine?

A. Methyl cyanide

B. Nitroethane

C. Methyl isocyanide

D. Acetamide

Answer: C

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13. An alkane of molecular weight 86 g/mol on monochlorination gives two products. The alkane is

A. 2 - Methylbutane

B. n - butane

C. 2, 2- Dimethyl propane

D. 2, 3- Dimethyl butane

Answer: D

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14. The osmotic pressures of equimolar solutions of urea,$BaCl_2$ and $AlCl_3$ willl be in the order :

A. $AlCl_3 > \text{Urea} > BaCl_2$

B. $\text{Urea} > BaCl_2 > AlCl_3$

C. $AlCl_3 > BaCl_2 > \text{Urea}$

D. $BaCl_2 > AlCl_3 > \text{Urea}$

Answer: C

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15. Structurally biodegradable detergent should contain :

A. Normal alkyl chain

B. Branched alkyl chain

C. Alkyl side chain

D. Cyclohexyl side chain

Answer: C

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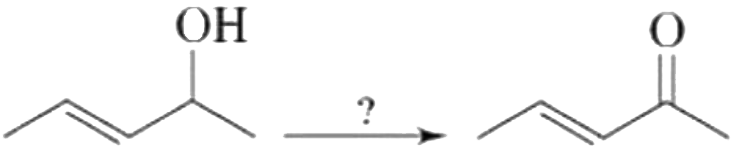
16. Which one among the following is the best reagent for the conversion of pent - 3 - en 2 - ol into pent - 3 - en - 2- one?



A. $KMnO_4 / H_2SO_4$

B. $K_2Cr_2O_7 / H_2SO_4$

C. CrO_3 / CH_3COOH

D. 

Answer: D

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17. Which of the following reactions will yield propan-2-ol ? Select the right answer from (a), (b), (c) and (d)

I. $CH_2 = CH - CH_3 + H_2O \xrightarrow{H^+}$

II. $CH_3 - CHO \xrightarrow{CH_3MgI\,/\,H_2O}$

III. $CH_2O \xrightarrow[H_2O]{C_2H_5MgI}$

IV. $CH_2 = CH - CH_3 \xrightarrow{\text{Neutral } KMnO_4}$

A. I and II

B. II and III

C. III and I

D. II and IV

Answer: A

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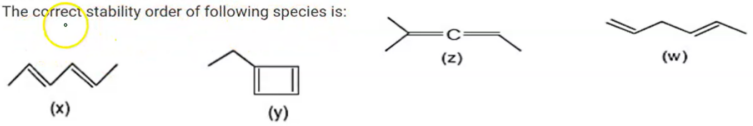
18.

The correct stability order of following species is:



A. $x > y > w > z$

B. $y > x > w > z$

C. $x > w > z > y$

D. $z > x > y > w$

Answer: C

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19. Both Co^{3+} and Pt^{4+} have a coordination number of six. Which of the following pair of complexes will show approximately the same electrical conductance for their 0.001 M aqueous solution ?

A. $CoCl_3.4NH_3$ and $PtCl_4.4NH_3$

B. $CoCl_3.3NH_3$ and $PtCl_4.5NH_3$

C. $CoCl_3.6NH_3$ and $PtCl_4.5NH_3$

D. $CoCl_3.6NH_3$ and $PtCl_4.3NH_3$

Answer: C

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20. The degree of dissociation of a weak monoprotic acid of concentration 1.2×10^{-3}M having $K_a = 1.0 \times 10^{-4}$ is

A. 1

B. 10

C. 15

D. 25

Answer: D

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21. Half - life period of the radioactive element A is 10 days. Amount of A left on the end of

11th day staring with 1 mole A is $\left(\frac{1}{2}\right)^{\frac{n+6}{10}}$ mole. What is the value of n.

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22. The work function (ϕ) of some metals is listed below . The number of metals which will show photoelectric effect when light of 300 nm wavelength falls on the metal is :

Metal	Li	Na	K	Mg	Cu	Ag	Fe	Pt	W
ϕ (eV)	2.4	2.3	2.2	3.7	4.8	4.3	4.7	6.3	4.75

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23. The decahydrate form of sodium carbonate i.e. washing soda on standing in air effloresces and crumbles to powder. The number of water molecule (s) present in the compound formed is :

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24. A current of 5.0 A flows for 4.0 h through an electrolytic cell containing a molten slat of metal M. This result in deposition of 0.25 mol

of the metal M at the cathode. The oxidation state of M in the molten salt is $+x$. The value of 'x' is (1 Faraday = 96000 C mol^{-1})

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25. Two moles of an ideal monoatomic gas at 5 bar and 300 K are expanded irreversibly up to a final pressure of 1 bar and 240 K against an external pressure of 0.5 bar. The work done by the gas is $-xR$. The value of x' is

(Here 'R' is gas constant)

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