Name:

Chapter 13 Review Quiz

Multiple Choice

Identify the choice that best completes the statement or answers the question.

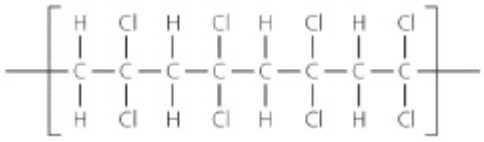
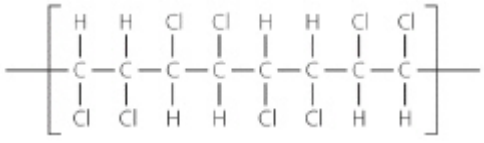
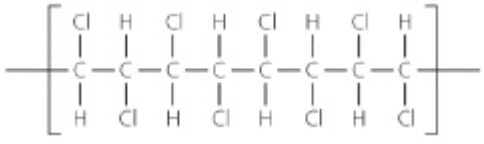
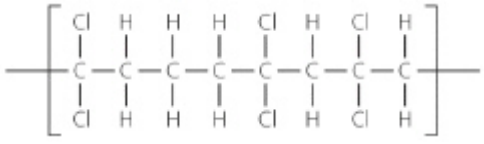
▼ 1. Which of the following is an example of a thermosetting polymer?
   a. polyethylene
   b. polyvinyl chloride
   c. polyethylene terephthalate
   d. polyurethane

▼ 2. Compare the conditions for the different types of cracking. Which line of the table below correctly shows the most likely values of temperature and pressure for thermal and catalytic cracking?

	Thermal cracking		Catalytic cracking	
	Temperature (°C)	Pressure (atm)	Temperature (°C)	Pressure (atm)
i	500	15	700	70
ii	500	70	700	15
iii	700	15	500	70
iv	700	70	500	15

   a. i
   b. ii
   c. iii
   d. iv

▼ 3. Which equation represents a cracking reaction?
   a. $2C_3H_6(g) + C_2H_4(g) + C_4H_{14}(l) \xrightarrow{catalyst} C_{14}H_{30}(l)$
   b. $C_{14}H_{30}(l) \xrightarrow{catalyst} 2C_2H_4(g) + C_3H_6(g) + C_7H_{16}(l)$
   c. $2C_{14}H_{30}(l) + 43O_2(g) \longrightarrow 14CO_2(g) + 15H_2O(l)$
   d. $C_{14}H_{30}(l) \xrightarrow{catalyst} [CH_2 - CH_2] \quad (s)$

▼ 4. Which of the following shows part of the polymer produced from $Cl_2C = CH_2$?
   a. 
   b. 
   c. 
   d. 

▼ 5. Select the correct comparison of structure and melting point of HDPE with those for LDPE.

	HDPE		LDPE	
	Structure	Property	Structure	Property
i	branched	higher boiling point	unbranched	higher boiling point
ii	branched	lower boiling point	unbranched	lower boiling point
iii	unbranched	higher boiling point	branched	lower boiling point
iv	unbranched	lower boiling point	branched	higher boiling point

a. i
b. ii
c. iii
d. iv

▼ 6. Select the correct comparison of structure and use of LDPE to HDPE.

	LDPE		HDPE	
	Structure	Use	Structure	Use
i	amorphous	lamination film for cardboard used in milk cartons	crystalline	caps for drink bottles
ii	amorphous	caps for drink bottles	crystalline	lamination film for cardboard used in milk cartons
iii	crystalline	lamination film for cardboard used in milk cartons	amorphous	caps for drink bottles
iv	crystalline	caps for drink bottles	amorphous	lamination film for cardboard used in milk cartons

a. i
b. ii
c. iii
d. iv

▼ 7. Which of the structures is the monomer for Teflon™?

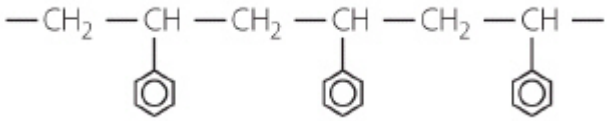
a. $CH_2 = CH_2$
b. $C_6H_5 – CH = CH_2$
c. $CH_2 = CH – Cl$
d. $CF_2 = CF_2$

▼ 8. Select the correct comparison of forces between the polymer chains of PVC with polyethylene.

	PVC	polyethylene
i	dispersion	dispersion
ii	dipole–dipole	dispersion
iii	dispersion	dipole–dipole
iv	dipole–dipole	dipole–dipole

a. i
b. ii
c. iii
d. iv

▼ 9. What is the systematic name for the monomer that makes this polymer?



a. Phenylbenzene
b. Chloroethene

c. Ethenylbenzene
d. Styrene

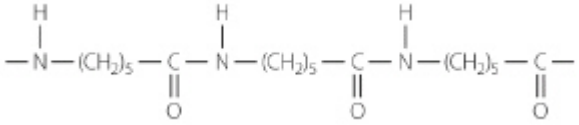
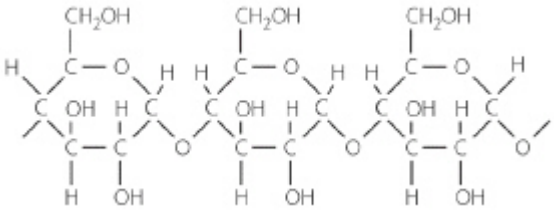
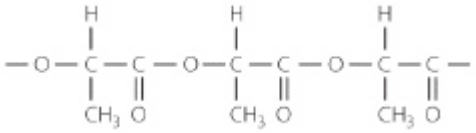
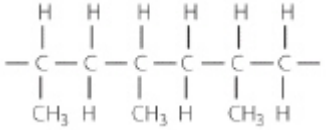
▼ 10. Which of the following polymers is an adhesive?
a. Poly(vinyl chloride)
b. Polytetrafluoroethylene
c. Polyacrylonitrile
d. Poly(vinyl acetate)

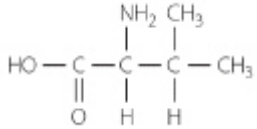
▼ 11. Which of the following is a copolymer?
a. polyethylene
b. polystyrene
c. polyethylene terephthalate
d. cellulose

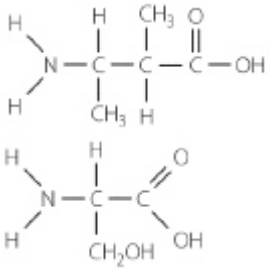
▼ 12. The densities (g cm^{-3}) of common plastics are:
- HDPE 0.95–0.97
- LDPE 0.917–0.940
- PP 0.90–0.91
- PS (in solid form) 1.04–1.05

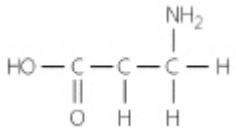
A 50 g sample of a polymer occupied a volume of 53.8 cm^3. What is the name of the polymer?
a. HDPE
b. LDPE
c. PP
d. PS

▼ 13. Which of the following only contains examples of synthetic condensation polymers?
a. Polyesters and polyamides
b. Polyesters and polyethylene
c. Polysaccharides and proteins
d. Polysaccharides and polyamides

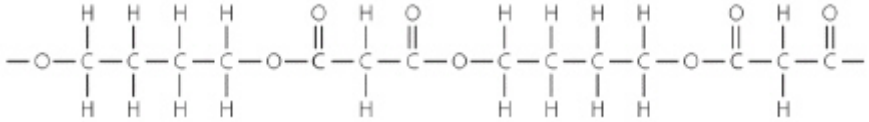
▼ 14. Which of the following polymers contains an ester linkage?
a. 
b. 
c. 
d. 

▼ 15. Which of the following is not classified as an amino acid?
a. 
b.

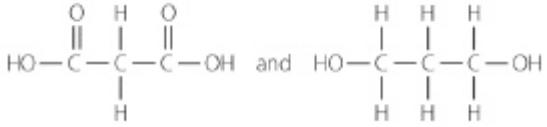
c. 

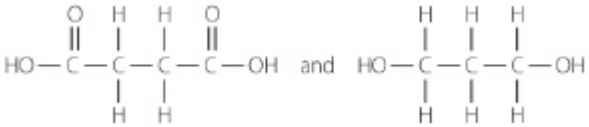
d. 

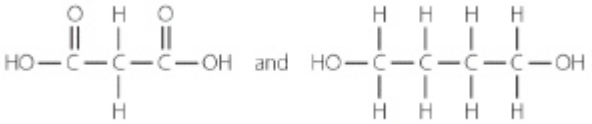
▼ 16. A part of the structure of a polymer is given below.

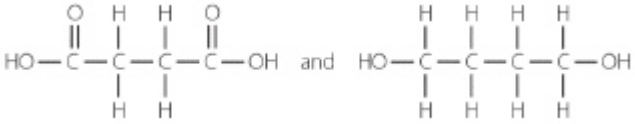


Which of the following shows the structures of the monomers used to produce this polymer?

a. 

b. 

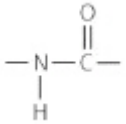
c. 

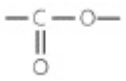
d. 

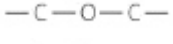
▼ 17. Which of the following describes the PET polymer?

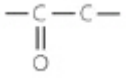
a. Condensation polymer, thermoplastic
b. Addition polymer, thermoplastic
c. Condensation polymer, thermosetting
d. Addition polymer, thermosetting

▼ 18. Which of the following is a glycosidic link?

a. 

b. 

c. 

d. 

▼ 19. Which of the following links the polymer to its monomer?

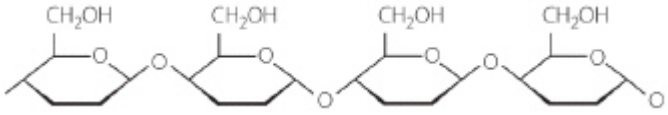
	glycogen	cellulose	starch
a.	α-glucose	β-glucose	α-glucose
b.			

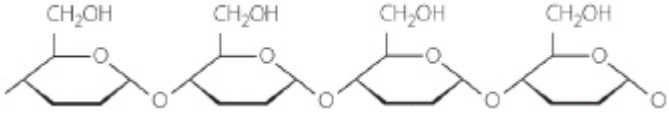
α-glucose α-glucose β-glucose

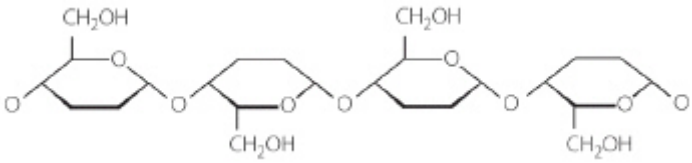
c. α-glucose β-glucose β-glucose

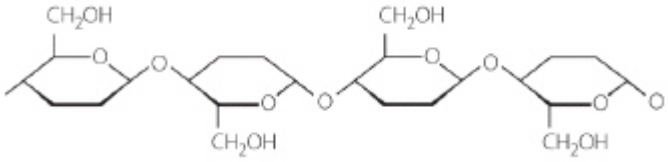
d. β-glucose β-glucose α-glucose

▼ 20. Which of the following represents the structure of part of the cellulose polymer?

a. 

b. 

c. 

d. 

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