CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA NEET SET 40

Chemistry

1. The angular momentum of electrons in d orbital is equal to

A. $\sqrt{2}h$

B. $2\sqrt{3}h$

C. 0

D. $\sqrt{6}h$

Answer: D

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2. Which of the following species contains equal number of pi and pi bonds ?

A. X_eO_4

B. $(CN)_2$

C. $CH_2(CN)_2$

D. HCO_3^-

Answer: A

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3. The solubility product of $Cr(OH)_3$ at 298 K is 6.0×10^{-31}. The concentration of hydroxide ions in a saturated solution of $Cr(OH)_3$ will be :

A. $\left(18 \times 10^{-31}\right)^{1/4}$

B. $\left(4.86 \times 10^{-29}\right)^{1/4}$

C. $\left(18 \times 10^{-31}\right)^{1/2}$

D. $\left(2.22 \times 10^{-31}\right)^{1/4}$

Answer: A

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4. Which of the following electrolytes has the same value of van't Hoff factor as that of $Al_2(SO_4)_3$(if all are $100\,\%$ ionised)?

A. K_2SO_4

B. $K_3\left[Fe(CN)_6\right]$

C. $K_4\left[Fe(CN)_6\right]$

D. $Al(NO_3)_3$

Answer: C

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5. 'Metals are usually not found as nitrates in their ores". Out of the following two (I and II) reasons which is//are true for the above obervation?

I.Metal nitrates are highly unstable.

II. Metal nitrates are highly soluble in water.

A. 1 is true but 2 is false

B. 1 is false but 2 true

C. 1 and 2 are false

D. 1 and 2 are true

Answer: B

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6. Which of the following statements is correct for a reversible process in a state of equilibrium ?

A. $\Delta G = 2.303RT \log K$

B. $\Delta G^\circ = -2303RT \log K$

C. $\Delta G^\circ = 2303RT \log K$

D. $\Delta G = -2.303RT \log K$

Answer: B

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7. When initial concentration of a reactant is doubled in a reaction, its half-life period is not affected. The order of the reaction is

A. First

B. Second

C. More than zero but less than first

D. zero

Answer: A

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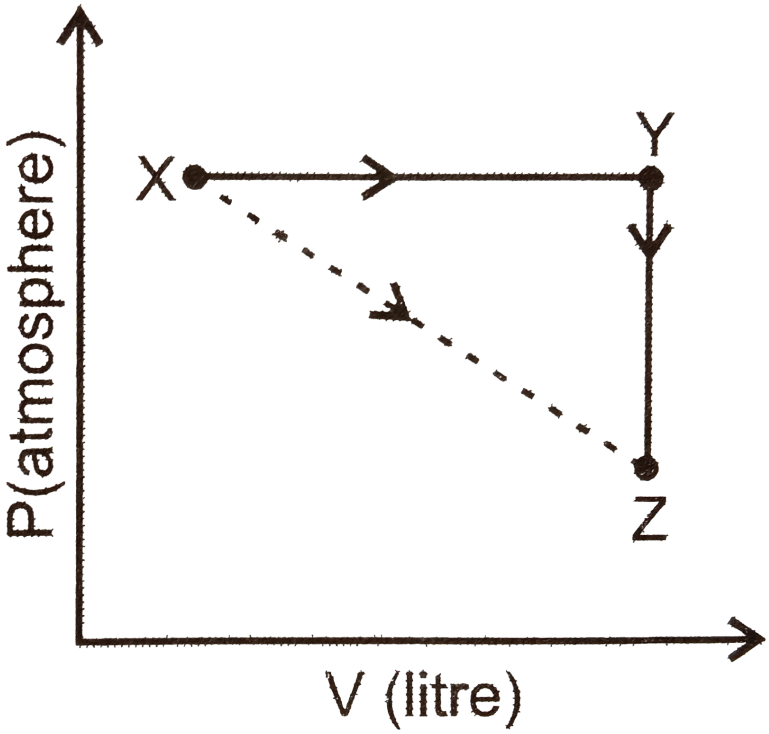
8. For an ideal gas, consider only $P - V$ work in going from an initial state X to the final state Z. The final state Z can be reached by either of the two paths shown in the figure. Which of the following choice(s) is

(are) correct? [Take ΔS as change in entropy and w as work done]



A. 1,2

B. 1,3

C. 2,3

D. 1,2,3

Answer: B

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9. Within each pair of element F & Cl s & se, and Li & Na , respectively , the elements that release more energy upon electron gain are

A. Cl , S and Li

B. F, S and Li

C. Cl , Se and Na

D. F, Se and Na

Answer: A

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10. 5 g of zinc is treated separately with an excess of

(a) dilute hydrochloric acid and

(b) aqueous sodium hydroxide

The ratio of the volumes of H_2 evolved in these two reactions is

A. $1:4$

B. $1:1$

C. $1:2$

D. $2:1$

Answer: B

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11. In a fuel cell methanol is used as fuel and oxygen gas is used as an oxidizer. The reaction is :

$$CH_3OH_{(l)} + \frac{3}{2}O_{2(g)} \rightarrow CO_2((g)) + 2H_2O_{(l)}$$

At $298K$ standard Gibb's energies of formation for $CH_3OH(l)$, $H_2O(l)$ and $CO_2(g)$ are -166.2, -237.2 and $-394.4kJmol^{-1}$ respectively. If standard enthalpy of combustion of methanol is $-726kJmol^{-1}$, efficiency of the fuel cell will be :

A. 87%

B. $90\ \%$

C. $97\ \%$

D. $80\ \%$

Answer: C

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12. The boiling point of $0.2 molkg^{-1}$ solution of X in water is greater than equimolal solution of Y in water. Which of the following statements is true in this case?

A. Molecular mass of X is greater than the molecular mass of Y.

B. Molecular mass of X is less than the molecular mass of Y.

C. Y is undergoing dissociation in water while X undergoes no change

D. X is undergoing dissociation is water.

Answer: D

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13. Biochemical Oxygen Demand (BOD) is the amount of oxygen required (in ppm):

A. for the photochemical breakdown of waste present in $1m^3$ volume of a water body .

B. for sustaining life in a water body.

C. by bacteria to break - down organic waste in a certain volume of a water sample .

D. by anaerobic bacteria to breakdown inorganic waste present in a water body .

Answer: C

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14. Magnetic moment 2.83 BM is given by which of the following ions?

At. nos. Ti=22, Cr=24, Mn=25,Ni=28

A. Mn^{2+}

B. Ni^{2+}

C. Ti^{3+}

D. Cr^{3+}

Answer: B

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15. Solubility of the alkaline earth's metal sulphates in water decreases in the sequence

A. $Sr > Ca > Mg > Ba$

B. $Ba > Mg > Sr > Ca$

C. $Ca > Sr > Ba > Mg$

D. $Mg > Ca > Sr > Ba$

Answer: D

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16. Maximum bond angle at nitrogen is present in which of the following ?

A. NO_2

B. NO_2^+

C. NO_2^-

D. NO_3^-

Answer: B

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17. The number of d-electrons in Fe^{2+} (Z=26) is not equal to the number of electrons in which one of the following ?

A. p - electrons in Cl (Z = 17)

B. d - electrons in Fe (Z = 26)

C. p - electrons in Ne (Z = 10)

D. s - electrons in Mg (Z = 12)

Answer: A

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18. Cobalt (III) chloride forms several octahedral complexes with amonia. Which of the following will not give test for chloride ions with silver nitrate at $25^{\circ}C$?

A. $CoCl_3.4NH_3$

B. $CoCl_3.5NH_3$

C. $CoCl_3.6NH_3$

D. $CoCl_3.3NH_3$

Answer: D

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19. In comparison to the zeolite process for the removal of permanent hardness, the synthetic resins method is

A. More efficient as it can exchange only cations

B. Less efficient as the resins cannot be regenerated

C. More efficient as it can exchange both cations as well as anions

D. Less efficient as it exchange only anions

Answer: C

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20. Which of the following processes does not involve oxidation of iron ?

A. Decolourization of blue $CuSO_4$ solution by iron

B. Formation of $Fe(CO)_5$ from Fe

C. Liberation of H_2 from steam by iron at high temperature

D. Rusting of iron sheets

Answer: B

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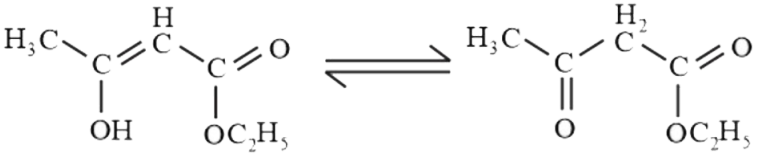
21. The enolic form of ethyl acetoacetate as below has



A. 16 sigma bonds and 1 pi - bond

B. 9 sigma bonds and 2 pi- bonds

C. 9 sigma bonds and 1 pi- bonds

D. 18 sigma bonds and 2 pi- bonds

Answer: D

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22. Which of these statements about $\left[Co(CN)_6\right]^{3-}$ is true?

A. $\left[Co(CN)_6\right]^{3-}$ has four unpaired electrons and will be in a low - spin configuration .

B. $\left[Co(CN)_6\right]^{3-}$ has four unpaired electrons and will be in a high - spin configuration .

C. $\left[Co(CN)_6\right]^{3-}$ has no unpaired electrons and will be in a high - spin configuration .

D. $\left[Co(CN)_6\right]^{3-}$ has no unpaired electrons and will be in a low - spin configuration .

Answer: D

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23. The reaction of $H_3N_3B_3Cl_3(A)$ with $LiBH_4$ in tetrahydrofuran gives inorganic benzene (B). Further, the reaction of (A) with (C) leads of $H_3N_3B_3(Me)_3$. Compounds (B) and (C) respectively , are :

A. Borazine and MeBr

B. Boron nitride and MeBr

C. Diborane and MeMgBr

D. Borazine and MeMgBr

Answer: D

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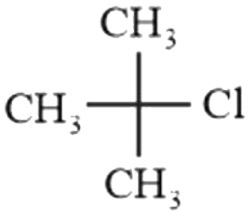
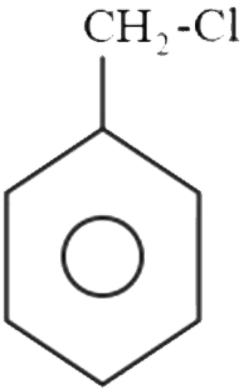
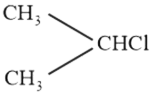
24. In which of the following compounds , the C - Cl bond ioniosation shall give most stable carbonium ion ?

A. 

B. 

C. $O_2NCH_2CH_2Cl$

D. 

Answer: B

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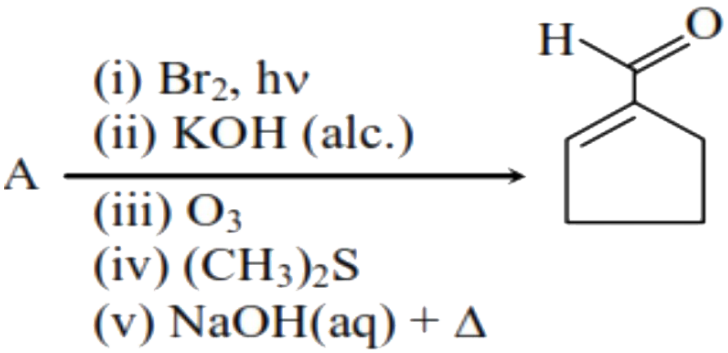
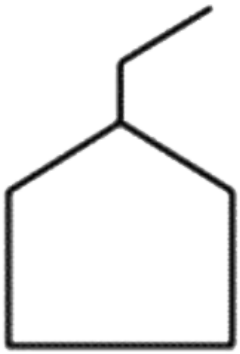
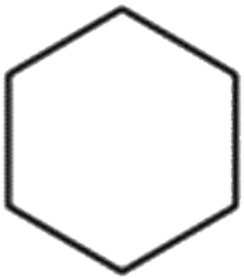
25. In the following reaction A is



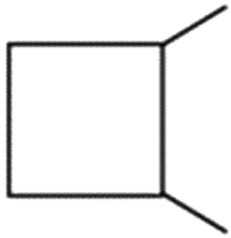
A.



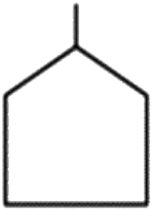
B.



C.



D.



Answer: B

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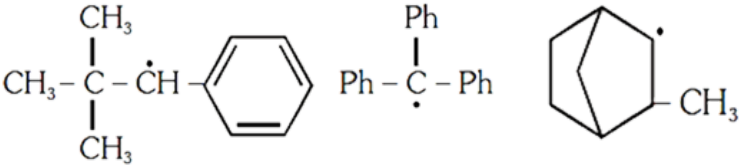
26. Consider the following compounds



(I) (II) (III)

Hyper conjugation occurs in

A. II only

B. III only

C. I and III

D. I only

Answer: B

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27. The reaction

$$CH_3 - \underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}} - ONa + CH_3CH_2Cl \xrightarrow[-NaCl]{} CH_3 - \underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}} - O - CH_2 - CH_3$$

is called

A. Williamson continuous etherification process

B. Gatterman - Koch reaction

C. Etard reaction

D. Williamson Synthesis

Answer: D

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28. The anodic half-cell of lead-acid battery is recharged using electricity of 0.05 Faraday. The amount of $PbSO_4$ electrolyzed in g during the process is : (Molar mass of $PbSO_4 = 303gmol^{-1}$)

A. 22.8

B. 15.2

C. 7.6

D. 11.4

Answer: C

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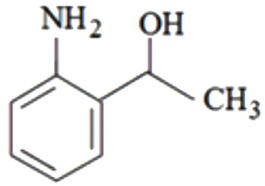
29. The tests performed on compound X and their inferences are :

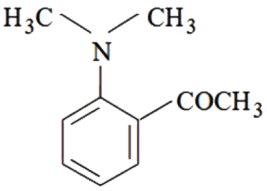
Test	Inference
(a) 2, 4 - DNP test	Coloured precipitate
(b) Iodoform test	Yellow precipitate
(c) Azo-dye test	No dye formation

Compound 'X' is :

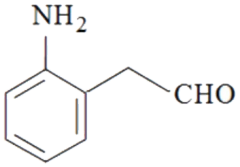
A.



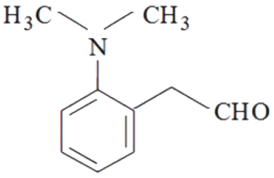
B.



C.



D.



Answer: B

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30. When propyne is treated with aqueous H_2SO_4 in the presence of $HgSO_4$, the major product is:

A. Propanal

B. Propyl Hydrogen Sulphate

C. Acetone

D. Propanol

Answer: C

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31. A compound 'X' on treatment with $Br_2 / NaOH$, provided C_3H_9N, which gives positive carbylamine test. Compound 'X' is :

A. $CH_3COCH_2NHCH_3$

B. $CH_3CH_2COOCH_2NH_2$

C. $CH_3CH_2CH_2CONH_2$

D. $CH_3CON(CH_3)_2$

Answer: C

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32. Among the colloids cheese (C), milk (M) and smoke (S), the correct combination of the dispered phase and dispersion medium, respectively is :

A. C : solid in liquid , M , solid in liquid , S: solid in gas

B. C : solid in liquid , M , liquid in liquid , S: gas in solid

C. C : liquid in solid M : liquid in solid , S : solid in gas

D. C : liquid in solid M : liquid in liquid , S : solid in gas

Answer: D

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33. An organic compound contains $C = 40\,\%$, $H = 13.33\,\%$, and $N = 46.67\,\%$. Its empirical formula will be

A. C_2H_2N

B. C_3H_7N

C. CH_4N

D. CHN

Answer: C

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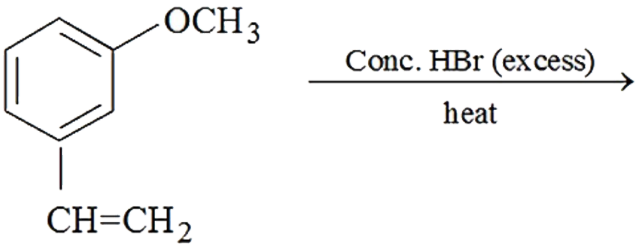
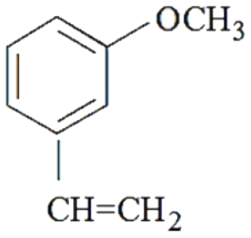
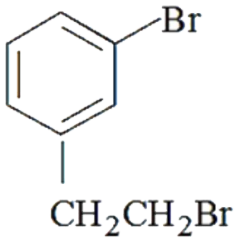
34. The major product of the following reactions



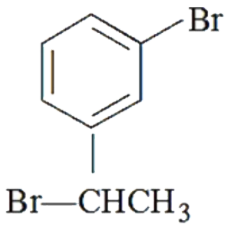
A.

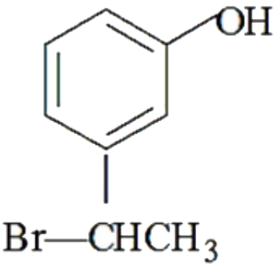


B.



C.



D. 

Answer: D

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35. For the reaction : $H_2 + I_2 \rightarrow 2HI$, the differential rate law is

A. $-\frac{d[H_2]}{dt} = -\frac{d[l_2]}{dt} = \frac{1}{2}\frac{d[Hl]}{dt}$

B. $-\frac{d[H_2]}{dt} = -2\frac{d[l_2]}{dt} = \frac{1}{2}\frac{d[Hl]}{dt}$

C. $-\frac{d[H_2]}{dt} = -\frac{d[l_2]}{dt} = \frac{d[Hl]}{dt}$

D. $-\frac{d[H_2]}{dt} = -\frac{d[l_2]}{dt} = -\frac{d[Hl]}{dt}$

Answer: A

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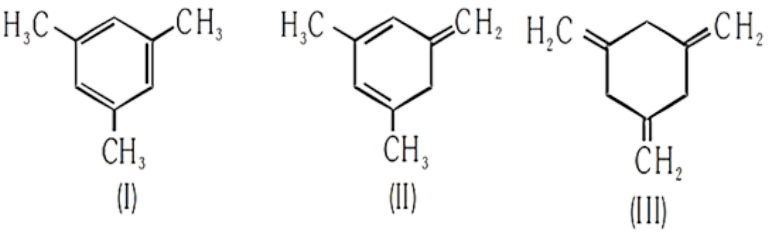
36. Given



The enthalpy of the hydrogenation of these compounds will be in the order as

A. $III > II > I$

B. $II > III > I$

C. $II > I > III$

D. $I > II > III$

Answer: A

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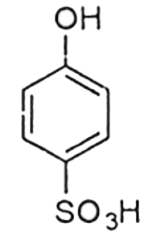
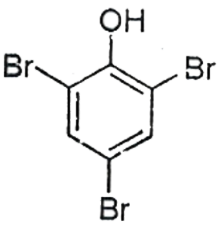
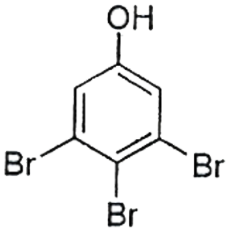
37. The major product of the following reaction is



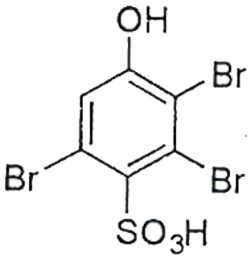
P



Q



R



S

A. P

B. Q

C. R

D. S

Answer: B

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38. Dissolving $120g$ of urea (mol wt $= 60$) in 1000g of water gave a solution of density 1.15 g/mL. The molarity of the solution is

A. 2.00 M

B. 2.22 M

C. 1.78 M

D. 2.05 M

Answer: D

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39. Which polymer has a 'chiral' monomer (s) ?

A. Nylon 6,6

B. Neoprene

C. PHBV

D. Buna - N

Answer: C

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40. Bithional is generally added to the soaps as an additive to function as a / an

A. Buffering agent

B. Softer

C. Antiseptic

D. Dryer

Answer: C

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41. Consider the following sequence of reaction

The final product (Q) is

$Ph - NO_2 \xrightarrow{Sn/HCl} (X) \xrightarrow{NaNO_2/HCl} P \xrightarrow{CuBr/HBr} (Q)$ The final product (Q) is

A. chlorbenzene

B. bromobenzene

C. benzyl bromide

D. benzyl chloride

Answer: B

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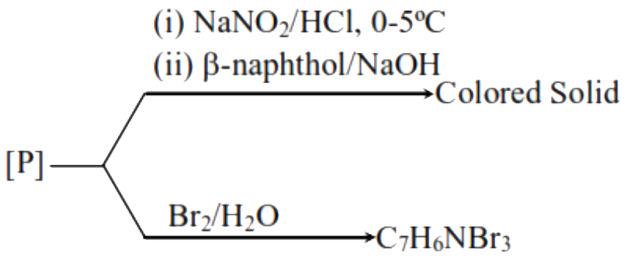
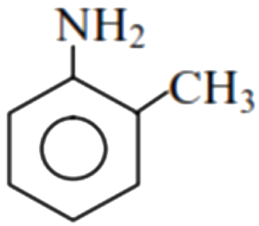
42. Consider the following reactions,

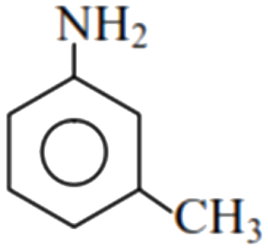


The compound (P) is

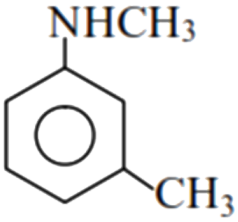
A.



B.



C.



D.

Answer: B

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43. The function of Sodium pump is a biological process operating in each and every cell of all animals. Which of the following biologicaly important ions is also constant f this pump ?

A. Mg^{2+}

B. K^{+}

C. Fe^{2+}

D. Ca^{2+}

Answer: B

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44. A weak acid HX has the dissociation constant 1×10^{-5}. M. It forms a salt NaX on reaction with alkali. The degree of hydrolysis of 0.1 M solution of NaX is

A. 1.0E-6

B. 0.0015

C. 0.0001

D. 0.001

Answer: C

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45. When the following aldohexose exists in its D-configuration, the total number of stereoisomers in its pyranose form, is

$$\begin{array}{l} CHO \\ | \\ CH_2 \\ | \\ CHOH \\ | \\ CHOH \\ | \\ CHOH \\ | \\ CH_2OH \end{array}$$

A. 2

B. 4

C. 6

D. 8

Answer: D

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