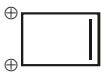
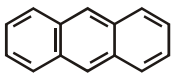
GOC

1. Which one of the following compounds is non-aromatic ?

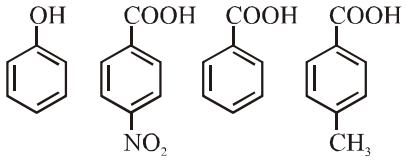
(1) 

(2) 

(3) 

(4) 

2. The correct order of acid character of the following compounds is :



I **II** **III** **IV**

Options:

(1) III > II > I > IV (2) IV > III > II > I

(3) I > II > III > IV (4) II > III > IV > I

3. A. Phenyl methanamine

B. N,N-Dimethylaniline

C. N-Methyl aniline

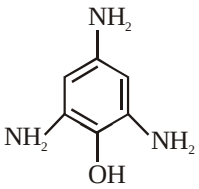
D. Benzenamine

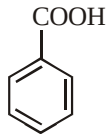
Choose the correct order of basic nature of the above amines.

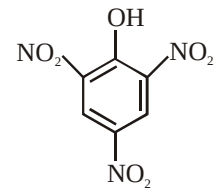
(1) A > C > B > D (2) D > C > B > A

(3) D > B > C > A (4) A > B > C > D

4. Compound(s) which will liberate carbon dioxide with sodium bicarbonate solution is/are:

A = 

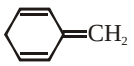
B = 

C = 

(1) B only (2) C only

(3) B and C only (4) A and B only

5. Among the following, the aromatic compounds are :

(A)  (B) 

(C)  (D) 

Choose the correct answer from the following options :

(1) (A) and (B) only

(2) (B) and (C) only

(3) (B), (C) and (D) only

(4) (A), (B) and (C) only

6. **Statement I :** Sodium hydride can be used as an oxidising agent.

Statement II : The lone pair of electrons on nitrogen in pyridine makes it basic.

Choose the CORRECT answer from the options given below :

(1) Both statement I and statement II are false

(2) Statement I is true but statement II is false

(3) Statement I is false but statement II is true

(4) Both statement I and statement II are true

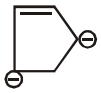
7. Which of the following is least basic ?

(1) $(CH_3CO)\ \ddot{N}HC_2H_5$ (2) $(C_2H_5)_3\ddot{N}$

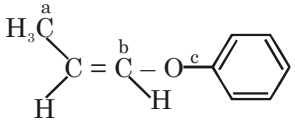
(3) $(CH_3CO)_2\ddot{N}H$ (4) $(C_2H_5)_2\ddot{N}H$

8. Which of the following is an aromatic compound?

(1)  (2) 

(3)  (4) 

9. In the following molecules,

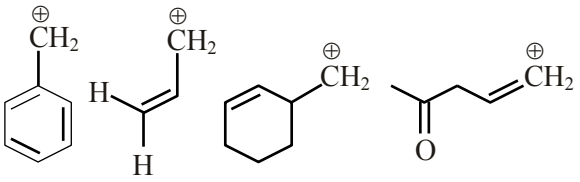


Hybridisation of carbon a, b and c respectively are :

(1) sp^3, sp, sp (2) sp^3, sp^2, sp

(3) sp^3, sp^2, sp^2 (4) sp^3, sp, sp^2

10.



(A) (B) (C) (D)

Among the given species the Resonance stabilised carbocations are:

(1) (C) and (D) only

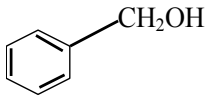
(2) (A), (B) and (D) only

(3) (A) and (B) only

(4) (A), (B) and (C) only

11. Which of the following compounds does not exhibit resonance?

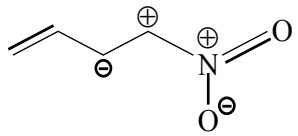
(1) $CH_3CH_2OCH=CH_2$

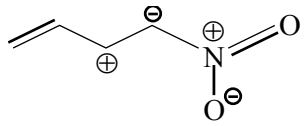
(2) 

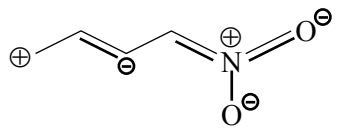
(3) $CH_3CH_2CH_2CONH_2$

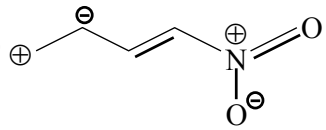
(4) $CH_3CH_2CH=CHCH_2NH_2$

12. Which one among the following resonating structures is **not** correct?

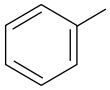
(1) 

(2) 

(3) 

(4) 

13. Which among the following is the strongest acid ?

(1) $CH_3CH_2CH_2CH_3$ (2) 

(3)  (4) 

14. Given below are two statements :

Statement I : Aniline is less basic than acetamide.

Statement II : In aniline, the lone pair of electrons on nitrogen atom is delocalised over benzene ring due to resonance and hence less available to a proton.

Choose the **most appropriate** option ;

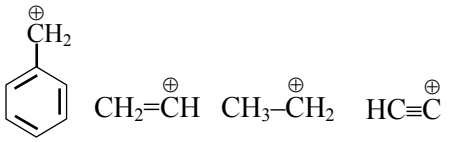
(1) Statement I is true but statement II is false.

(2) Statement I is false but statement II is true.

(3) Both statement I and statement II are true.

(4) Both statement I and statement II are false.

15.



A B C D

The correct order of stability of given carbocation is :

(1) A > C > B > D (2) D >B > C > A

(3) D > B > A > C (4) C > A > D > B

16. Given below are two statements :

Statement I : Hyperconjugation is a permanent effect.

Statement II : Hyperconjugation in ethyl cation $\left(CH_3-\overset{+}{C}H_2\right)$ involves the overlapping $C_{sp^2}-H_{1s}$ bond with empty 2p orbital of other carbon.

Choose the **correct** option :

(1) Both **statement I** and **statement II** are false

(2) **Statement I** is incorrect but **statement II** is true

(3) **Statement I** is correct but **statement II** is false

(4) Both **Statement I** and **statement II** are true.

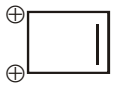
SOLUTION

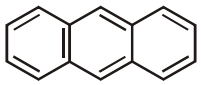
1. Official Ans. by NTA (1)

Sol. For the following ion/compounds

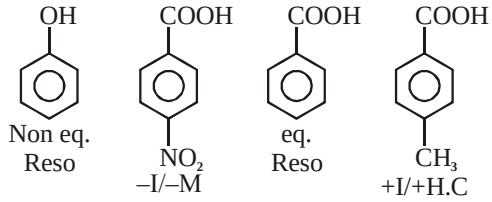
(1)  – Non aromatic

(2)  – Aromatic

(3)  – Aromatic

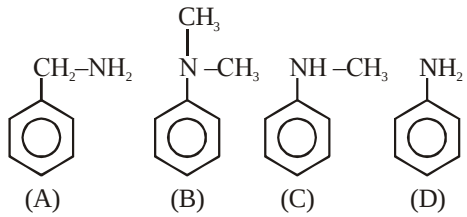
(4)  – Aromatic

2. Official Ans. by NTA (4)

Sol. 

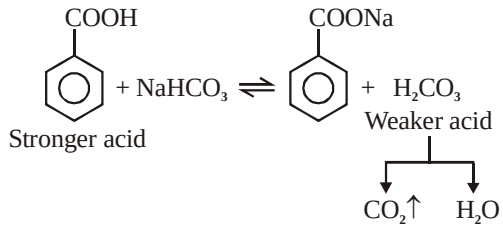
2 > 3 > 4 > 1

3. Official Ans. by NTA (4)

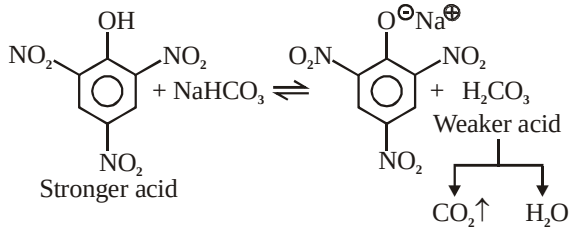
Sol. 

B.S. order (A) > (B) > (C) > (D)

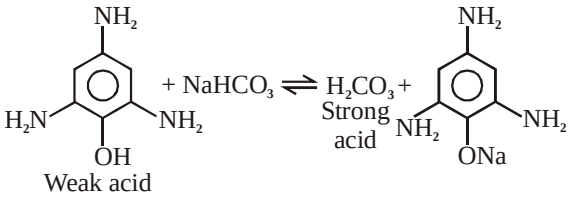
4. Official Ans. by NTA (3)

Sol. 

equilibrium favours forward direction and $CO_2\uparrow$ is librated.



Equilibrium favours forward direction and $CO_2\uparrow$ is librated.



Equilibrium favours backward direction and $CO_2\uparrow$ is not librated.

5. Official Ans. by NTA (2)

Sol. (A) Non-Aromatic

(B) Aromatic

(C) Aromatic

(D) Anti-Aromatic

6. Official Ans. by NTA (3)

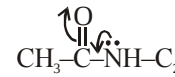
Sol. (1) NaH (sodium Hydride) is used as a reducing reagent.

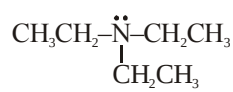
(2)  In pyridine, due to free electron on N atom, it is basic in nature.

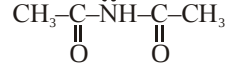
Hence statement I is false & II is true.

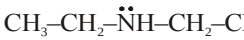
7. Official Ans. by NTA (3)

Sol. For the given compounds :

(1)  ; L.P. on Nitrogen is delocalised.

(2)  ; L.P. on Nitrogen is localised.

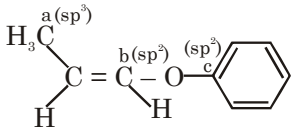
(3)  ; L.P. on Nitrogen is delocalised due to conjugation with both  (Hence least basic)

(4)  ; L.P. on Nitrogen is localised.

8. Official Ans. by NTA (1)

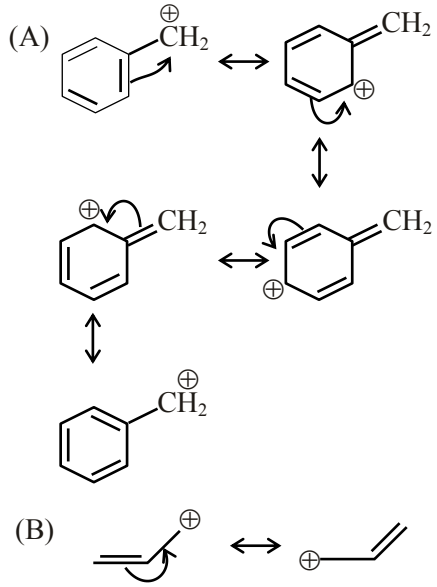
Sol.  → Aromatic compound

9. Official Ans. by NTA (3)

Sol. 

10. Official Ans. by NTA (3)

Sol. (A) and (B) only in Resonance

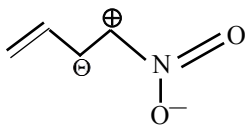


11. Official Ans. by NTA (4)

Sol. $CH_3–CH_2–CH = CH–CH_2–NH_2$

No conjugation thus resonance is not possible.

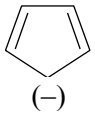
12. Official Ans. by NTA (1)

Sol. 

It is unstable RS (due to similar charge on adjacent atom)

13. Official Ans. by NTA (4)

Sol.  ; because its conjugate base is aromatic

Strongest acid 

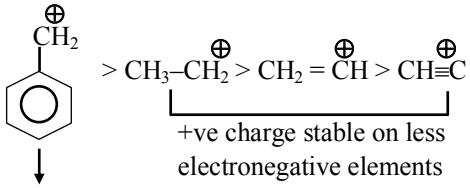
(–)

14. Official Ans. by NTA (2)

Sol. Explanation :- aniline is more basic than acetamide because in acetamide, lone pair of nitrogen is delocalised to more electronegative element oxygen.

In Aniline lone pair of nitrogen delocalised over benzene ring.

15. Official Ans. by NTA (1)

Sol. 

$> CH_3–\overset{\oplus}{C}H_2 > CH_2 = \overset{\oplus}{C}H > CH \equiv \overset{\oplus}{C}$

+ve charge stable on less electronegative elements

Stable due to Resonance

16. Official Ans. by NTA (3)

Sol. **Statement I :** It is correct statement

Statement II : $CH_3 - \overset{\oplus}{C}H_2$ involve $C_{sp^3} - H_{1s}$ bond with empty 2p orbital hence given statement is false.