



CHEMISTRY

JEE (MAIN AND ADVANCED) CHEMISTRY

ELECTRON MIGRATION EFFECTS

Example

1. Among chloroacetic acid and acetic , which is more acidic.

Why ?



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2. Among ethylamine and ammonia , which is more basic. Why ?



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3. Write the resonance structures of crotonal-dehyle and indicate the stability order.



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4. Why the bond length of two C,O bonds in carboxylate ions are equal?



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5. In the which of the following compounds mesomerie effect is possible? Vinyl chloride , b) Allyl chloride and c) 3- Butenal



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6. Why toluene is more reactive than benzene towards electrophilic substitution reactions?



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7. Explain mesomeric and inductive effects present in vinyl chloride.



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8. $C_1 - C_2$ Bond length in propene is 1.46 \AA and $C_2 - C_3$ bond length is 1.36 \AA . Explain.



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9. What is the stability order of various alkyl free radicals ?
Why?



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10. What is ring - chain tautomerism ?



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11. Among tertiary butyl and isopropyl carbon free radicals, why the first one is more stable ?



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12. What type of species are formed during homolysis of a covalent bond ?



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13. Identify electrophilic centre in the following . RCHO , RCH and CH_3X .



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Exercise 2 1 1

1. What do you understand by inductive effect ? Illustrate your answer with two examples.



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2. Write a brief note on electromeric effect



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3. Explain mesomeric effect. Basing on it, explain the reactivity of phenol and benzaldehyde towards electrophilic substitution reactions.



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4. Why the hyperconjugation effect exerted by a methyl group is greater than by an ethyl group ?



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Exercise 2 1 2

1. What are the main types of reaction intermediates?



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2. What are electrophiles ? Explain with two examples



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3. Mention any two nucleophiles. What is the necessary condition for a species to act as a nucleophile?



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4. What is a carbene? How is it formed? What is the hybridisation of carbon in carbene?



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5. Give an account of the main types of reactions in organic chemistry?



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Questions For Descriptive Answers

1. Hyperconjugation effect is also termed as 'no bond resonance'. Why?



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2. Explain why alkyl groups act as electron donors when attached to a π system.



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3. Separate nucleophiles and electrophiles from:

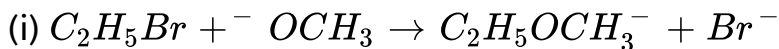
H_3O^+ , $RCOO^-$, BF_3R-O-R , NH_3 , R_3C^+ and $ZnCl_2$

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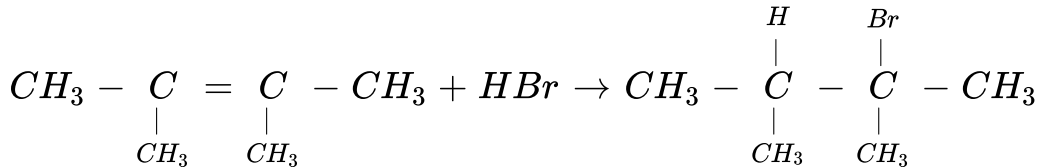


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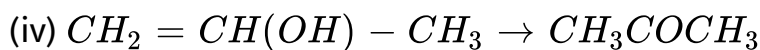
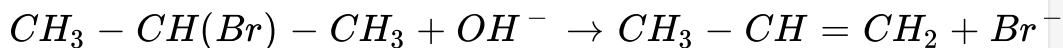
4. Classify the following reactions in one of the reaction type :



(ii)



(iii)



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5. Why trichloro acetic acid is more reactive than acetic acid ?



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6. Among the ions, $O_2NCH_2CH_2O^-$ and $CH_3CH_2O^-$, which is more stable ? Why?



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7. $C_2H_5^+$ is more stable than CH_3^+ . Substantiate ?



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8. What type of reaction is involved in the conversion of ammonium cyanate to urea.



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9. Halogen causes $-I$ effect, but with lone pairs they have $+M$ effect. Substantiate.



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10. Phenol is more acidic and ethanol is less acidic than water.

Why ?



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