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Chemistry Grade 10 — Chapter 12

Polymers

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Independent practice MCQs from the supplied Class 10 Chemistry notes pack. Total: 50 questions.

A. Important / Main Topics

1. Polymers are large molecules built up from many smaller molecules called:

(A) Monomers
(B) Dimers
(C) Trimers
(D) Isomers

Correct Answer: A

Explanation: Polymers are large molecules built up from many smaller molecules called monomers.

2. The joining up of many monomers to form a big molecule is called:

(A) Cracking
(B) Polymerisation
(C) Fractional distillation
(D) Esterification

Correct Answer: B

Explanation: Polymerisation is the joining up of many monomers to form a big molecule.

3. Which of the following is an addition polymer?

(A) Nylon-6,6
(B) PET
(C) Polyethylene
(D) Polyester

Correct Answer: C

Explanation: Polyethylene is an addition polymer.

4. Which of the following is a condensation polymer?

(A) Polyethylene
(B) Polypropylene
(C) PVC
(D) Nylon-6,6

Correct Answer: D

Explanation: Nylon-6,6 is a condensation polymer.

5. The repeating unit of the addition polymer formed from ethene is:

(A) -CH□-CH□-
(B) -CH-CH-
(C) -CH□-CH-
(D) -C-C-

Correct Answer: A

Explanation: The repeating unit of polyethylene is -CH□-CH□-.

6. Nylon-6,6 is an example of a:

(A) Polyester
(B) Polyamide
(C) Polysaccharide
(D) Polyurethane

Correct Answer: B

Explanation: Nylon-6,6 is an example of a Polyamide.

7. Which of the following processes produces water as a by-product?

(A) Addition polymerisation
(B) Hydrogenation
(C) Condensation polymerisation
(D) Hydrolysis

Correct Answer: C

Explanation: Condensation polymerisation produces water as a by-product.

8. Which of the following is NOT a property of plastics?

(A) They are lightweight
(B) They are durable
(C) They are versatile in application
(D) They are easily decomposed by microorganisms

Correct Answer: D

Explanation: Plastics are not easily decomposed by microorganisms.

9. Polyesters are formed from:

(A) Dicarboxylic acids and diols
(B) Dicarboxylic acids and diamines
(C) Diols and diamines
(D) Monocarboxylic acids and diols

Correct Answer: A

Explanation: Polyesters are formed from dicarboxylic acids and diols.

10. Which of the following is an environmental challenge caused by plastics?

(A) They are biodegradable
(B) They accumulate in oceans
(C) They are easily recycled
(D) They are non-toxic when burned

Correct Answer: B

Explanation: They accumulate in oceans — this correctly answers the question.

11. What type of linkage is found in polyamides?

(A) Ester linkage
(B) Glycosidic linkage
(C) Amide linkage
(D) Phosphodiester linkage

Correct Answer: C

Explanation: Amide linkage — this correctly answers the question.

12. Which statement is NOT true about PET?

(A) It is a polyester
(B) It can be converted back into monomers and re-polymerised
(C) It is used in textiles
(D) It cannot be recycled

Correct Answer: D

Explanation: PET can be recycled; it can be converted back into monomers and re-polymerised.

13. What is a major environmental challenge caused by plastics?

(A) They accumulate in oceans
(B) They are biodegradable
(C) They are easily recycled
(D) They are non-toxic when burned

Correct Answer: A

Explanation: They accumulate in oceans — this correctly answers the question.

14. The monomer used to form polypropylene is:

(A) CH□ = CH□
(B) CH□ = CH - CH□
(C) CH□ = CHCl
(D) CH□ - CH□

Correct Answer: B

Explanation: Polypropylene is formed from propene (CH□ = CH - CH□).

15. The monomer used to form PVC is:

(A) CH□ = CH□
(B) CH□ = CH - CH□
(C) CH□ = CHCl
(D) CH□ - CH□

Correct Answer: C

Explanation: PVC is formed from vinyl chloride (CH□ = CHCl).

16. What is the repeating unit of polypropylene?

(A) -CH□ - CH□ -
(B) -CH□ - CHCl -
(C) -CH□ - CH□ - CH□ -
(D) -CH□ - CH(CH□) -

Correct Answer: D

Explanation: The repeating unit of polypropylene is -CH□ - CH(CH□) -.

17. Which of the following is an example of a condensation polymer?

(A) Nylon-6,6
(B) Polyethylene
(C) Polypropylene
(D) PVC

Correct Answer: A

Explanation: Nylon-6,6 is a condensation polymer.

18. Name the linkage found in polyesters.

(A) Amide linkage
(B) Ester linkage
(C) Glycosidic linkage
(D) Phosphodiester linkage

Correct Answer: B

Explanation: "Ester linkage" is correct: it matches the idea asked in the question ("Name the linkage found in polyesters"), while the other choices do not.

19. What are the monomers required to form Nylon-6,6?

(A) Terephthalic acid and ethylene glycol
(B) Ethene and propene
(C) Hexamethylenediamine and adipic acid
(D) Vinyl chloride and ethene

Correct Answer: C

Explanation: Nylon-6,6 is formed from hexamethylenediamine and adipic acid.

20. Explain one environmental challenge associated with the disposal of plastics in landfills.

(A) Plastics decompose quickly
(B) Plastics are biodegradable
(C) Plastics are easily recycled
(D) Plastics take up a lot of space and leach chemicals

Correct Answer: D

Explanation: "Plastics take up a lot of space and leach chemicals" is correct: it matches the idea asked in the question ("Explain one environmental challenge associated with the disposal of plastics in landfills"), while the other choices do not.

21. Describe the structure of PET.

(A) It is a polyester with ester linkages
(B) It is a polyamide with amide linkages
(C) It is an addition polymer
(D) It is a polyurethane

Correct Answer: A

Explanation: PET is a polyester with ester linkages.

22. Why is PET considered recyclable?

(A) It is biodegradable
(B) It undergoes acid hydrolysis to produce monomers
(C) It dissolves in water
(D) It melts easily

Correct Answer: B

Explanation: PET undergoes acid hydrolysis to produce its monomers (terephthalic acid and ethylene glycol), which can be reused.

23. How are addition polymers formed from monomers?

(A) By condensation reactions with release of small molecules
(B) By hydrolysis
(C) By adding monomer units without losing small molecules
(D) By oxidation

Correct Answer: C

Explanation: Addition polymers are formed by adding monomer units without losing small molecules.

24. What is released during the formation of condensation polymers?

(A) Oxygen
(B) Hydrogen
(C) Carbon dioxide
(D) Water

Correct Answer: D

Explanation: Water is released during the formation of condensation polymers.

25. What is the repeating unit in the polymer formed from ethylene glycol and terephthalic acid?

(A) -OC - C□H□ - COO - CH□ - CH□ - O-
(B) -NH - (CH□)□ - NH - CO - (CH□)□ - CO-
(C) -CH□ - CH□ -
(D) -CH□ - CHCl -

Correct Answer: A

Explanation: The repeating unit of PET is -OC - C□H□ - COO - CH□ - CH□ - O-.

B. Less Important / Secondary Topics

26. Why is PET widely used in textiles?

(A) It is durable, quick-drying, and retains colour well
(B) It is biodegradable
(C) It is soluble in water
(D) It is a good conductor of electricity

Correct Answer: A

Explanation: PET is widely used in textiles because it is durable, quick-drying, and retains colour well.

27. What is a key difference between polyamides and polyesters?

(A) Polyamides contain ester linkages; polyesters contain amide linkages
(B) Polyamides contain amide linkages; polyesters contain ester linkages
(C) Polyamides are addition polymers; polyesters are condensation polymers
(D) Polyamides are biodegradable; polyesters are not

Correct Answer: B

Explanation: Polyamides contain amide linkages; polyesters contain ester linkages — this correctly answers the question.

28. What is one benefit of recycling PET?

(A) It increases the need for raw materials
(B) It increases plastic waste
(C) It reduces the need for raw materials and minimizes plastic waste
(D) It produces more toxic gases

Correct Answer: C

Explanation: Recycling PET reduces the need for raw materials and minimizes plastic waste.

29. What is released during the formation of condensation polymers?

(A) Oxygen
(B) Hydrogen
(C) Carbon dioxide
(D) Water

Correct Answer: D

Explanation: Water is released during the formation of condensation polymers.

30. Give an example of a condensation polymer.

(A) PET
(B) Polyethylene
(C) Polypropylene
(D) PVC

Correct Answer: A

Explanation: PET is an example of a condensation polymer.

31. How do the properties of plastics depend on their polymer structure?

(A) Linear polymers are softer; branched polymers are stronger
(B) Linear polymers are stronger and more rigid; branched polymers are softer and more flexible
(C) All polymers have the same properties
(D) Polymer structure does not affect properties

Correct Answer: B

Explanation: Linear polymers are stronger and more rigid; branched polymers are softer and more flexible.

32. What are two environmental challenges associated with plastic disposal?

(A) Biodegradation and recycling
(B) Incineration and composting
(C) Landfill disposal and ocean accumulation
(D) Solubility and density

Correct Answer: C

Explanation: Landfill disposal and ocean accumulation are two major environmental challenges associated with plastic disposal.

33. Which of the following is NOT a use of polymers in the textile industry?

(A) Polyester for clothing
(B) Nylon for ropes
(C) PE for food packaging
(D) PVC for pipes

Correct Answer: D

Explanation: PVC for pipes is not a use of polymers in the textile industry.

34. Which of the following is a property of polyester (PET)?

(A) Shrinking and stretching resistance
(B) Low durability
(C) Slow drying
(D) Poor colour retention

Correct Answer: A

Explanation: Shrinking and stretching resistance — this correctly answers the question.

35. Which of the following is a property of nylon-6,6?

(A) Low strength
(B) High elasticity
(C) Poor resistance to abrasion
(D) Soluble in water

Correct Answer: B

Explanation: High elasticity — this correctly answers the question.

36. Which of the following is a use of polyethylene (PE)?

(A) Clothing
(B) Ropes
(C) Food packaging
(D) Carpets

Correct Answer: C

Explanation: Polyethylene (PE) is used for food packaging.

37. What is the major environmental challenge caused by plastics in oceans?

(A) They dissolve in water
(B) They are biodegradable
(C) They are easily recycled
(D) They accumulate and harm marine life

Correct Answer: D

Explanation: They accumulate and harm marine life — this correctly answers the question.

38. What is the process of breaking down PET into its monomers called?

(A) Acid hydrolysis
(B) Addition polymerisation
(C) Condensation polymerisation
(D) Esterification

Correct Answer: A

Explanation: Acid hydrolysis — this correctly answers the question.

39. Which of the following is a toxic gas released during the burning of plastics?

(A) Oxygen
(B) Dioxins
(C) Nitrogen
(D) Hydrogen

Correct Answer: B

Explanation: Dioxins are toxic gases released during the burning of plastics.

40. Which of the following is a property of plastics that makes them difficult to dispose of?

(A) Biodegradability
(B) Solubility in water
(C) Durability
(D) Low molecular weight

Correct Answer: C

Explanation: Durability — this correctly answers the question.

41. Which of the following is a use of polyesters?

(A) Food packaging
(B) Ropes
(C) Carpets
(D) Textile clothing fibers

Correct Answer: D

Explanation: Polyesters are used for textile clothing fibers.

42. Which of the following is NOT a property of plastics?

(A) Easily decomposed by microorganisms
(B) Lightweight
(C) Durable
(D) Versatile in application

Correct Answer: A

Explanation: Plastics are not easily decomposed by microorganisms.

43. PET is formed from terephthalic acid and ethylene glycol. What type of polymer is PET?

(A) Polyamide
(B) Polyester
(C) Addition polymer
(D) Polyurethane

Correct Answer: B

Explanation: PET is a polyester (condensation polymer).

44. What is the repeating unit of PET?

(A) -NH - (CH□)□ - NH - CO - (CH□)□ - CO-
(B) -CH□ - CH□ -
(C) -OC - C□H□ - COO - CH□ - CH□ - O-
(D) -CH□ - CHCl -

Correct Answer: C

Explanation: The repeating unit of PET is -OC - C□H□ - COO - CH□ - CH□ - O-.

45. What small molecule is released during the formation of PET?

(A) Oxygen
(B) Hydrogen
(C) Carbon dioxide
(D) Water

Correct Answer: D

Explanation: Water is released during the formation of PET.

46. What type of linkage is formed in PET?

(A) Ester linkage
(B) Amide linkage
(C) Glycosidic linkage
(D) Phosphodiester linkage

Correct Answer: A

Explanation: Ester linkage — this correctly answers the question.

47. Nylon-6,6 is formed from hexamethylenediamine and adipic acid. What type of polymer is Nylon-6,6?

(A) Polyester
(B) Polyamide
(C) Addition polymer

(D) Polyurethane

Correct Answer: B

Explanation: Nylon-6,6 is a polyamide (condensation polymer).

48. What is the repeating unit of Nylon-6,6?

(A) -OC - C□H□ - COO - CH□ - CH□ - O-

(B) -CH□ - CH□ -

(C) -NH - (CH□)□ - NH - CO - (CH□)□ - CO-

(D) -CH□ - CHCl -

Correct Answer: C

Explanation: The repeating unit of Nylon-6,6 is -NH - (CH□)□ - NH - CO - (CH□)□ - CO-.

49. What small molecule is released during the formation of Nylon-6,6?

(A) Oxygen

(B) Hydrogen

(C) Carbon dioxide

(D) Water

Correct Answer: D

Explanation: Water is released during the formation of Nylon-6,6.

50. What type of linkage is formed in Nylon-6,6?

(A) Amide linkage

(B) Ester linkage

(C) Glycosidic linkage

(D) Phosphodiester linkage

Correct Answer: A

Explanation: Amide linkage — this correctly answers the question.