

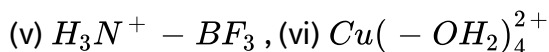
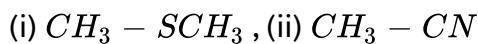
CHEMISTRY

BOOKS - R SHARMA CHEMISTRY (HINGLISH)

GENERAL ORGANIC CHEMISTRY

Example

1. Using curved-arrow notation, show the formation of reactive intermediates when covalent bonds in the following substance undergo heterolytic (polar) cleavage.



Strategy: Both bonding electrons remain with the more electronegative atom. If the bonding atom have same electronegativities,, then the

bonding electrons are taken away by the larger atom as it can sustain the negative charge more effectively.

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2. Which bond is more polar in the following pairs of molecules ?

(a) $H_3C - H$, $H_3C - Br$,

(b) $H_3C - NH_2$, $H_3C - OH$

(c) $H_3C - OH$, $H_3C - SH$.

A. $H_3C - H$, $H_3C - Br$

B.

C.

D.

Answer:

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3. In which (C - C) bond of $\left(H_3\overset{3}{C} - \overset{2}{C}H_2 - \overset{1}{C}H_2 - Br \right)$, the inductive effect is expected to be the least ?

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4. Write the resonance structures of (1) CH_3COO^\ominus and (2) $CH_2 = CH - CHO$. Indicate the relative stability of the contributing structures.

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5. Write the resonance structures of (1) CH_3COO^\ominus and (2) $CH_2 = CH - CHO$. Indicate the relative stability of the contributing structures.

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1. In most cases, the organic reactions are brought about with inorganic compounds like acid, bases, oxidizing agents, reducing agents, and so on. The inorganic compounds that bring about the organic reactions are termed as attacking reagents, and the organic compounds undergoing the chemical transformation are termed as

A. receiving reagents

B. substrates

C. reactants

D. formats

Answer: D



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2. A mechanism for the organic reaction is a description of the events that take place on a "_____" level as reactants become products.

- A. universal
- B. commercial
- C. molecular
- D. massive

Answer: C

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3. A reaction mechanism does not include a description of

- A. bonds broken and formed
- B. all intermediates and transition states
- C. relative rates of the discrete steps
- D. yield of the products.

Answer: D

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4. The cleavage of a covalent bond between two atoms of a reactant in organic reaction can occur in

- A. two ways
- B. three ways
- C. four ways
- D. just one way

Answer: A



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5. What is the reverse of heterolytic cleavage called ?

- A. Ionic bonding
- B. Covalent bonding
- C. Coordinate covalent bonding

D. Electrovalent bonding

Answer: C



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6. Heterolysis of bonds to carbon does not lead to the formation of

A. carbocations

B. carbanions

C. free radicals

D. both (1) and (2)

Answer: C



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7. Homolytic reactions are favored by

- (i) nonpolar solvents
- (ii) heating
- (iii) irradiation with light
- (iv) presence of peroxides

A. (ii), (iii)

B. (i), (iv)

C. (i), (ii), (iii)

D. (i), (ii), (iii), (iv)

Answer: D



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Follow Up Test 2

1. Carbocation is group of atoms that contains a carbon atom bearing only-electrons

- A. six
- B. four
- C. two
- D. five

Answer: A



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2. Carbocations are classified as primary, secondary, or tertiary after the C atom bearing the positive charge. They are named by use of the word cation. Which of the following is a primary carbocation?

- A. tert-Butyl cation
- B. Isopropyl cation

C. Ethyl cation

D. Methyl cation

Answer: C



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3. Carbocation are

A. Arrhenius acids

B. Bronsted acids

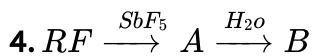
C. Lowry acids

D. Lewis acids

Answer: D



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Identify the product B

- A. An alcohol
- B. An aldehyde
- C. An ether
- D. A carboxylic acid

Answer: A



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5. In a carbocation, the electron deficient C is bounded to three other atom, and for this bonding uses

- A. pAO 's
- B. sp^2HO 's
- C. sp^3HO 's

D. $spHO's$

Answer: B



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6. Which of the following orbitals is empty in a carbocation?

A. sp^2HO

B. $sHO's$

C. pAO

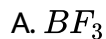
D. dAO

Answer: C



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7. The quantum mechanical picture of a carbocation is exactly the same as that of

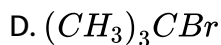
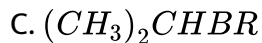
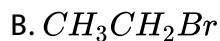


Answer: A



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8. Heterolytic bond dissociation energy of $C - Br$ bond is minimum for



Answer: D

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Follow Up Test 3

1. The total number of electrons present in the valance shell of the negatively charged C^- of a carbanion is

A. 8

B. 6

C. 4

D. 5

Answer: A

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2. The hybridization of the negatively charged C atom of $\overset{-}{\underset{\cdot\cdot}{\text{C}}}\text{H}_3$, is

A. dsp^2

B. sp^2

C. sp^3

D. sp

Answer: C

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3. The geometry of the methanide ion, $\overset{-}{\underset{\cdot\cdot}{\text{C}}}\text{H}_3$,

A. trigonal pyramidal

B. tetrahedral

C. square pyramidal

D. trigonal planar

Answer: B



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4. The $H - C - H$ bond angle in $\overset{\cdot\cdot}{\underset{\cdot\cdot}{C}}H_3$, is

- A. 109.5°
- B. 120°
- C. slightly less than 109.5°
- D. slightly more than 109.5°

Answer: C



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5. Which of the following can serve as a source from which C atom is readily transferred with its electrons?

A. Organometallic compounds

B. Coordination compounds

C. Double salts

D. Acidic salts

Answer: A

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6. Which of the following is correct for a carbon?

A. It is a Lewis base.

B. It is a nucleophile.

C. It is the conjugate base of a carbon acid.

D. All of these.

Answer: D

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7. The _____ hydrogen atoms of carbonyl compounds (i.e aldehydes and ketones) are acidic protons.

- A. alpha
- B. beta
- C. gamma
- D. omega

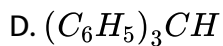
Answer: A



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8. Which of the following compounds is the most acidic

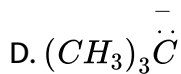
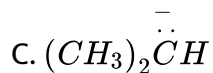
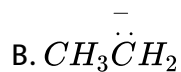
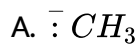
- A. CH_4
- B. $C_6H_5CH_2$
- C. $(C_6H_5)CH_2$



Answer: D

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9. Which of the following carbanions is the most reactive?



Answer: D

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Follow Up Test 4

1. A free radical is a chemical species which is

- A. electron deficient and electrically neutral
- B. electron deficient and positively charged
- C. electron rich and negatively charged
- D. electron rich and electrically neutral

Answer: A

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2. Total number of electron present in the valence shell of C atom in methyl radical is

- A. 6
- B. 7
- C. 8
- D. 5

Answer: B

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3. The shape of alkyl free radical is

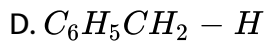
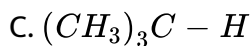
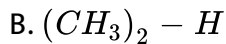
- A. pyramidal
- B. tetrahedral
- C. planar
- D. bent

Answer: C

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4. Homolytic bond dissociation energy of $C - H$ bond is minimum for

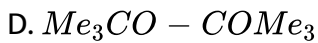
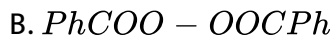
- A. $CH_3CH_2 - H$



Answer: D

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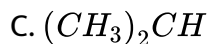
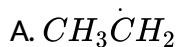
5. Which of the following would yield a carbon radical on heating?



Answer: C

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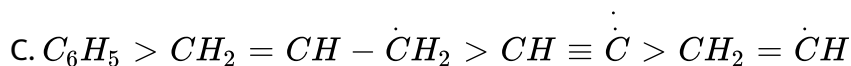
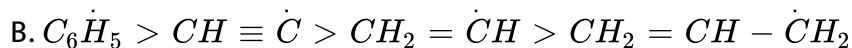
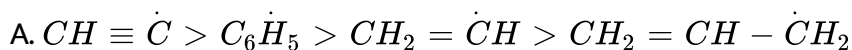
6. Which of the free radicals is most stable?



Answer: B

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7. The correct of stability of the free radical is



Answer: D

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Follow Up Test 5

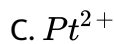
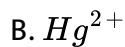
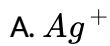
1. Electrophiles

- A. positive reagents
- B. netural reagents
- C. Lewis acids
- D. all of these

Answer: D

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2. Which of the following metal ions cannot act as an electrophile?

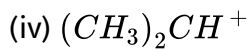
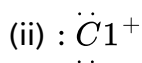
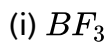


Answer: D



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3. Which of the following species act as electro-philic?



A. (i), (ii), (iii), (iv)

B. (i), (iii)

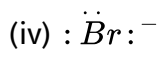
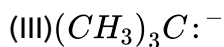
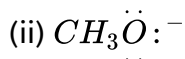
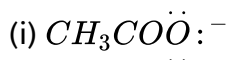
C. (ii), (iv)

D. (i), (iii), (iv)

Answer: A

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4. Which of the following are nucleophiles?



A. (i),(ii)

B. (i), (ii), (iii)

C. (i), (ii), (iii), (iv)

D. (ii), (iii), (iv)

Answer: C

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5. Which of the following is not nucleophiles?

(i) HCl

(ii) SiF_4

(iii) $P(CH_3)_3$

(iv) $CH_2 = CH_2$

A. (i), (ii), (iv)

B. (i), (ii)

C. (iii), (iv)

D. (ii), (iv)

Answer: B



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6. Which of the following species behave both as a nucleophile and an electrophile?

(i) $CH_3C \equiv N:$, (ii) CH_4

(iii) $H_2C = O$, (iv) H_2

A. (ii), (iii)

B. (i), (ii)

C. (iii), (iv)

D. (ii), (iv)

Answer: A



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7. what kind of reaction occurs between a nucleophilic and an electrophile?

A. Ionic bonding

B. Covalent bonding

C. Coordinate covalent bonding

D. Metallic bonding

Answer: C

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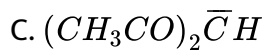
8. Which of the following has highest nucleophilicity ?



Answer: C

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9. Which of the following can behave as an ambident nucleophile?

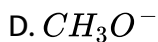
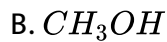


D. All of these

Answer: D

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10. Which of the following is the strongest nucleophile?

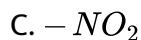
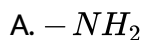


Answer: C

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Follow Up Test 6

1. Which of the following atoms/groups exerts $-I$ effect when attached to a carbon atom?



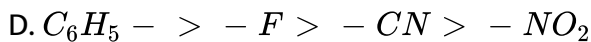
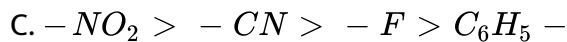
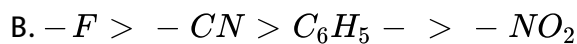
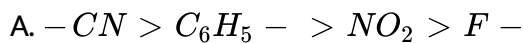
D. all of these

Answer: D



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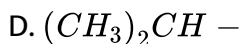
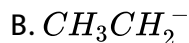
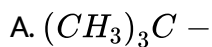
2. Which of the following gives the correct order of decreasing electron withdrawing effect?



Answer: C

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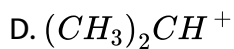
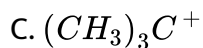
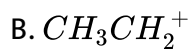
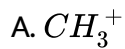
3. Which of the following alkyl groups has the maximum +I effect?



Answer: A

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4. The most stable carbocation is:

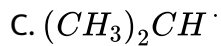
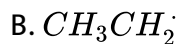
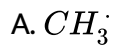


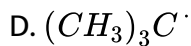
Answer: C



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5. Which of the following is the least stable carbocation?



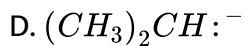
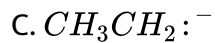
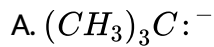


Answer: A



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6. Which of the following is the most stable carbanion?

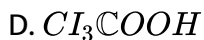
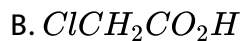
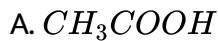


Answer: B



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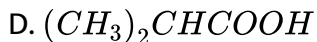
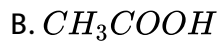
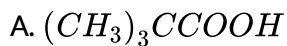
7. Which of the following is the strongest acid?



Answer: D

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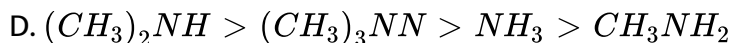
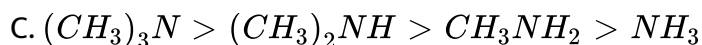
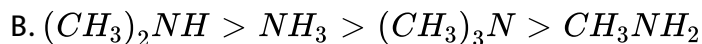
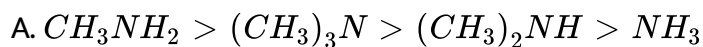
8. Which of the following is the weakest acid?



Answer: A

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9. Which of the following shows the correct order of decreasing basic strength in benzene medium?

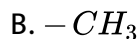
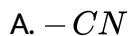


Answer: C



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10. Which of the following substituents will decrease the acidic strength of phenol?



C. $-NO_2$

D. $-CHO$

Answer: B

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Follow Up Test 7

1. Which of the following groups shows the strongest $-R$ effect?

A. $-COOR$

B. $-CN$

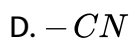
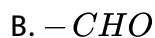
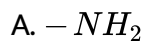
C. $-NO_2$

D. $-CHO$

Answer: C

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2. Which of the following has +*R*(or +*M*) effect?

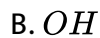


Answer: A



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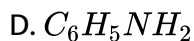
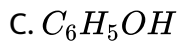
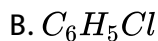
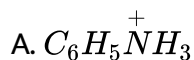
3. Which of the following groups shows the weakest +*R* effect?



Answer: B

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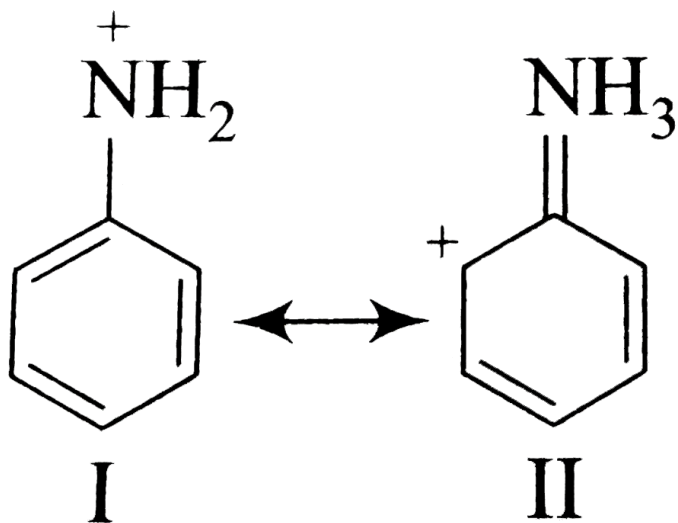
4. In which of the following compounds, does the substituent not exert its resonance effect?



Answer: A

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5. Examine the following two structures for the anilinium ion and choose the correct statement from the ones gives below:



- A. *II* is not an acceptable canonical structure because carbonium ions are less stable than ammonium ions.
- B. *II* is not an acceptable canonical structure because it is non-aromatic.
- C. *II* is not acceptable canonical structure because the nitrogen has 10 valence electrons.
- D. *II* is an acceptable canonical structure.

Answer: C



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6. Resonance structure of a molecule cannot have

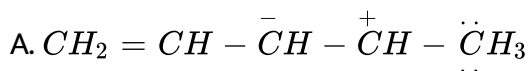
- A. identical arrangement of atoms
- B. nearly the same energy
- C. the same number of unpaired electrons
- D. identical bonding

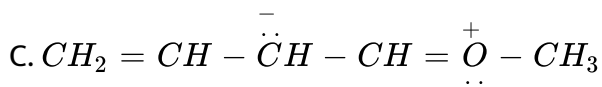
Answer: D



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7. Which of the following resonating structures of 1 – methoxy-1,3-butadiene is least stable?

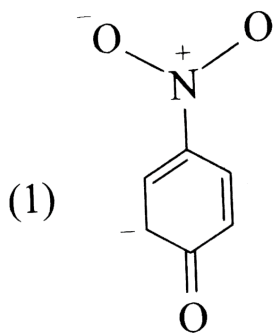




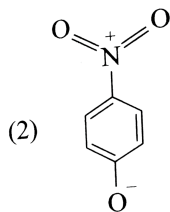
Answer: D

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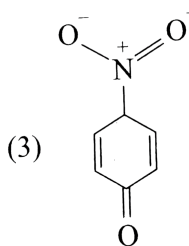
8. The most unlikely representation of resonance structure of *p*-nitrophenoxide ion is:



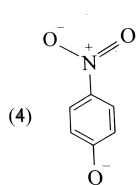
A.



B.



C.



D.

Answer: B

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9. Unlike other amines (RNH_2), guanidine, $H_2\ddot{N} - \underset{\substack{|| \\ NH \\ \vdots}}{C} - \ddot{N}H_2$

is a strong base because the cation formed by the addition of H^+ has _____ equivalent contributing structures.

A. three

B. four

C. two

D. five

Answer: A

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10. Phenols are more acidic than alcohols because

- A. phenols are more soluble in water than alcohols are.
- B. the phenoxide ion is stabilized by resonance but resonance is not possible in the alkoxide ion.
- C. resonance stabilization in the phenoxide ion is greater than that in the alkoxide ion.
- D. phenol are stabilized by resonance but alcohol are not.

Answer: B

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11. Although phenoxide ion has more number of resonating structures than carboxylate ion, carboxylic acid is a stronger than phenol. Why?

A. the relative resonance stabilization of the carboxylate ion over carboxylic acid is much greater than the relative resonance stabilization of the phenoxide ion over phenol.

B. a carboxylic acid has a greater resonance stabilization than a phenol.

C. the carboxylate ion is more resonance-stabilized than the phenoxide ion.

D. A carboxylic acid can form a dimer by intermolecular hydrogen bonding but a phenol cannot.

Answer: A



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1. Which of the following does not exhibit electromeric effect?

- A. Ethers
- B. Aldehydes
- C. Ketones
- D. Alkenes

Answer: A

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2. Which of the following electrons displacement effects is temporary?

- A. Inductive effect
- B. Resonance effect
- C. Electromeric effect

D. Hyperconjugation

Answer: C

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3. Which of the following electronic effects does not take place in the ground state of the molecule?

A. Hyperconjugation

B. Inductive effect

C. Resonance effect

D. Electromeric effect

Answer: D

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4. The kind of delocalisation involving sigma bond orbitals is called.....

- A. Hyperconjugation
- B. mesomeric effect
- C. Electromeric effect
- D. inductive effect

Answer: A



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5. The CH_3 – group in propene exerts

- A. Hyperconjugation
- B. + I effect
- C. – I effect
- D. both (1) and (2)

Answer:



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6. The total number of contributing structures for hyperconjugation in propene is

A. 3

B. 4

C. 5

D. 2

Answer: B



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7. Which of the following electron displacement effects in covalent bonds may also be regarded as no bond resonance?

- A. Inductive effect
- B. Electromeric effect
- C. Hyperconjugation
- D. Resonance effect

Answer: C

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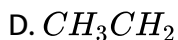
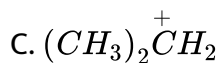
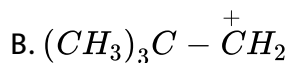
8. Which of the following alkyl groups exerts maximum hyperconjugation when bonded to an unsaturated system?

- A. $(CH_3)_2CH -$
- B. $CH_3CH_2 -$
- C. $CH_3 -$
- D. $(CH_3)_3C -$

Answer: C

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9. Which of the following cannot exhibit hyperconjugation?



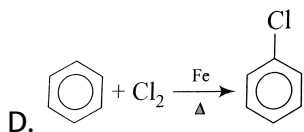
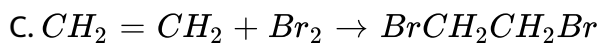
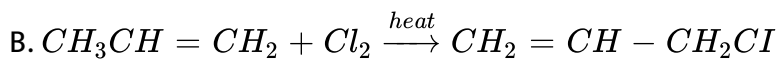
Answer: B

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Follow Up Test 9

1. Which of the following is a free-radical substitution reaction?





Answer: B

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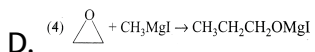
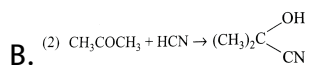
2. The formation of a cyanohydrin from a carbonyl compound is an example of

- A. nucleophilic addition reaction
- B. nucleophilic substitution reaction
- C. electrophilic substitution reaction
- D. electrophilic addition reaction

Answer: A



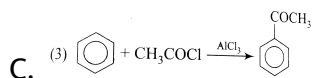
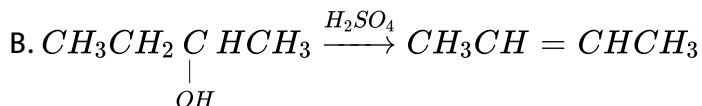
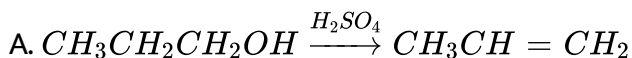
3. Which of the following is a condensation reaction?

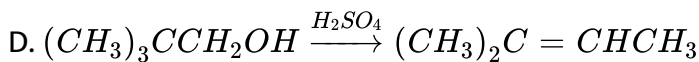


Answer: C

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4. Which of the following reactions involves molecular rearrangement?

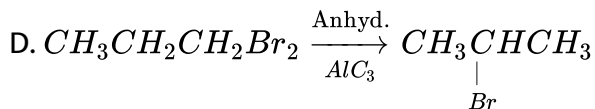
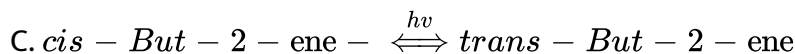
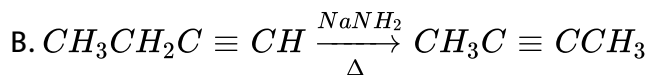
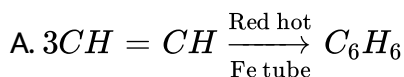




Answer: D

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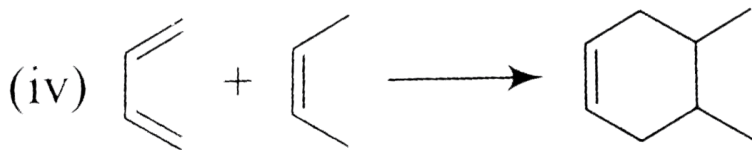
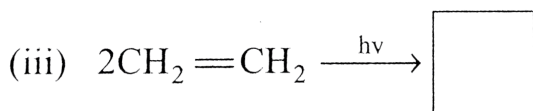
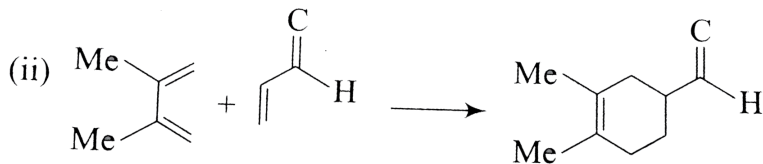
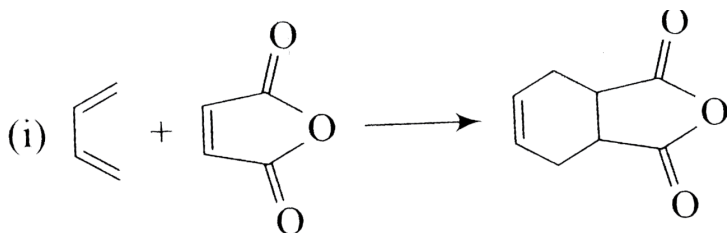
5. Which of the following is not an isomerization reaction?



Answer: A

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6. Which of the following are pericyclic reactions?



A. (i), (iv)

B. (i), (ii), (iv)

C. (i), (ii), (iii), (iv)

D. (ii), (iii), (iv)

Answer: C

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Question Bank Level I

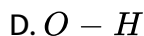
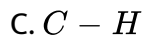
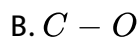
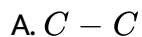
1. Homolytic fission of carbon-carbon bond of ethane produces an intermediate in which the carbon atom is in

- A. sp^2 hybridized state
- B. sp^3 hybridized state
- C. sp hybridized state
- D. dsp^2 hybridized state

Answer: A

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1. In CH_3CH_2OH , the bond that undergoes heterolytic cleavage most readily is

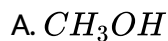


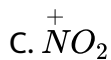
Answer: D



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2. Which of the following is an electrophilic reagent?

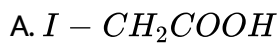




Answer: C

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3. Which one of the following acids would you expect to be the strongest?



Answer: D

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4. Hyperconjugation involves delocalization of

- A. σ electrons into an adjacent π bond
- B. n electron of a heteroatom into an adjacent multiple bond
- C. π electrons into an adjacent π bond
- D. All of these

Answer: A



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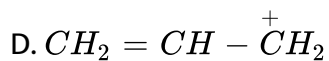
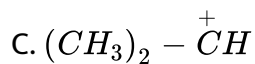
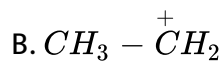
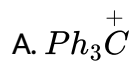
5. Which of the following alkenes is the most stable on account of maximum hyperconjugation?

- A. $(CH_3)_3CCH = CH_2$
- B. $CH_3CH = CH_2$
- C. $(CH_3)_2CHCH = CH_2$
- D. $CH_3CH_2CH = CH_2$

Answer: B

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6. Which of the following carbocations will be the most stable?

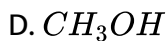
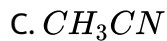
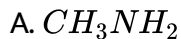


Answer: A

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Level II

1. Which one of the following behaves both as a nucleophile and an electrophile ?

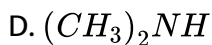
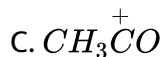
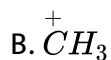
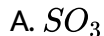


Answer: C



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2. Which of the following is not an electrophile ?



Answer: D



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3. Which of the following statements is not correct for resonance structure?

- A. None of the individual resonance structures explains all the characteristics of the actual molecule.
- B. The resonance hybrid has equal contribution from all the resonating structure.
- C. The different resonance structure of a molecule should have the same number of unpaired electrons.
- D. The different resonating structures of a molecule have fixed arrangements of atomic nuclei.

Answer: B



4. The $(CH_3)_3C$ - group in *t*-butylacetylene exerts

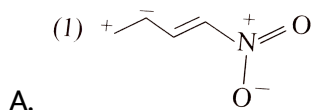
- A. $-I$ effect
- B. $+I$ effect
- C. hyperconjugation
- D. both (2) and (3)

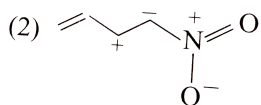
Answer: B

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Level Iii

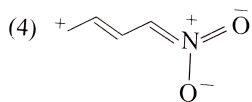
1. Among the following, the least stable resonance structure is :





B.

C.



D.

Answer: C

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2. Which of the following statements is correct?

A. Triphenylchloromethane is completely ionized in liquid SO_2 .

B. Triphenylmethanol dissolves in concentrated H_2SO_4 to give a solution that has the same intense yellow color as triphenylchloromethane solution.

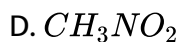
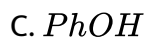
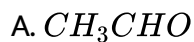
C. Both (1) and (2)

D. None of these

Answer: C

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3. Which of the following would yield a carbanion to the greatest extent on treatment with an alkali?



Answer: B

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4. The treatment of $Me_3C - F$ with SbF_5 in liquid SO_2 would yield a

A. carbocation

B. carbon radical

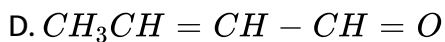
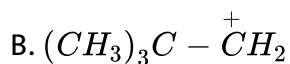
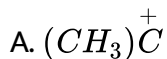
C. carbanion

D. carbene

Answer: A

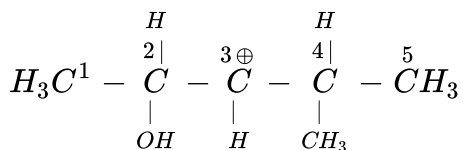
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5. In which of the following molecule/ions are the inductive effect, resonance effect, and hyperconjugation all operating simultaneously?



Answer: D

6. In the following carbocation, H/CH_3 that is most likely to migrate to the positively charged carbon is :



A. CH_3 at $C - 4$

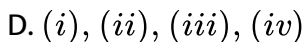
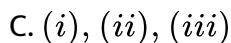
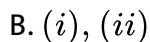
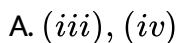
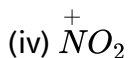
B. H at $C - 4$

C. CH_3 at $C - 2$

D. H at $C - 2$

Answer: D

1. Which of the following species are electrophilic?

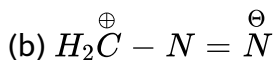
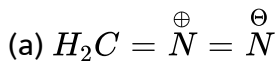


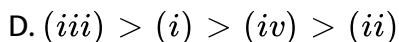
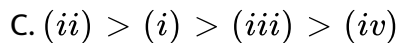
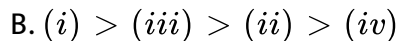
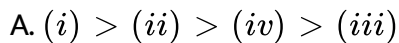
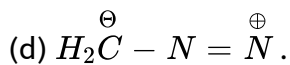
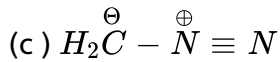
Answer: D



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2. Give the stability of the following resonance structures



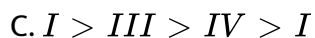
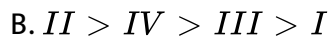


Answer: B



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3. Arrange the carbanions, $(CH_3)_3\bar{C}$, $\bar{C}Cl_3$, $(CH_3)_2\bar{C}H$, $C_6H_5\bar{C}H_2$, in order of their decreasing stability



D. $IV > II > I > III$

Answer: B



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Archives

1. Archives

A. $-SO_3H$

B. $-COOH$

C. $-NO_2$

D. $-CN$

Answer: C



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2. Arrange the following free radicals in the order of decreasing stability:

methyl (*I*), vinyl (*II*), allyl (*III*), benzyl (*IV*)

A. $I > II > III > IV$

B. $III > II > I > IV$

C. $II > I > IV > III$

D. $IV > III > I > II$

Answer: D



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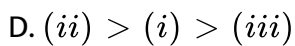
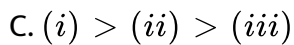
3. Base strength of the following

(i) $H_3CCH_2^-$, (ii) $H_2C = CH^-$

(iii) $HC \equiv C^-$

A. $(iii) > (ii) > (i)$

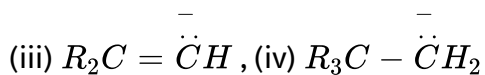
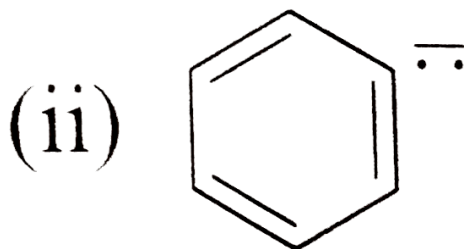
B. $(i) > (iii) > (ii)$



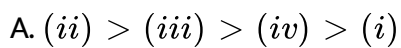
Answer: C

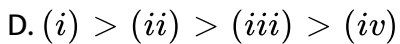
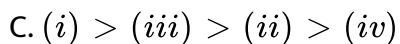
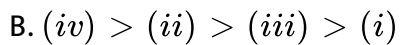
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4. The stability of carbanions in the following



is in the order

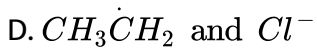
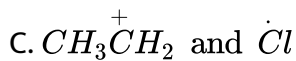
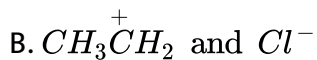
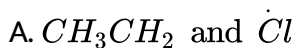




Answer: D

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5. CH_3CH_2Cl undergoes homolytic fission to produce



Answer: A

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6. Hyperconjugation involves overlap of the following orbitals :

A. $\sigma - \sigma$

B. $\sigma - p$

C. $p - p$

D. $\pi - \pi$

Answer: B



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7. Chlorination of methane in the presence of ultraviolet light involves:

A. homolytic cleavage

B. heterolytic cleavage

C. carbocation

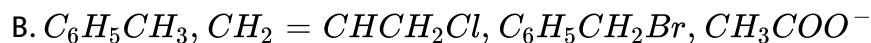
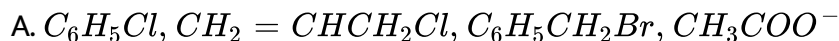
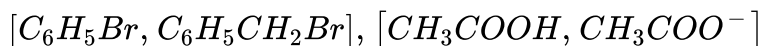
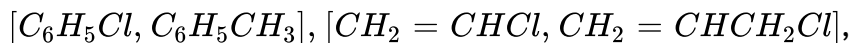
D. carbanion

Answer: A



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8. Which species are more resonance stabilized in the following pairs:

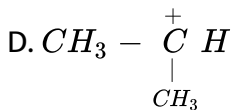
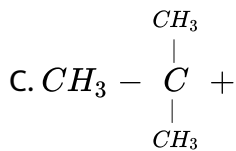
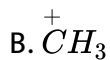
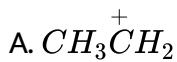


Answer: D



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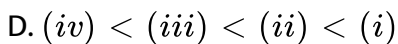
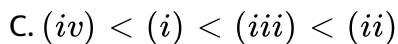
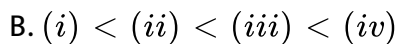
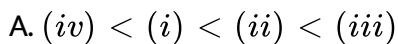
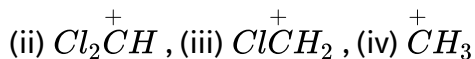
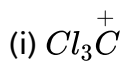
9. The most stable carbocation is:



Answer: C

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10. Consider the following carbocation:



Answer: B

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11. Which of the following compounds possesses the $C - H$ bonds with the lowest bond dissociation energy?

A. Toluene

B. Benzene

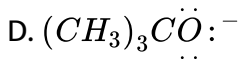
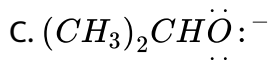
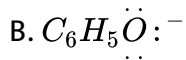
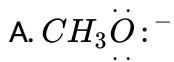
C. *n*-Pentane

D. 2, 2-Dimethylpropane

Answer: A

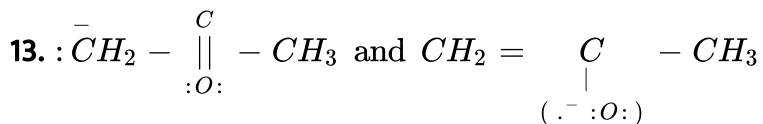
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12. Which of the following alkoxides is the most reactive nucleophile?



Answer: A

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A. resonance structure

B. tautomers

C. geometrical isomers

D. optical isomers

Answer: A

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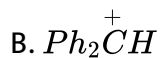
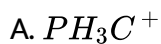
14. Resonance in most of the organic molecules

- A. increase stability
- B. decreases stability
- C. increases reactivity
- D. none of these

Answer: A

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15. Which of the following is the most stable?

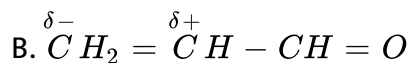


D. Tropylium cation

Answer: D

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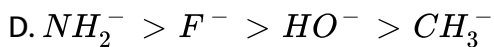
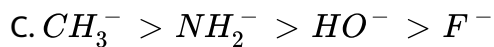
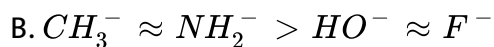
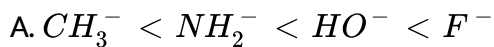
16. Polarization of electrons in acrolein may be written as:



Answer: A

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17. Nucleophilicity order is correctly represented by

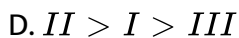
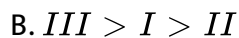
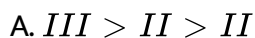


Answer: C

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18. Among the following alkenes:

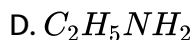
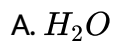
(1 - Butene, , *cis* - 2 - Butene, , trans - 2 - Butene,), (I,



Answer: A

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19. Which of the following is an electrophile ?



Answer: C

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20. Which of the following is the active species in the nitration of aromatic organic compounds ?



C. NO_2

D. NO_3^-

Answer: B

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21. Heterolytic fission of a covalent bond in organic molecules gives

A. free radicals

B. cations and anions

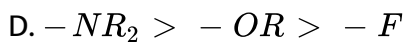
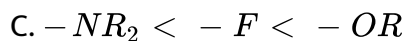
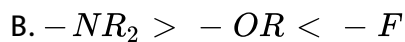
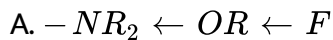
C. only cations

D. only anions

Answer: B

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22. Which of the following is correct with respect to $-I$ effect of the substitutes? ($R = alkyl$)

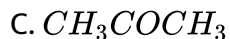
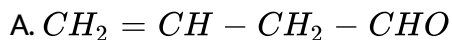


Answer: A



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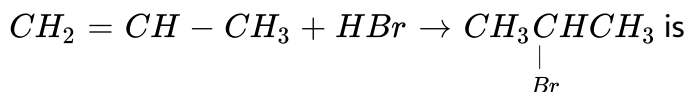
23. In which of the following, will resonance be possible?



Answer: B

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24. The reaction



- A. nucleophilic addition
- B. electrophilic addition
- C. electrophilic substitution
- D. free radical addition

Answer: B

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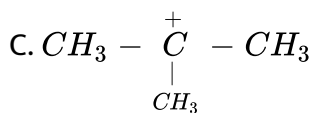
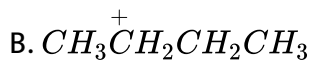
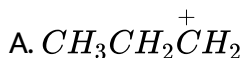
25. Which of the following statements is not correct about the resonance structure?

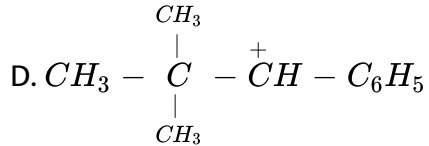
- A. Contributing structures are less stable than the resonance hybrid.
- B. Contributing structures represent molecules having no real existence.
- C. Equivalent resonating structures make the resonance very important.
- D. Contributing structures contribute to the resonance hybrid in proportion of their relative energies.

Answer: D

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26. Which of the following is the least stable ?

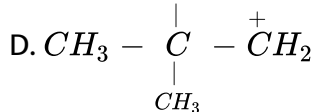
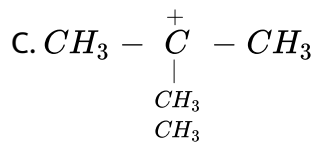
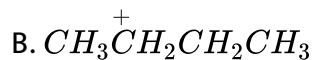
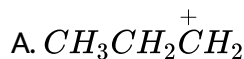




Answer: A

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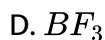
27. Which of the following ion is the most stable?



Answer: C

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28. Which of the following is not a nucleophile?

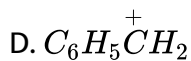
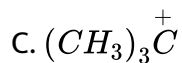
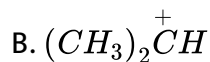
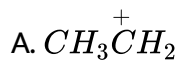


Answer: D



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29. Which of the following is the most stable carbocation?



Answer: D

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30. Which of the following is an example of elimination reaction?

- A. Chlorination of methane
- B. Dehydration of ethanol
- C. Nitration of benzene
- D. Hydroxylation of ethylene

Answer: B

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31. The homolytic fission of hydrocarbon results in the formation of

- A. carbonium ion

B. free radicals

C. carbanions

D. carbenes

Answer: B



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32. Which of the following is an electrophilic reagent?

A. RO^-

B. BF_3

C. NH_3

D. ROH

Answer: B



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33. Which of the following contains three pairs of electrons in the valence shell?

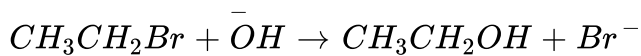
- A. Carbocations
- B. Carbanions
- C. free radicals
- D. none of these

Answer: A



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34. The reaction



is an example of

- A. electrophilic substitution
- B. electrophilic addition

C. nucleophilic addition

D. nucleophilic substitution

Answer: D

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35. Electrophilic reagents are

A. electron pair donors

B. Lewis acids

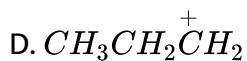
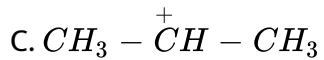
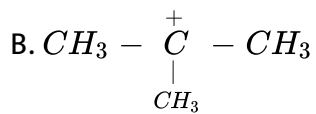
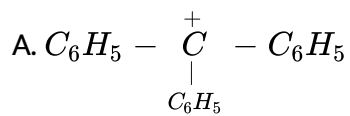
C. odd electron molecules

D. none of these

Answer: B

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36. Pick out the most stable carbonium ion:



Answer: A



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