Jimma Institute of Technology

B.Sc. Materials Science and Engineering

Tutorial - Multiple Choice Questions

Model Exam – 2 **08.05.2023**

Name of the student	Register number

Answer the following questions.

1. What is a polymer?
   (a). A small molecule (b). A large molecule composed of repeating subunits called monomers (c). A type of metal (d). A type of gas
2. What are monomers?
   (a). Large molecules (b). Small molecules that can be chemically bonded together to form a polymer (c). Elements (d). Compounds
3. What is polymerization?
   (a). A type of metal (b). A chemical reaction in which monomers are linked together to form a polymer (c). A type of gas (d). A type of salt
4. What are the two types of polymerization reactions?
   (a). Addition and subtraction (b). Condensation and substitution
   (c). Addition and condensation (d). Polymerization and depolymerization
5. What is addition polymerization?
   (a). A type of polymerization reaction in which monomers react to form a polymer with the elimination of a small molecule
   (b). A type of polymerization reaction in which monomers add onto a growing polymer chain without the elimination of any byproducts

(c). A type of polymerization reaction in which monomers break apart to form smaller molecules

(d). A type of polymerization reaction in which monomers exchange functional groups

6. What is condensation polymerization?

   (a). A type of polymerization reaction in which monomers react to form a polymer with the elimination of a small molecule

   (b). A type of polymerization reaction in which monomers add onto a growing polymer chain without the elimination of any byproducts

   (c). A type of polymerization reaction in which monomers break apart to form smaller molecules

   (d). A type of polymerization reaction in which monomers exchange functional groups

7. What are homopolymers?

   (a). Polymers that are composed of a single type of monomer

   (b). Polymers that are composed of two or more different types of monomers

   (c). Polymers that are crosslinked

   (d). Polymers that are blends of different polymers

8. What are copolymers?

   (a). Polymers that are composed of a single type of monomer

   (b). Polymers that are composed of two or more different types of monomers

   (c). Polymers that are crosslinked

   (d). Polymers that are blends of different polymers

9. What is a thermoplastic polymer?

(a). A polymer that can be melted and re-molded multiple times without significant degradation of its properties

(b). A polymer that undergoes a permanent chemical change upon curing.

10. What is the definition of polymerization?

(a). The process by which a polymer is broken down into its monomers

(b). The process by which a polymer is crosslinked

(c). A process by which monomers are linked together to form a polymer

(d). A process by which a polymer is dissolved in a solvent

11. What are the two types of polymerization reactions?

(a). Condensation and substitution (b). Addition and substitution

(c). Addition and condensation (d). Depolymerization and polymerization

12. Which type of polymerization reaction involves the elimination of a small molecule?

(a). Addition polymerization (b). Condensation polymerization

(c). Substitution polymerization (d). Radical polymerization

13. Which type of polymerization reaction involves the use of free radicals?

(a). Addition polymerization (b). Condensation polymerization

(c). Substitution polymerization (d). Radical polymerization

14. What is the mechanism of addition polymerization?

(a). The formation of a covalent bond between monomers through the elimination of a small molecule

(b). The addition of monomers to a growing polymer chain through a reactive intermediate called a free radical, cation or anion

(c). The repeated reaction between two different types of monomers to form a polymer

(d). The opening of a cyclic monomer to form a linear polymer

15. What is the mechanism of condensation polymerization?

(a). The formation of a covalent bond between monomers through the elimination of a small molecule

(b). The addition of monomers to a growing polymer chain through a reactive intermediate called a free radical, cation or anion

(c). The repeated reaction between two different types of monomers to form a polymer

(d). The opening of a cyclic monomer to form a linear polymer

16. Which type of polymerization reaction produces less waste?

(a). Addition polymerization (b). Condensation polymerization

(c). Substitution polymerization (d). Radical polymerization

17. Which type of polymerization reaction can produce a wider range of polymers?

(a). Addition polymerization (b). Condensation polymerization

(c). Substitution polymerization (d). Radical polymerization

18. What is the difference between addition and condensation polymerization?

(a). Addition polymerization involves the elimination of a small molecule, while condensation polymerization does not

(b). Addition polymerization is a type of chain-growth polymerization, while condensation polymerization is a type of step-growth polymerization

(c). Addition polymerization requires highly purified monomers, while condensation polymerization does not

(d). Addition polymerization is less sensitive to impurities

19. Which type of polymer is formed from a single monomer?

(a). Homopolymer (b). Copolymer (c). Terpolymer (d). Interpolymer

20. Which type of polymer is formed from two different monomers?

(a). Homopolymer (b). Copolymer (c). Terpolymer (d). Interpolymer

21. Which type of polymer is formed from three different monomers?

(a). Homopolymer (b). Copolymer (c). Terpolymer (d). Interpolymer

22. Which type of polymer is formed from more than three different monomers?
(a). Homopolymer (b). Copolymer (c). Terpolymer (d). Interpolymer
23. Which type of polymer has a linear, branched, or crosslinked structure?
(a). Homopolymer (b). Copolymer (c). Terpolymer (d). Polymer blend
24. Which type of polymer is formed by mixing two or more different polymers?
(a). Homopolymer (b). Copolymer (c). Terpolymer (d). Polymer blend
25. Which type of polymer is formed by chemical reactions between two different polymers?
(a). Homopolymer (b). Copolymer (c). Terpolymer (d). Polymer blend
26. Which type of polymer is a natural polymer found in plants and animals?
(a). Synthetic polymer (b). Biopolymer (c). Elastomer (d). Thermoplastic
27. Which type of polymer is made from petrochemicals?
(a). Biopolymer (b). Synthetic polymer (c). Elastomer (d). Thermoset
28. Which type of polymer can be easily molded and reshaped by heating and cooling?
(a). Thermoplastic (b). Thermoset (c). Elastomer (d). Biopolymer
29. Which type of polymer is rigid and cannot be easily reshaped once it is set?
(a). Thermoplastic (b). Thermoset (c). Elastomer (d). Biopolymer

30. Which type of polymer has the ability to stretch and return to its original shape?

(a). Thermoplastic (b). Thermoset (c). Elastomer (d). Biopolymer