

HW 06

Question 1

1 pts

Which step of the addition mechanism both increases the length of the polymer chain AND produces a free radical to continue the reaction?

- propagation
- perpetuation
- termination
- initiation
- addition

Question 2

1 pts

Which of the following properly outlines the addition mechanism?

- Initiation - Termination - Propagation
- Initiation - Propagation - Termination
- Initiation - Propagation - Condensation - Termination
- Heterolytic Cleavage - Propagation - Condensation - Termination

Question 3

1 pts

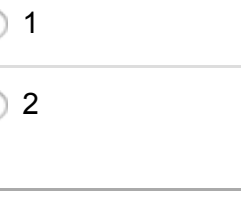
A condensation reaction may occur when which two functional groups are present in the reactants?

- alcohol, ester
- ketone, alcohol
- carboxylic acid, alcohol
- aldehyde, ether
- amine, carboxylic acid

Question 4

1 pts

Which recycle symbol (number) would you most likely find on a large milk container made from the following monomer:



- 4
- 6
- 5
- 1
- 2

Question 5

1 pts

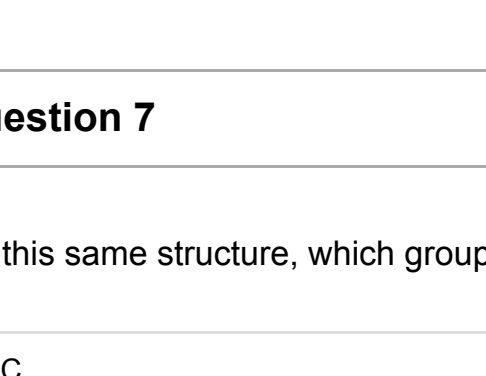
LDPE polymers are _____ branched than HDPE, resulting in greater _____.

- less, strength
- more, flexibility
- more, strength
- less, flexibility

Question 6

1 pts

Observe the structure below and answer the next two questions.



Which arrow is pointing to a carbonyl carbon?

- D
- B
- A
- C

Question 7

1 pts

On this same structure, which group will be **removed** in the condensation mechanism?

- C
- A
- D
- B

Question 8

1 pts

Fabrics often list their contents in generic terms, rather than proprietary ones. What might you find on the care tag of a nylon garment?

- polyamide
- silk
- polyester
- Kevlar
- polystyrene

Question 9

1 pts

Which of the following polymers are made via an *addition* reaction mechanism?

- Polyethylene
- Polypropylene
- Polyvinyl Chloride
- Nylon
- Bakelite
- Polyethylene Terephthalate
- Polystyrene

Question 10

1 pts

Five of the six "Big 6" plastics are composed of nearly the same repeating monomer, but with differing functional groups substituted into a single position. What is the functional group unique to polypropylene?

- carboxyl
- alcohol
- halide
- amine
- methyl

Question 11

1 pts

Which of the following functional groups is the distinguishing feature of the monomer used to manufacture styrofoam?

- a halide group
- a phenyl group
- an amine group
- a benzyl group
- a ester group

Question 12

1 pts

The following three common plastic items are most likely to be composed of which three Big 6 plastics? (identify the plastics by their recycling number)

- Disposable coffee cup
- Plumbing pipe
- Carbonated drink bottle

- 3, 1, 4
- 6, 3, 1
- 5, 2, 3
- 2, 4, 6

Question 13

1 pts

The bakelite polymer consists of phenol and formaldehyde. In the real world, why does this polymer **not** look as organized as it does in two dimensions?

- the phenol groups are flat
- the methylene links are flat and rigid
- the methylene links can rotate and branch in different directions
- the carbon-carbon bonds in the phenol groups can rotate and branch in different directions

Question 14

1 pts

Which of the following is/are made from amino acid monomers?

- cellulose
- fats
- silk
- biological proteins
- starch
- wool

Question 15

1 pts

Which of the following can be glucose polymers?

- wool
- cotton
- silk
- flax
- proteins
- carbohydrates

Question 16

1 pts

There are many different types of proteins. What makes a protein unique?

- the carboxylic acid and amine functional groups on the amino acid monomers
- the various sugar monomers that make up the protein chain
- the identity of the R-side chain on the amino acid monomers that make up the polymer
- the fact that all amino acids have the same functional groups

Question 17

1 pts

Consider the biological polymer of DNA. There are two monomer units (a copolymer) that make up the backbone chain - what is the repeat unit here?

- phosphate + glucose
- ester + deoxyribose
- phosphate + deoxyribose
- phosphate + deoxyfructose
- peptide link + ribose