

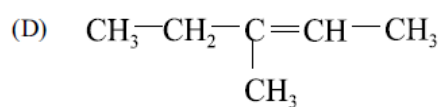
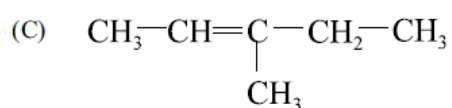
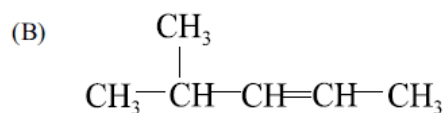
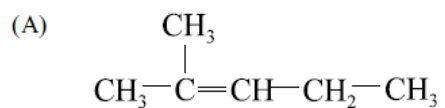
Unit 3 Organic Review Old Finals KEY

2008

32. Which is an organic compound?

- (A)  $\text{CHCl}_3$
- (B)  $\text{Cl}_2$
- (C)  $\text{NaHCO}_3$
- (D)  $\text{NH}_4\text{Cl}$

33. Which molecule is 4-methyl-2-pentene?

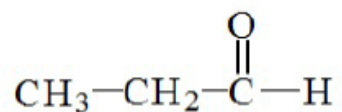


Answer 33. B

34. Which chemical is an isomer of cyclopentane?

- (A) cyclopentene
- (B) cyclopentyne
- (C) **1-pentene**
- (D) 1-pentyne

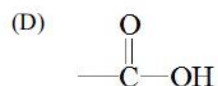
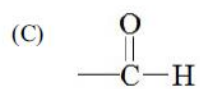
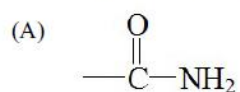
35. What is the IUPAC name of the compound below?



- (A) ethanal
- (B) ethanone
- (C) **propanal**
- (D) propanone

Answer 35 C

36. Which functional group is found in amines?

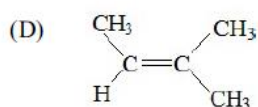
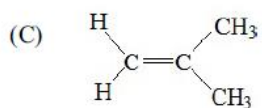
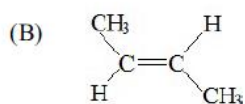
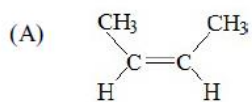


**Answer 36 B**

37. Which substance can undergo an acid elimination reaction?

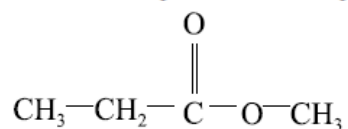
- (A) ethanal
- (B) ethanoic acid
- (C) ethanol**
- (D) ethyl ethanoate

38. Which is *trans*-2-butene?



**Answer 38 B**

39. Which substance reacts with methanol to produce the compound below?



- (A) ethanoic acid
- (B) ethanol
- (C) propanoic acid
- (D) propanol

**Answer 39 C**

40. Which reaction occurs when a condensation polymer forms from its monomers?

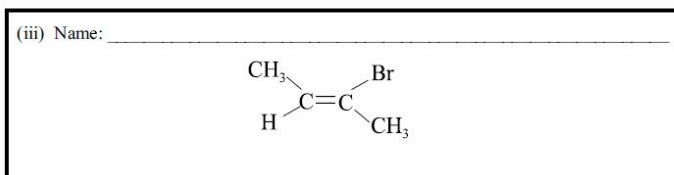
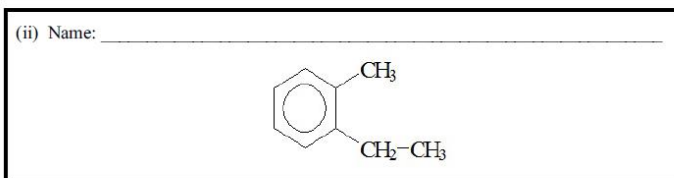
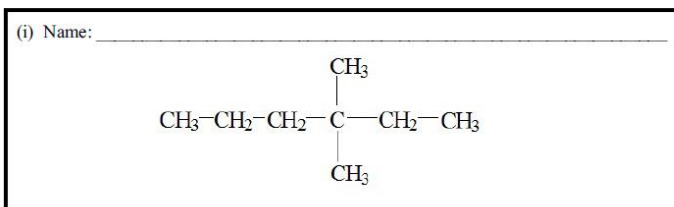
- (A) addition
- (B) elimination

(C) esterification

(D) substitution

2008 Part 2 Questions

6 43. (a) Name each compound using IUPAC naming rules.



43 a (i) 3,3 – dimethylhexane

(ii) 1 – ethyl – 2 – methylbenzene

(iii) 2 – bromo – 2 – butene

Value

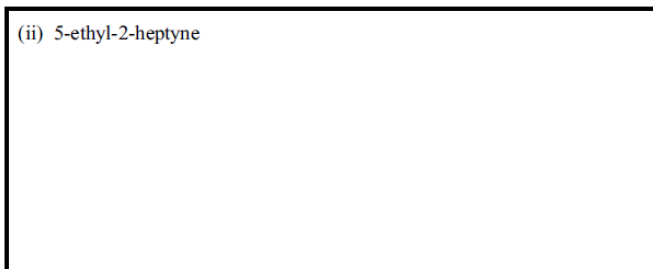
4

(b) Draw structural diagrams for the following:

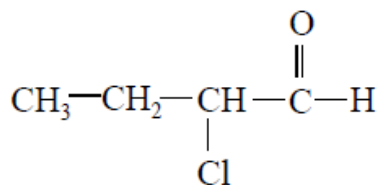
(i) 2-chlorobutanal



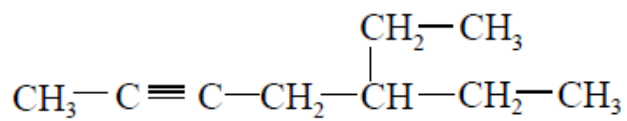
(ii) 5-ethyl-2-heptyne



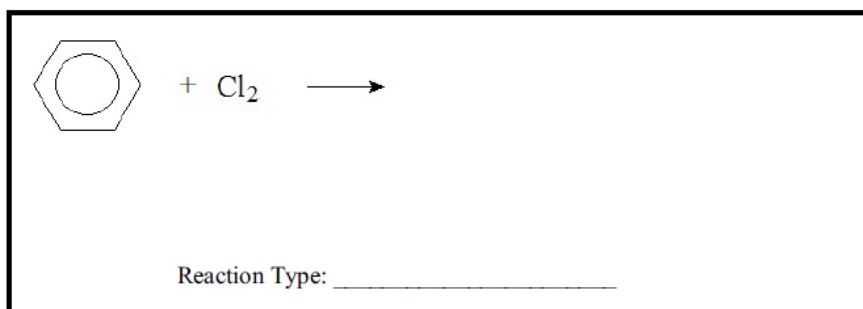
B (i)



B (ii)

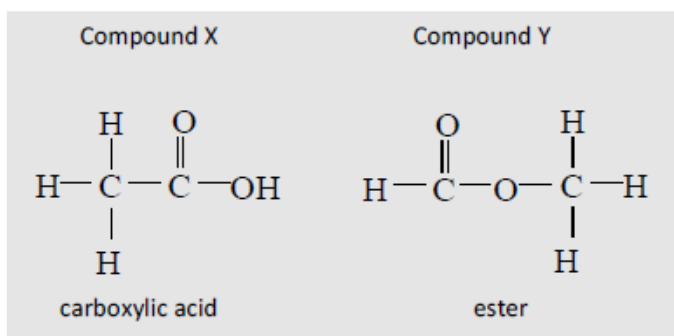
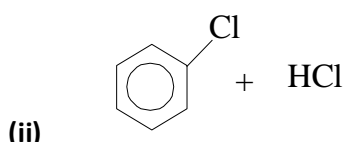


- 3 (c) For the reaction below:
- identify the *reaction type*.
  - complete and balance the reaction, and show structures for all organic molecules.



- 3 (d) Two isomers (X and Y) have the formula  $C_2H_4O_2$ . Compound X can react to produce an ester. Compound Y is the organic product of an esterification reaction. Draw structural diagrams for compounds X and Y, and state the IUPAC name for each compound under its structure.

**C (i) substitution**







**D**

### 2009 Sample

32. Which is an organic compound?

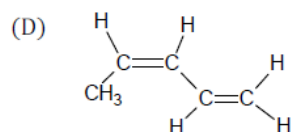
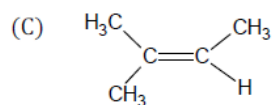
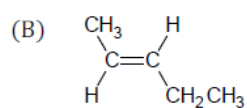
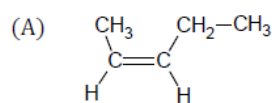
- $\text{Na}_2\text{CO}_3$
- $\text{C}_2\text{H}_5\text{OH}$
- $\text{MgSO}_4$
- $\text{Be}(\text{ClO})_2$

33. Which compound is aromatic?

- 
- 
- 
- 

**Answer 32 B 33 B**

34. Which is cis -2-pentene ?



**Answer 34 A**

35. Which compound has a double bond?

(A) butene

(B) cyclohexane

(C) ethyne

(D) propane

**Answer 35 A**

36. Which compound is a hydrocarbon derivative?

(A)  $C_2H_6$

(B)  $C_4H_8$

(C)  $C_2H_5OH$

(D)  $C_5H_8$

37. Which is an isomer of cyclononane?

(A) 2,4 - dimethyl-heptane

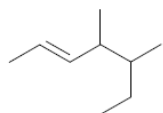
(B) 2 - nonene

(C) cyclononene

(D) nonyne

**Answer 36 C 37 B**

38. What is the name of this compound ?



- (A) 4,5-dimethyl-2-heptene
- (B) 3,4-dimethyl-5-heptene
- (C) 3,4-dimethyl-3-heptene
- (D) 3,4-dimethyl-2-heptene

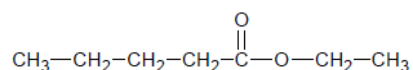
**Answer 38 A**

39. A student picks up a bottle containing four hydrocarbons. If the cover is left off the bottle, which hydrocarbon will vapourize last?

- (A) 2-methyl-3-ethylpentane
- (B) 2,3-dimethylhexane
- (C) 2-methyl-3-ethylheptane
- (D) 3-methyloctane

**Answer 39 C**

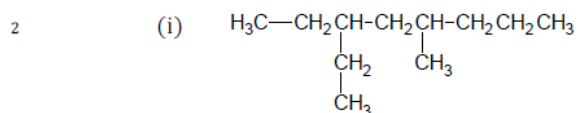
40. Which substance reacts with ethanol to produce the compound below?



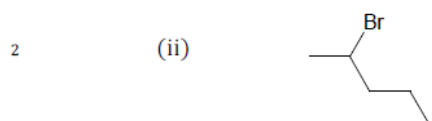
- (A) propanoic acid
- (B) pentanol
- (C) pentanoic acid
- (D) propanol

**Answer 40 C**

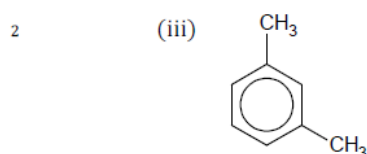
43. A. **Name** each compound using the IUPAC naming rules.



Name: \_\_\_\_\_



Name: \_\_\_\_\_

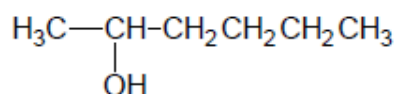


Name: \_\_\_\_\_

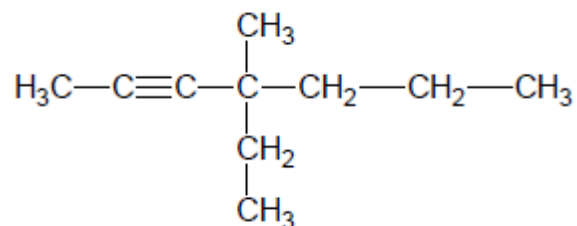
- (i) 3-ethyl-5-methyloctane
- (ii) 2-bromopentane
- (iii) 1,3-dimethylbenzene

B. Draw structural diagrams for each of the following compounds:

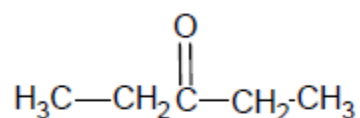
- 2 (i). 2-hexanol



- 2 (ii). 4-ethyl-4-methyl-2-heptyne

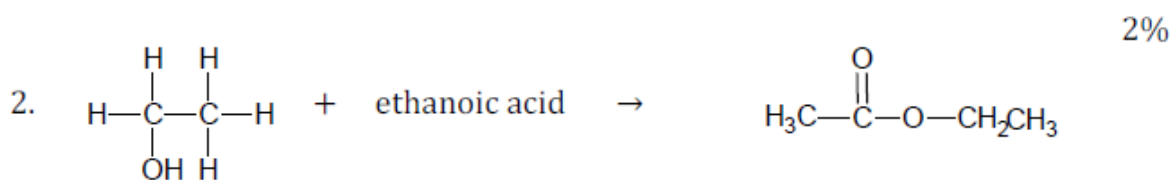
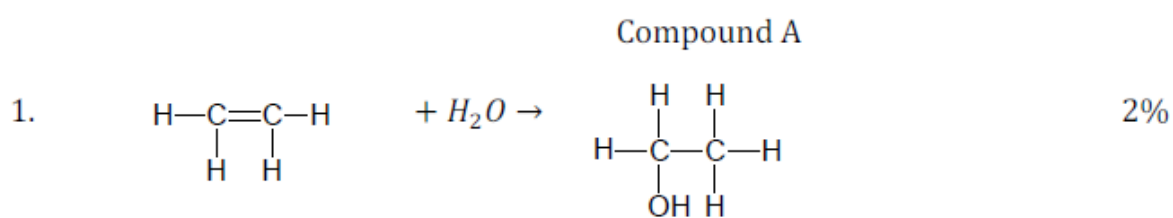


- 2 (iii). 3-pentanone



- 4 C. A reaction between ethene and water produces Compound A. Compound A is further reacted with ethanoic acid to produce Compound B.

Use **structural diagrams** to show Compound A and Compound B.



Compound B

June 2009

32. Which compound is organic?

- (A) **CH<sub>3</sub>OH**
- (B) CaCO<sub>3</sub>
- (C) NaClO<sub>3</sub>
- (D) NCl<sub>3</sub>

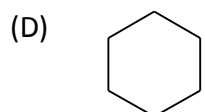
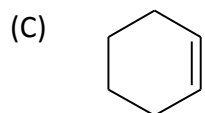
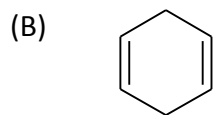
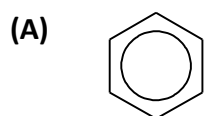
33. Which is an alkane?

- (A) benzene
- (B) ethyne
- (C) hexene
- (D) **propane**

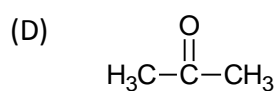
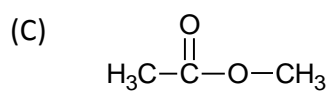
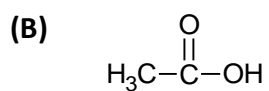
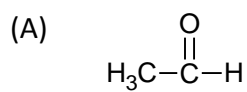
34. Which is a hydrocarbon?

- (A) CH<sub>3</sub>COOH
- (B) CH<sub>3</sub>OH
- (C) **CH<sub>4</sub>**
- (D) CH<sub>3</sub>Cl

35. Which is benzene?



36. Which represents a carboxylic acid?

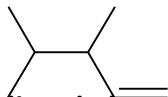




37. Which is a structural isomer of cyclopentane?

- (A) cyclopentene
- (B) methylbutane
- (C) methylcyclobutane**
- (D) methylpropane

38. Which is the correct name for the structure below?

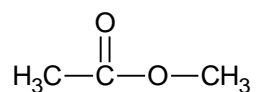


- (A) 3,4-dimethyl-1-pentene**
- (B) 2,3-dimethyl-4-pentene
- (C) 3,4-dimethyl-2-pentene
- (D) 2,3-dimethyl-5-pentene

39. A student picks up a bottle containing four hydrocarbons. If the cover is left off the bottle, which hydrocarbon will vapourize first?

- (A) methylbutane**
- (B) 2-heptene
- (C) hexane
- (D) 3,3,4,4-tetramethyldecane

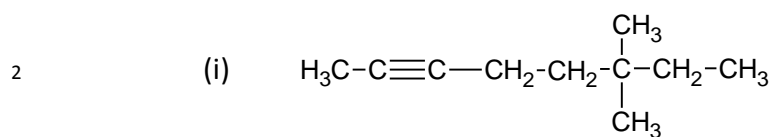
40. Which substance reacts with methanol to produce the compound below?



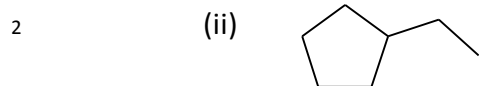
- (A) ethanoic acid**
- (B) ethanol
- (C) propanol
- (D) propanoic acid

#### June 2009 Part 2 Questions

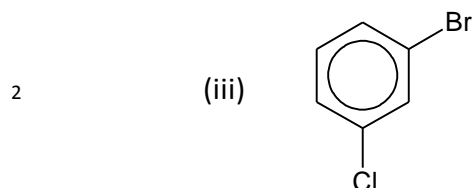
43. a. Name each compound using the IUPAC naming rules.



Name: **6,6-dimethyl-2-octyne**



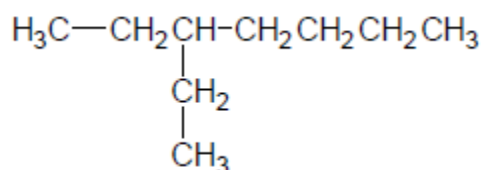
Name: **ethylcyclopentane**



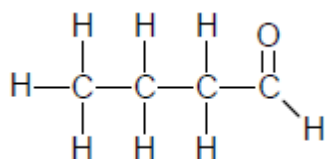
Name: **1-bromo-3-chlorobenzene**

b. Draw a structural diagram for each compound.

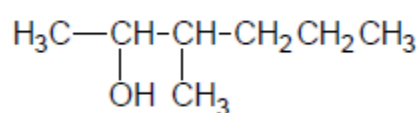
2 (i) 3-ethylheptane



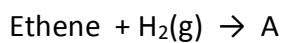
2 (ii) butanal



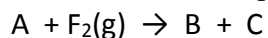
2 (iii) 3-methyl-2-hexanol



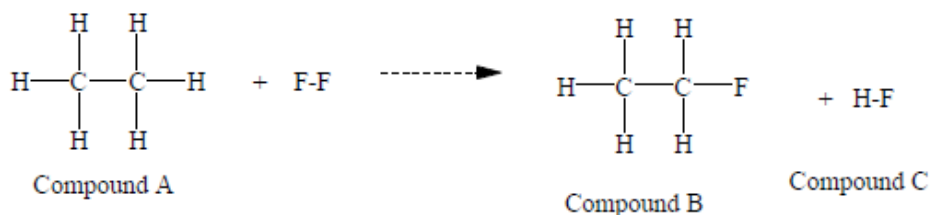
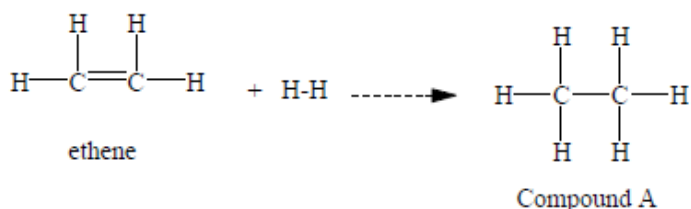
4 c. Ethene reacts with hydrogen gas to produce Compound A.



Compound A reacts with fluorine gas to produce Compound B and Compound C.



Use structural diagrams to identify Compounds A, B, and C.



June 2010

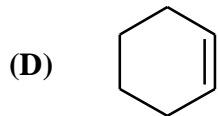
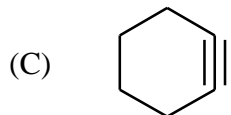
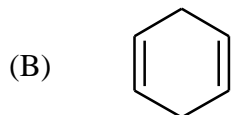
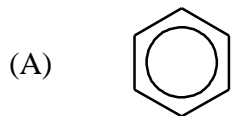
33. Which compound is classified as organic?

- (A) CsCN
- (B) **H<sub>2</sub>CO**
- (C) Na<sub>2</sub>CO<sub>3</sub>
- (D) NH<sub>2</sub>Cl

34. Which is a hydrocarbon?

- (A) methanal
- (B) methanamide
- (C) **methane**
- (D) methanol

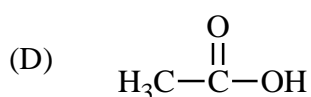
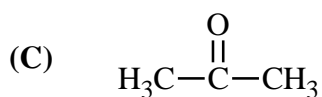
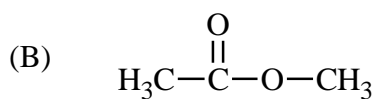
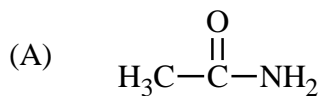
35. Which is a structural isomer of 2-hexyne?



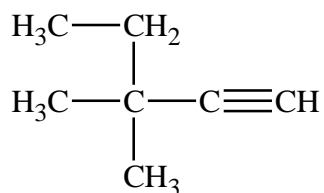
36. Which term represents a process that uses heat, in the absence of air, to break large hydrocarbon molecules into smaller molecules?

- (A) fractional distillation
- (B) hydrocarbon cracking**
- (C) reforming
- (D) substitution

37. Which represents a ketone?



38. What is the name of this compound?



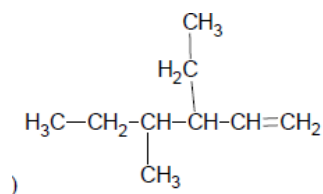
- (A) 3,3-dimethyl-1-pentyne**
- (B) 3-ethyl-3-methyl-1-butyne
- (C) 3,3-dimethyl-1-ethyl-1-propyne
- (D) 2-ethyl-2-methyl-3-butyne

39. Which pair could be used to produce octyl ethanoate?
- (A) ethanol and octanoic acid  
 (B) heptanol and ethanoic acid  
 (C) **octanol and ethanoic acid**  
 (D) octanol and methanoic acid
40. Reacting water with ethyl propanoate produces an alcohol and propanoic acid. What product is formed if this alcohol is heated in the presence of concentrated sulfuric acid?
- (A)  $\text{H}_3\text{C}-\text{CH}_3$   
 (B)  $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_3$   
 (C)  $\text{H}_3\text{C}-\text{CH}=\text{CH}_2$   
 (D)  $\text{H}_2\text{C}=\text{CH}_2$

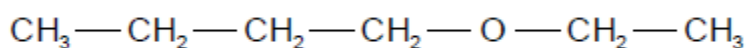
**2010 Part 2 Questions**

43. (a) Draw a structural diagram for each compound.

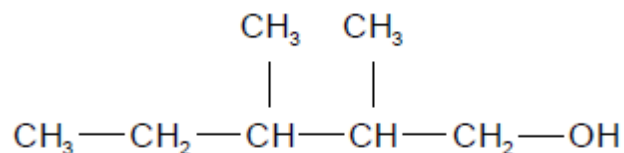
(i) 3-ethyl-4-methyl-1-hexene



2 (ii) butylethyl ether



2 (iii) 2,3-dimethyl-1-pentanol

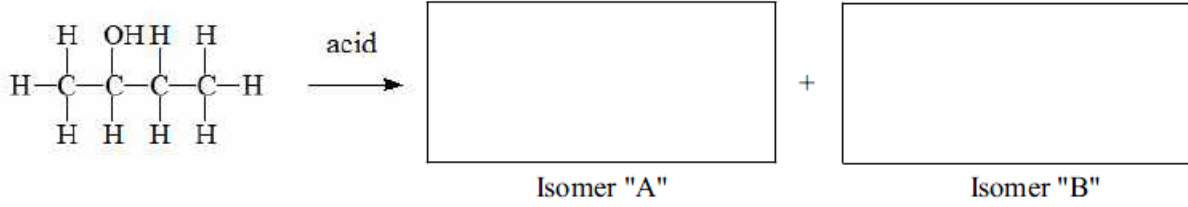


- 4 (b) In Reaction 1 of an experiment, 2-butanol undergoes an elimination reaction to produce isomers A and B.

In Reaction 2, isomers A and B are exposed to excess chlorine and products C and D are formed.

Draw and name structures for each chemical produced (A, B, C, and D).

**Reaction 1:**



**Reaction 2:**

add excess  
 $\text{Cl}_2$



Chemical "C"

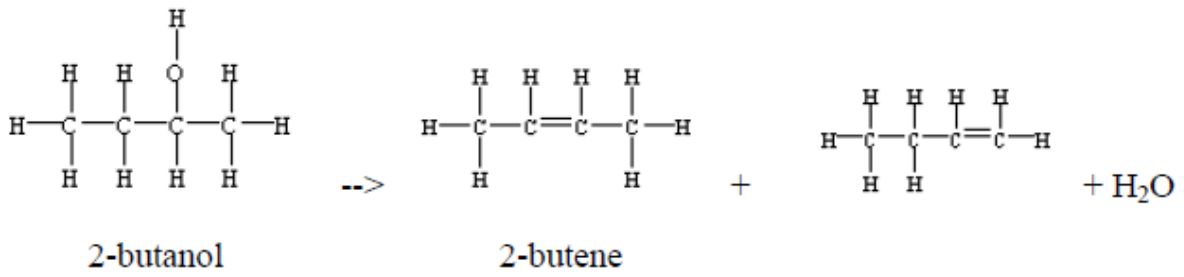
**Reaction 3:**

add excess  
 $\text{Cl}_2$

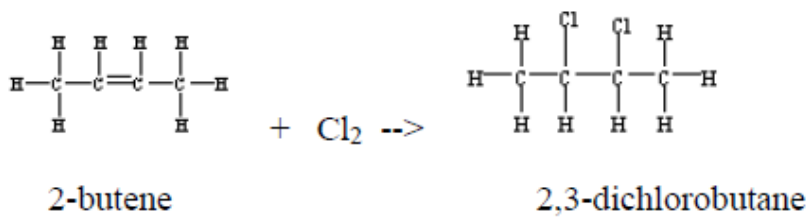


Chemical "D"

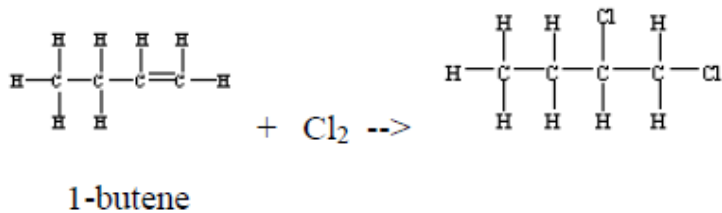
**Reaction 1:**



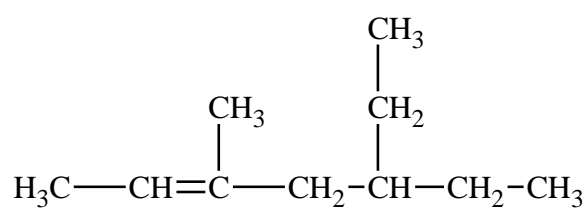
**Reaction 2:**



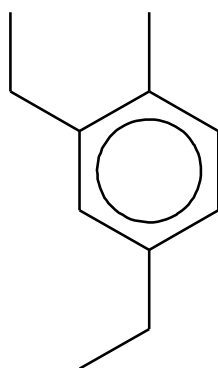
**Reaction 3:**



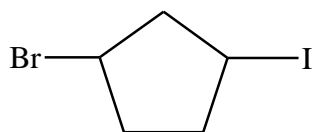
43. (c) Give the IUPAC name for the following structures.



2 (i) Name: **5-ethyl-3-methyl-2-heptene**



2 (ii) Name: **1-methyl-2,4-diethylbenzene or 2,4-diethyl-1-methylbenzene**



2 (iii) Name: **1-bromo-3-iodocyclopentane**