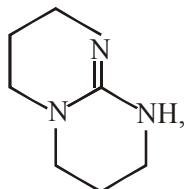


## ELECTRONIC DISPLACEMENT EFFECT

1. निम्न यौगिकों के लिए  $pK_b$  का बढ़ता क्रम होगा:



(A)



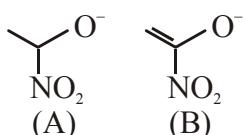
(B)



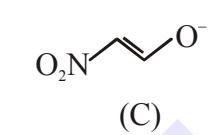
(C)

- (1) (A) < (B) < (C)      (2) (C) < (A) < (B)  
 (3) (B) < (A) < (C)      (4) (B) < (C) < (A)

2. निम्नलिखित ऐल्कॉक्साइडों के लिए स्थायित्व का सही क्रम है :-



(A)



(B)



(C)

- (1) (C) > (B) > (A)      (2) (C) > (A) > (B)  
 (3) (B) > (C) > (A)      (4) (B) > (A) > (C)

3. निम्न यौगिकों को C-OH आबन्ध लम्बाई के बढ़ते क्रम में व्यवस्थित कीजिए :

मेथेनॉल, फीनॉल, p-एथाक्सीफीनॉल

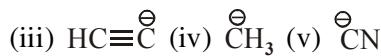
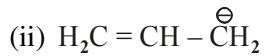
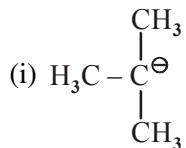
- (1) फीनॉल < मेथेनॉल < p-एथाक्सीफीनॉल  
 (2) फीनॉल < p-एथाक्सीफीनॉल < मेथेनॉल  
 (3) मेथेनॉल < p-एथाक्सीफीनॉल < फीनॉल  
 (4) मेथेनॉल < फीनॉल < p-एथाक्सीफीनॉल

4. निम्न ऐल्काडाइस के लिए दहन ऊष्मा का सही क्रम है :



- (1) (a) < (b) < (c)      (2) (b) < (c) < (a)  
 (3) (c) < (b) < (a)      (4) (a) < (c) < (b)

5. निम्न मध्यवर्तियों के लिए क्षारीयता का बढ़ता क्रम है (दुर्बल से प्रबल)



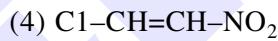
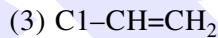
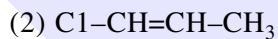
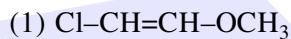
(1) (v) &lt; (i) &lt; (iv) &lt; (ii) &lt; (iii)

(2) (iii) &lt; (i) &lt; (ii) &lt; (iv) &lt; (v)

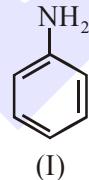
(3) (v) &lt; (iii) &lt; (ii) &lt; (iv) &lt; (i)

(4) (iii) &lt; (iv) &lt; (ii) &lt; (i) &lt; (v)

6. निम्नलिखित में से किसमें सबसे छोटा C-Cl आबंध है ?



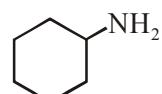
7. निम्नलिखित ऐमीनों की क्षारकता का घटता क्रम है :



(I)



(II)



(III)



(IV)

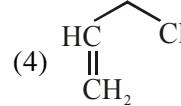
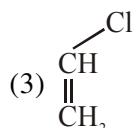
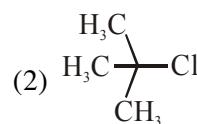
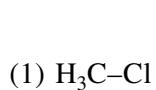
(1) (I) &gt; (III) &gt; (IV) &gt; (II)

(2) (III) &gt; (I) &gt; (II) &gt; (IV)

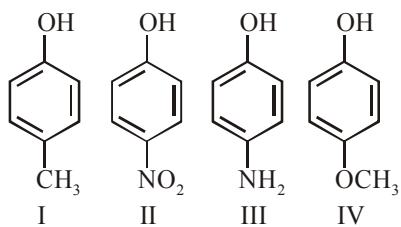
(3) (III) &gt; (II) &gt; (I) &gt; (IV)

(4) (II) &gt; (III) &gt; (IV) &gt; (I)

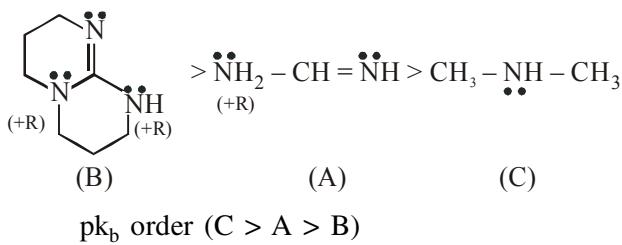
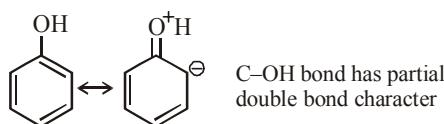
8. निम्नलिखित यौगिकों में से किसमें C—Cl आबंध सबसे छोटा है ?



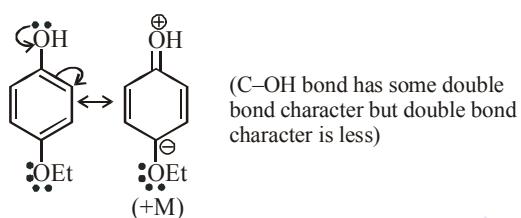
9. निम्नलिखित यौगिकों के क्वथनांकों का बढ़ता क्रम है :



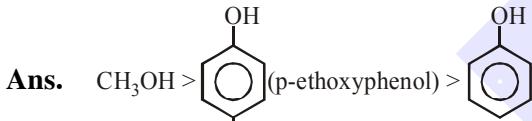
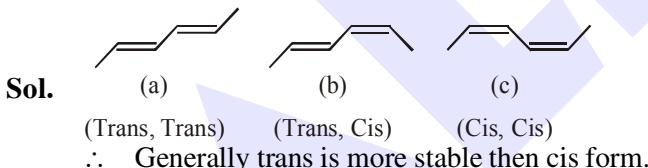
- (1) I < IV < III < II    (2) IV < I < II < III  
(3) I < III < IV < II    (4) III < I < II < IV

SOLUTION**1. NTA Ans. (3)****Sol.** Base strength order**2. NTA Ans. (1)****Sol.** (C) > (B) > (A)**3. NTA Ans. (2)****Sol.** H<sub>3</sub>C – OH (100% single bond)

C–OH bond has partial double bond character



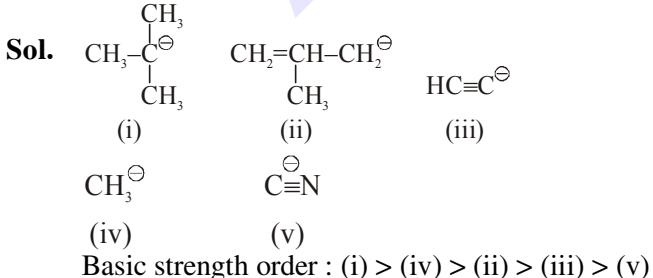
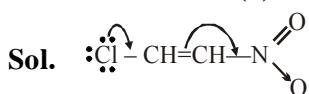
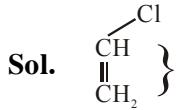
(C–OH bond has some double bond character but double bond character is less)

**4. NTA Ans. (1)**

$$\text{Heat of combustion (HOC)} \propto \frac{1}{\text{Stability}}$$

Stability : a &gt; b &gt; c

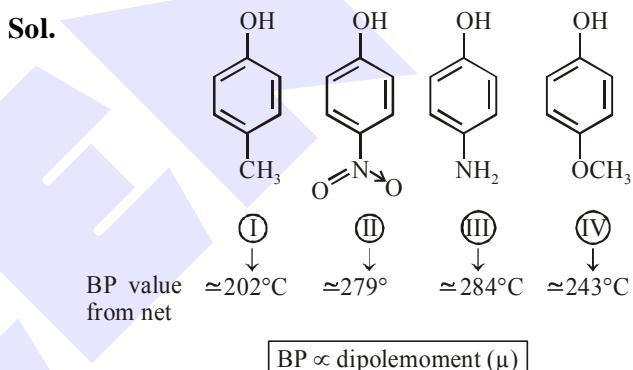
HOC : c &gt; b &gt; a

**5. NTA Ans. (3)****6. NTA Ans. (4)**Due to  $-M$  effect of  $-\text{NO}_2$  and  $+M$  effect of Cl more D.B. character between C – Cl bond. So shortest bond length.**7. NTA Ans. (3)****8. Official Ans. by NTA (3)**

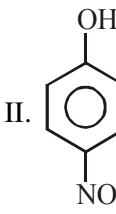
In option (3) C—Cl bond is shortest due to resonance of lone pair of –Cl.

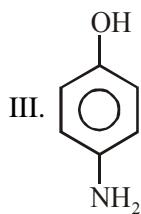
Due to resonance C—Cl bond acquire partial double bond character.

Hence C—Cl bond length is least.

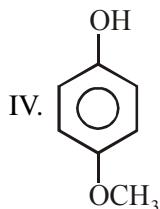
**9. Official Ans. by NTA (1)****Alter**

Increasing order of boiling point is :

 $\Rightarrow$  Shows hydrogen bonding from –O–H group only $\Rightarrow$  Shows strongest hydrogen bonding from both sides of –OH group as well as  $-\text{NO}_2$  group.



⇒ Shows stronger hydrogen bonding from both side of -OH group as well as -NH<sub>2</sub> group.



⇒ Shows stronger hydrogen bonding from one side -OH-group and another side of -OCH<sub>3</sub> group shows only dipole-dipole interaction.

⇒ Hence correct order of boiling point is:

(I) < (IV) < (III) < (II)