

CHEMISTRY

BOOKS - MS CHOUHAN CHEMISTRY (HINGLISH)

AN INTRODUCTION TO ORGANIC REACTIONS AND THEIR MECHANISMS ACIDS AND BASES

Solved Problems 3 1

1. Write an equation that shows the Lewis acid and Lewis base in the reaction of bromine (Br_2) with ferric bromide = ($FeBr_3$)



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2. Write an equation that shows the Lewis acid and Lewis base in the reaction of bromine (Br_2) with ferric bromide = ($FeBr_3$)



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Solved Problems 3 2

1. Add curved arrows to the following to indicate the flow of electrons for all the bond forming and bond breaking steps



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2. Add curved arrows to the following to indicate the flow of electrons for all the bond

forming and bond breaking steps



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3. Add curved arrows to the following to indicate the flow of electrons for all the bond forming and bond breaking steps



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4. Add curved arrows to the following to indicate the flow of electrons for all the bond forming and bond breaking steps



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5. Add curved arrows to the following to indicate the flow of electrons for all the bond forming and bond breaking steps



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6. Add curved arrows to the following to indicate the flow of electrons for all the bond forming and bond breaking steps



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7. Add curved arrows to the following to indicate the flow of electrons for all the bond forming and bond breaking steps





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8. Add curved arrows to the following to indicate the flow of electrons for all the bond forming and bond breaking steps



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Solved Problem 3 3

1. Using the pK_a values in Table 3.1 decide which is the stronger base, CH_3OH or H_2O



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2. Using the pK_a values in Table 3.1 decide which is the stronger base, CH_3OH or H_2O



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Solved Problem 3 4

1. Consider the mixing of an aqueous solution of phenol, C_6H_5OH (see Table 3.1), and NaOH. What acid-base reaction, if any, would take place



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2. Consider the mixing of an aqueous solution of phenol, C_6H_5OH (see Table 3.1), and NaOH. What acid-base reaction, if any, would take place



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Solved Problem 3 5

1. Which compound in each pair would be most acidic?



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2. Which compound in each pair would be most acidic?



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3. Which compound in each pair would be most acidic?



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4. Which compound in each pair would be most acidic?



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Solved Problem 3 6

1. Assuming you have available propyne, a solution of sodium amide in liquid ammonia, and T_2O show how you would prepare the tritium-labeled compound $CH_3C \equiv CT$.



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2. Assuming you have available propyne, a solution of sodium amide in liquid ammonia,

and T_2O show how you would prepare the tritium-labeled compound $CH_3C \equiv CT$.



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Solved Problem 3 8

1. Compare the stabilities in the following pair of carbocations



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2. Compare the stabilities in the following pair of carbocations



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Solved Problem 3 9

1. Compare acid strength of the following sets of compounds:



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2. Compare acid strength of the following sets of compounds:



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3. Compare acid strength of the following sets of compounds:



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4. Compare acid strength of the following sets of compounds:



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5. Compare acid strength of the following sets of compounds:



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6. Compare acid strength of the following sets of compounds:



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Solved Problem 3 10

1. Compare base strength of the following sets of compounds:



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2. Compare base strength of the following sets of compounds:



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3. Compare base strength of the following sets of compounds:



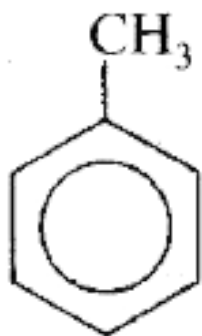
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4. Compare base strength of the following sets of compounds:



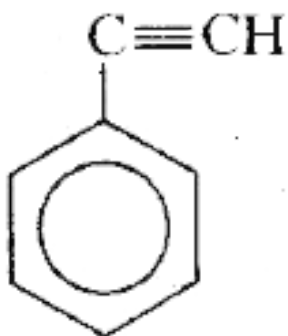
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Additional Question Single Correct Choice Type



(I)

:



(II)

1.

In compound (I) and (II) inductive effect of phenyl is

A. $+I$, $+I$

B. $-I$, $+I$

C. $-I$, $-I$

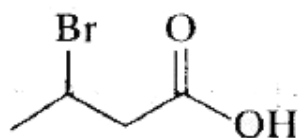
D. $+I$, $-I$

Answer: b

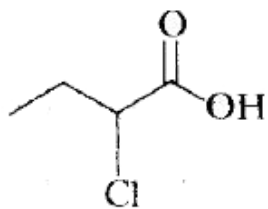
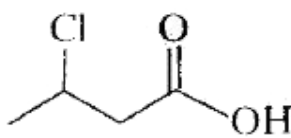


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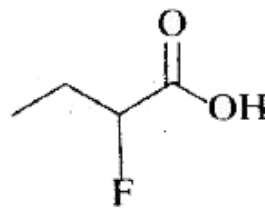
2. Rank the following carboxylic acids with respect to strengths listing the strongest one first



(II)



(IV)



A. $I > II > IV > III$

B. $I > II > III > IV$

C. $III > IV > I > II$

D. $IV > III > II > I$

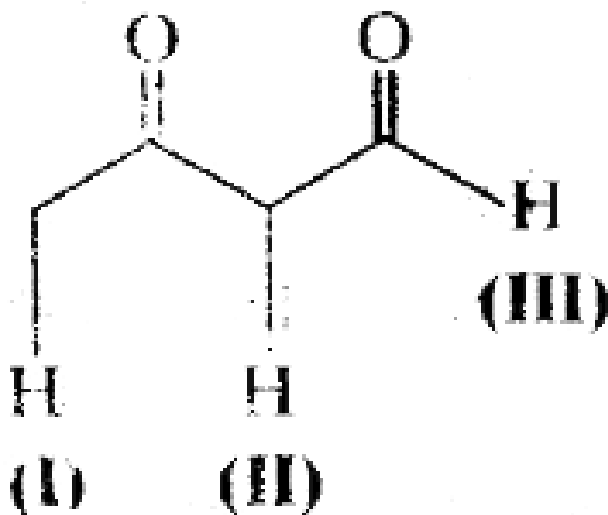
Answer: d



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3. Choose the order that has the indicated hydrogen atoms correctly arranged with respect

to increasing acidity.



A. $I < II < III$

B. $I < III < II$

C. $III < I < II$

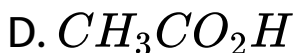
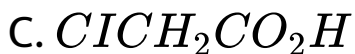
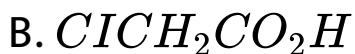
D. $II < I < III < I$

Answer: c



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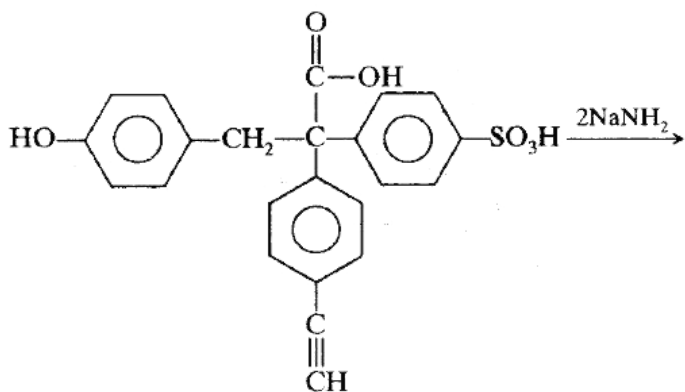
4. Which of the following is the strongest acid?



Answer: c



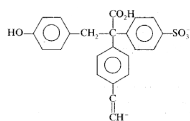
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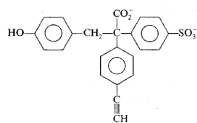
5.

Product of the above reaction is

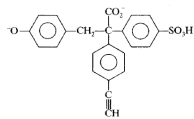
A.



B.



C.



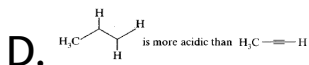
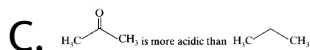
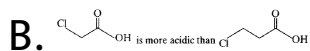
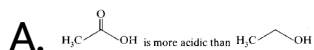
D. none of these

Answer: b



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6. Shown below are five comparisons of acid strengths. Which one of the comparisons is incorrect

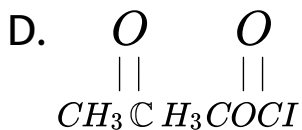
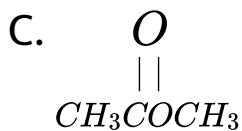
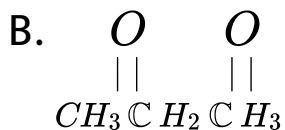
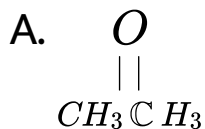


Answer: d



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7. Which of the following compounds has the largest pK_a



Answer: c



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8. When benzene sulphonic acid and p-nitrophenol are treated with $NaHCO_3$ the gases released, respectively, are

A. SO_2 , NO_2

B. SO_2 , NO

C. SO_2 , CO_2

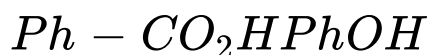
D. CO_2 , CO_2

Answer: d



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9. Compare acidic-strength of the below compounds



A. $iii > iv > ii > i$

B. $iii > ii > iv > i$

C. $iii > iv > i > ii$

D. $iv > iii > ii > i$

Answer: c



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10. What is the most acidic of the hydrogens on propyl acetoacetate?



A. v

B. w

C. x

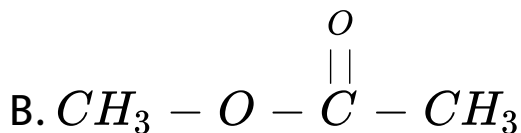
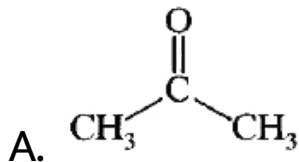
D. y

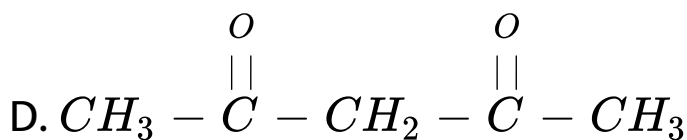
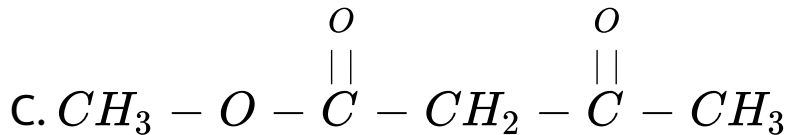
Answer: b



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11. Which of the following compounds has the most acidic α -hydrogens?



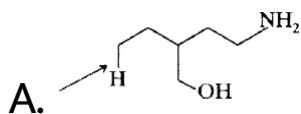


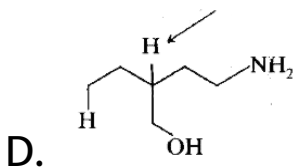
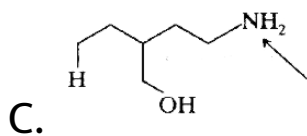
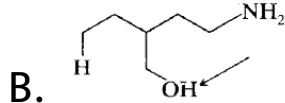
Answer: d



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12. Which hydrogen in the following molecule would you expect to be the most acidic (i.e., most easily removed as H^+)?



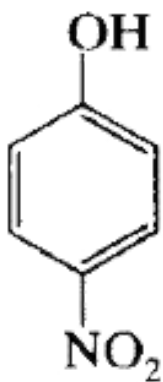


Answer: b

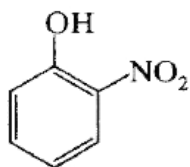


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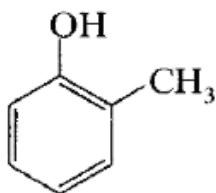
13. Most acidic phenol derivative is



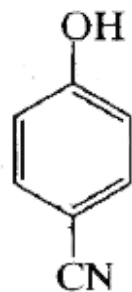
A.



B.



C.



D.

Answer: a



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14. Choose the order that has the following compounds correctly arranged with respect to increasing basicity:

A. 

B. 

C. 

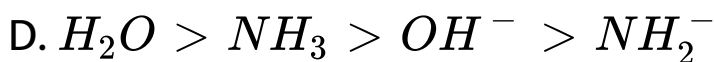
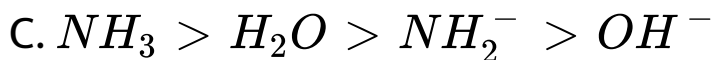
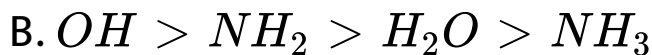
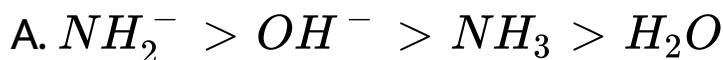
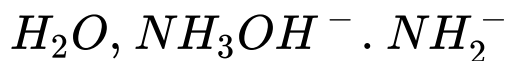
D. 

Answer: c



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15. The correct decreasing order of basic strength of the following species is _____ .



Answer: a



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16. The compound having most basic nitrogen is

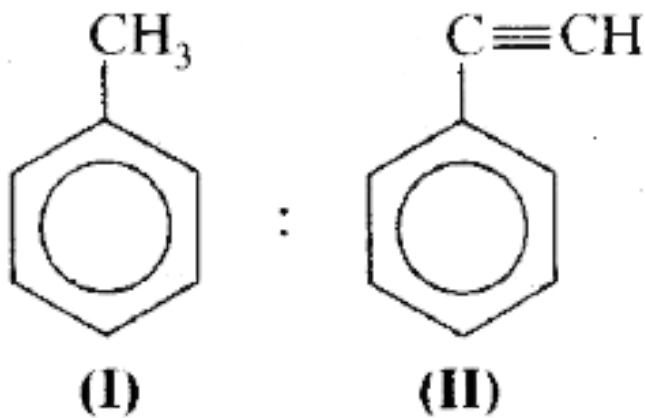
A. 

B. 

C. 

D. 

Answer: a



17.

In compound (I) and (II) inductive effect of phenyl is

A. $+I$, $+I$

B. $-I$, $+I$

C. $-I$, $-I$

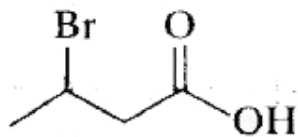
$$D. +I, -I$$

Answer: b

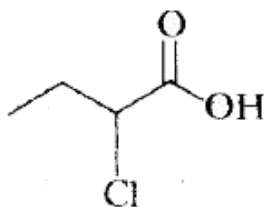
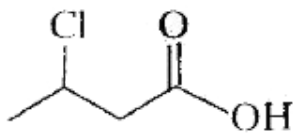


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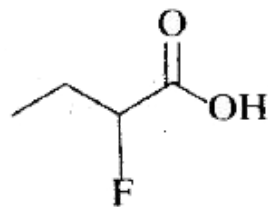
18. Rank the following carboxylic acids with respect to strengths listing the strongest one first



(II)



(IV)



A. $I > II > IV > III$

B. $I > II > III > IV$

C. $III > IV > I > II$

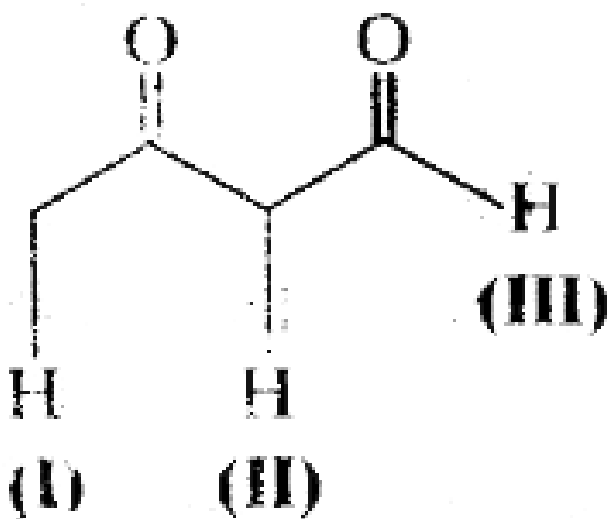
D. $IV > III > II > I$

Answer: d



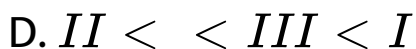
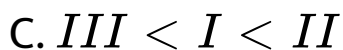
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19. Choose the order that has the indicated hydrogen atoms correctly arranged with respect to increasing acidity.



A. $I < II < III$

B. $I < III < II$

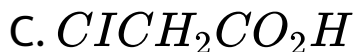
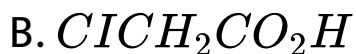


Answer: c



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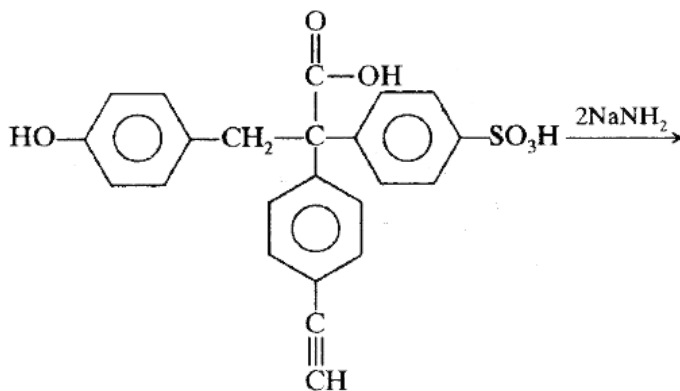
20. Which of the following is the strongest acid?



D. CH_3CO_2H

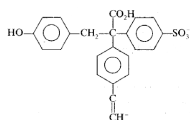
Answer: c

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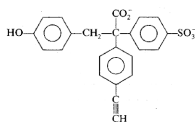


Product of the above reaction is

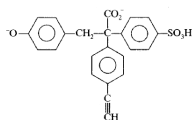
A.



B.



C.



D. none of these

Answer: b



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22. Shown below are five comparisons of acid strengths. Which one of the comparisons is incorrect

A. $\text{H}_3\text{C}-\overset{\text{O}}{\parallel}\text{C}-\text{OH}$ is more acidic than $\text{H}_3\text{C}-\text{CH}_2-\text{OH}$

B. $\text{Cl}-\text{CH}_2-\overset{\text{O}}{\parallel}\text{C}-\text{OH}$ is more acidic than $\text{Cl}-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}\text{C}-\text{OH}$

C. $\text{H}_3\text{C}-\overset{\text{O}}{\parallel}\text{C}-\text{CH}_3$ is more acidic than $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_3$

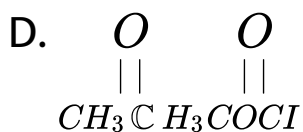
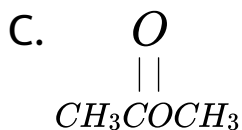
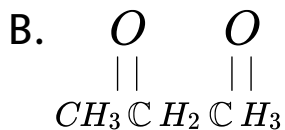
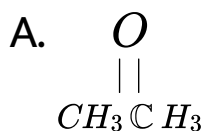
D. $\text{H}_3\text{C}-\overset{\text{H}}{\underset{\text{H}}{\text{C}}}-\overset{\text{H}}{\text{C}}-\text{H}$ is more acidic than $\text{H}_3\text{C}-\text{C}\equiv\text{C}-\text{H}$

Answer: d



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23. Which of the following compounds has the largest pK_a



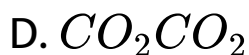
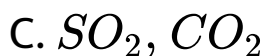
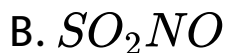
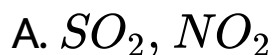
Answer: c



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24. When benzene sulphonic acid and p-nitrophenol are treated with $NaHCO_3$ the

gases released, respectively, are

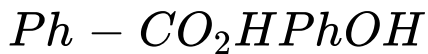


Answer: d



View Text Solution

25. Compare acidic-strength of the below compounds



A. $iii > iv > ii > i$

B. $iii > ii > iv > i$

C. $iii > iv > i > ii$

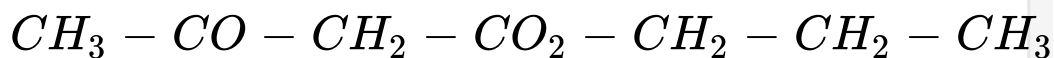
D. $iv > iii > ii > i$

Answer: c



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26. What is the most acidic of the hydrogens on propyl acetoacetate?



A. v

B. w

C. x

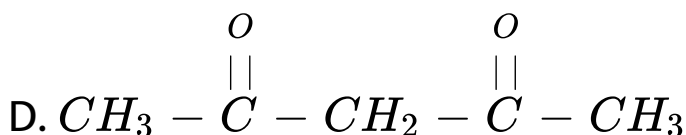
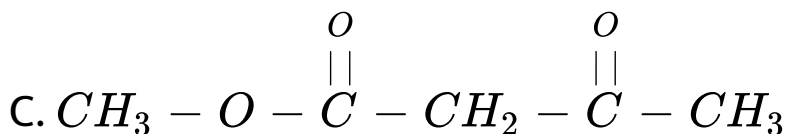
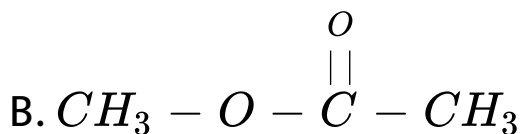
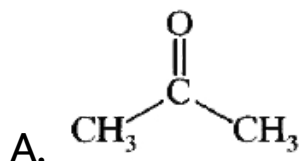
D. y

Answer: b



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27. Which of the following compounds has the most acidic α -hydrogens?

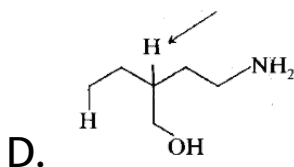
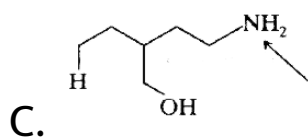
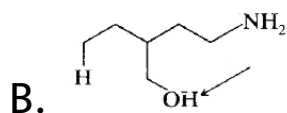
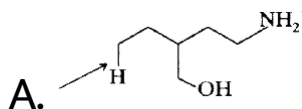


Answer: d



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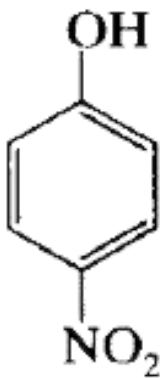
28. Which hydrogen in the following molecule would you expect to be the most acidic (i.e., most easily removed as H^+)?



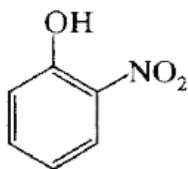
Answer: b



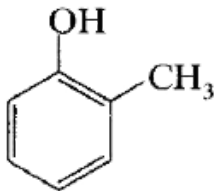
29. Most acidic phenol derivative is



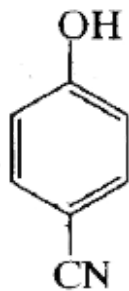
A.



B.



C.



D.

Answer: a



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30. Choose the order that has the following compounds correctly arranged with respect to increasing basicity:

A. 

B. 

C. 

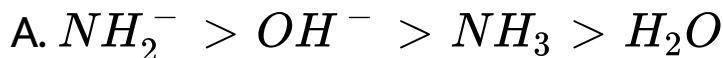
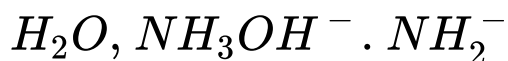
D. 

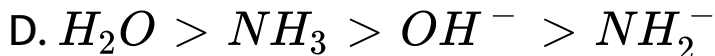
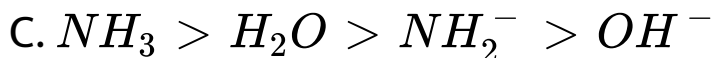
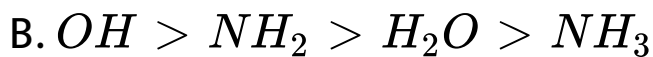
Answer: c



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31. The correct decreasing order of basic strength of the following species is _____ .





Answer: a



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32. The compound having most basic nitrogen is



C. 

D. 

Answer: a



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