Organic Chemistry Review

Use the following information to answer the next question.

1	$H_2O(l)$	5	hydrocyanic acid
2	$CH_2O(g)$	6	4-methyl-2-heptyne
3	$HCO_3^-(aq)$	7	1,2-dimethylbenzene
4	$CH_3COOH(aq)$	8	carbonic acid

Numerical Response

1. The organic compounds shown in the list above are

Answer: 2 4 6 7

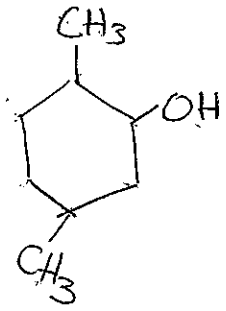
1. The molecular formula for 2,5-dimethylcyclohexan-1-ol is

A. C_6H_6O

B. $C_6H_{12}O$

C. $C_8H_{13}O$

D. $C_8H_{16}O$



Use the following information to answer the next two questions.

Organic Acids

1	Butanoic acid	$C_3H_7COOH(l)$
2	Methanoic acid	$HCOOH(l)$
3	Octanoic acid	$C_7H_{15}COOH(l)$
4	Octadecanoic acid	$CH_3(CH_2)_{16}COOH(l)$

4, 3, 1, 2

2. *Butanoic acid can be described as an* ___i___ *compound, and the functional group in butanoic acid is* ___ii___ .

The statement above is completed by the information in row

Row	*i*	*ii*
A.	aromatic	a carboxyl
B.	aromatic	an ester
C.	aliphatic	a carboxyl
D.	aliphatic	an ester

Numerical Response

2. Listed in order from the acid that has the **lowest** boiling point to the acid that has the **highest** boiling point, the four organic acids above are numbered

2, 1, 3, and 4.

Lowest boiling point **Highest boiling point**

(Record all **four digits** of your answer below.)

Use the following information to answer the next question.

Molecules

~~1~~ pent-2-ene
~~2~~ ~~pent-2-yne~~
~~3~~ cyclopentane
4 ~~methylpropane~~
5 ~~dimethylpropane~~
~~6~~ ethylcyclopropane
~~7~~ methylcyclobutane

Numerical Response

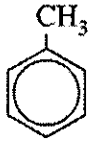
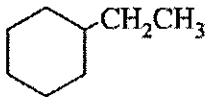
alkene, cycloalkane

3. The four molecules listed above that are isomers of $C_5H_{10}(l)$ are numbered 1, 3, 6, and 7.

(Record all **four digits** of your answer **in any order** below.)

Use the following information to answer the next question.

Structures and Descriptions

1		**4**	Branched	**7**	Unsaturated
2		**5**	Unbranched	**8**	Alkane
3		**6**	Saturated	**9**	Alkene

Numerical Response

4. The structures and descriptions above that apply to methylcyclopentane are numbered __2__, __5__, __6__, and __8__.

(Record all **four digits** of your answer **in any order** below.)

Use the following information to answer the next question.

$$C_2H_4(g) + Br_2(l) \rightarrow ?$$

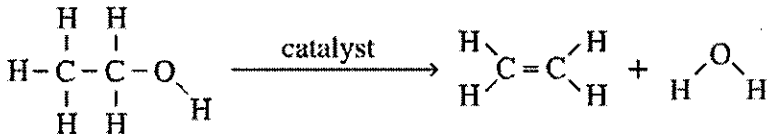
3. *The reactants above undergo an* __*i*__ *reaction, and the product of the reaction is 1,2-dibromo*__***ii***__ .

The statement above is completed by the information in row

Row	***i***	***ii***
A.	elimination	ethane
B.	elimination	ethene
C.	addition	ethane
D.	addition	ethene

Use the following information to answer the next question.

Ethene is a plant hormone that causes fruits and vegetables to ripen. Ethene can be produced artificially by the reaction represented by the following equation.



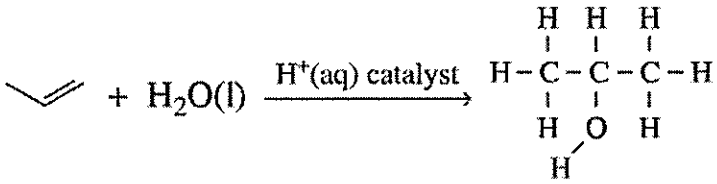
4. *Ethene can be described as both an* ___i___ *compound and* ___ii___ *molecule.*

The statement above is completed by the information in row

Row	*i*	*ii*
A.	aliphatic	a saturated
B.	aliphatic	an unsaturated
C.	aromatic	a saturated
D.	aromatic	an unsaturated

Use the following information to answer the next question.

Propan-2-ol can be produced from propene and water, as represented by the following equation.



5. *The production of propan-2-ol from propene is* ___i___ *reaction. Propan-2-ol is likely to be* ___ii___ *in water.*

The statement above is completed by the information in row

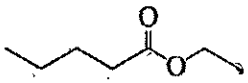
Row	*i*	*ii*
A.	a substitution	soluble
B.	a substitution	insoluble
C.	an addition	soluble
D.	an addition	insoluble

6. Which of the following rows identifies a reactant and its product in a polymerization reaction?

Row	Reactant	Product
A.	Ethene	Ethene
B.	Ethene	Polyethene
C.	Propene	Ethene
D.	Propene	Polyethene

Use the following information to answer the next question.

Esters with pleasant odours and flavours are often used as food additives. An ester that is used for its fruity apple flavour is shown below.

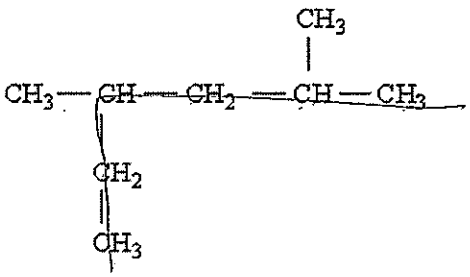


7. *The ester shown above could be produced by the reaction of* ___*i*___ *and* ___*ii*___ .

The statement above is completed by the information in row

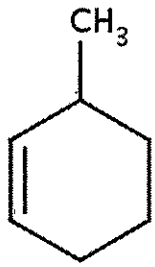
Row	*i*	*ii*
A.	ethanoic acid	pentan-1-ol
B.	ethanoic acid	butan-1-ol
C.	pentanoic acid	propan-1-ol
D.	pentanoic acid	✓ ethanol

8. What is the IUPAC name for the following compound?



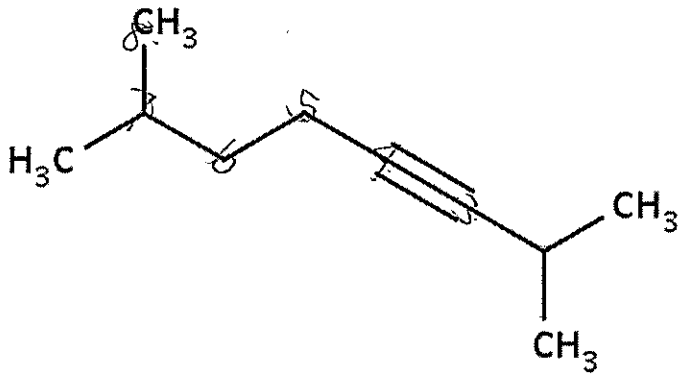
A. 2,4-dimethyl hexane
B. 3,5-dimethylhexane
C. 4-ethyl-2-methylpentane
D. 2-ethyl-4-methylpentane

9. What is the correct name of the molecule shown below?



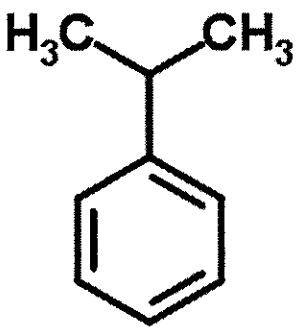
A. 2-methylcyclohexene
B. 3-methylhexene
C. 1-methylcyclohex-2-ene
D. 3-methylcyclohexene

10. What is the correct name of the molecule shown below?



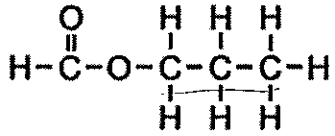
A. 6-ethyl-2-methylhept-3-yne
B. 2-ethyl-6-methylhelp-4-yne
C. 3,7-dimethyloct-5-yne
D. 2,6-dimethyloct-3-yne

11. Cumene is the starting material in the formation of acetone and phenol. Its ring structure is shown in the diagram below.



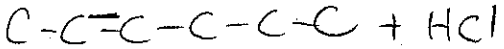
A. propylbenzene
B. 2-phenylbutane
C. 2-benzylpropane
D. 1,1-dimethylbenzene

12. What compounds would you need to synthesize the molecule below?



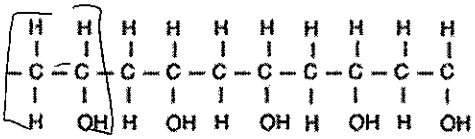
(A.) propan-1-ol and methanoic acid
B. butan-1-ol and methanoic acid
C. methanol and propanoic acid
D. methanol and butanoic acid

13. In a reaction between hex-2-ene and hydrochloric acid, which of the following will be the product(s)?
A. 1-chlorohexane
B. 2-chlorohexane
C. 3-chlorohexane
(D.) both B and C

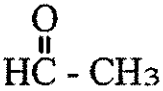


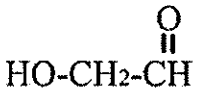
14. The polymerization of propene can be classified as
(A.) an addition reaction
B. an elimination reaction
C. a substitution reaction
D. a condensation reaction

15. Polyvinyl alcohol has the following structure

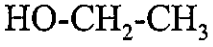


The monomer used to make this structure is

A. 

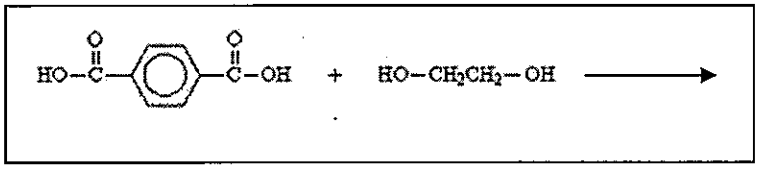
C. 

(B.) 

D. 

Use the following information to answer the next three questions.

Two organic compounds react together to form a polymer as shown below



16. One of the products formed is
    A. carbon dioxide gas
    B. hydrogen gas
    C. oxygen gas
    (D) water

17. The type of polymerization reaction shown above is a/an
    (A.) condensation polymerization
    B. reformation polymerization
    C. addition polymerization
    D. radical polymerization

18. Draw the ester that is formed

Use the following information to answer the next question.

Reactants	Type of Reaction
(a) 2-bromobutane + hydroxide ion	1. addition
(b) propene + hydrochloric acid	2. elimination
(c) ethanoic acid + heptan-3-ol	3. substitution
(d) butane + chlorine	4. esterification

Numerical Response

5. Match the reactants to the type of reaction they undergo.

Type of reaction: 2 1 4 3

Reactant: (a) (b) (c) (d)