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Chemistry Grade 10 — Chapter 8

Organic Chemistry

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

A. Important / Main Topics

1. A displayed formula shows:

(A) All the bonds between atoms as individual lines
(B) Only the molecular formula
(C) Only the carbon atoms
(D) Only the functional groups

Correct Answer: A

Explanation: A displayed formula shows all the bonds between atoms as individual lines.

2. The condensed structural formula of methane is:

(A) CH□
(B) CH□
(C) CH□
(D) C□H□

Correct Answer: B

Explanation: The condensed structural formula of methane is CH□.

3. Alkenes have the general formula:

(A) C_nH□n□□
(B) C_nH□n□□
(C) C_nH□n
(D) C_nH_n

Correct Answer: C

Explanation: Alkenes have the general formula C_nH□n.

4. Which of the following is the simplest alkyne?

(A) Ethene
(B) Ethane
(C) Propene
(D) Ethyne

Correct Answer: D

Explanation: Ethyne — this correctly answers the question.

5. The IUPAC name of CH□CH□CH□CH□ is:

(A) Butane
(B) Propane
(C) Pentane
(D) Hexane

Correct Answer: A

Explanation: The IUPAC name of CH□CH□CH□CH□ is Butane.

6. Which of the following correctly represents the formula for but-2-ene?

(A) CH□ = CHCH□CH□
(B) CH□CH = CHCH□
(C) CH□CH□CH = CH□
(D) CH□C equiv CHCH□

Correct Answer: B

Explanation: CH□CH = CHCH□ — this correctly answers the question.

7. Given the molecular formula C□H□□O, which compound is most likely to be represented by this formula?

(A) Butanoic acid
(B) But-2-ene
(C) Butan-1-ol
(D) Butanal

Correct Answer: C

Explanation: Butan-1-ol — this correctly answers the question.

8. Which of the following is the correct IUPAC name for the compound with the formula CH□CH□CH□COOH?

(A) Propanoic acid
(B) Butanal
(C) Butanol
(D) Butanoic acid

Correct Answer: D

Explanation: Butanoic acid — this correctly answers the question.

9. Identify the statement which is true regarding propan-1-ol and propan-2-ol:

(A) They have the same molecular formula
(B) Both have identical condensed structural formula
(C) They are different compounds with the same structural formula
(D) Propan-1-ol is a carboxylic acid, and propan-2-ol is an ester

Correct Answer: A

Explanation: Identify the statement which is true regarding propan-1-ol and propan-2-ol They have the same molecular formula.

10. Name the compound that can be formed by the esterification of methanol and propanoic acid:

(A) Propyl methanoate
(B) Methyl propanoate
(C) Ethyl propanoate
(D) Propyl ethanoate

Correct Answer: B

Explanation: Name the compound that can be formed by the esterification of methanol and propanoic acid Methyl propanoate.

11. Which of the following molecules contains an -OH functional group?

(A) Butane
(B) Ethene
(C) Butan-1-ol
(D) But-2-yne

Correct Answer: C

Explanation: Butan-1-ol — this correctly answers the question.

12. If a compound ends in "-oic acid," what functional group must it contain?

(A) -OH
(B) -C=O
(C) -C=C-
(D) -COOH

Correct Answer: D

Explanation: -COOH — this correctly answers the question.

13. Which formula corresponds to an ester that could be formed from butan-1-ol and ethanoic acid?

(A) CH□COOCH□CH□CH□CH□

(B) CH□CH□CH□CH□COOCH□
(C) CH□CH□CH□CH□CH□COOH
(D) CH□CH□COOCH□

Correct Answer: A

Explanation: CH□COOCH□CH□CH□CH□ — this correctly answers the question.

14. Which structural formula represents butan-1-ol?

(A) CH□CH□CH□CH□COOH
(B) CH□CH□CH□CH□OH
(C) CH□CH□CH = CH□
(D) CH□CH = CHCH□

Correct Answer: B

Explanation: CH□CH□CH□CH□OH — this correctly answers the question.

15. Identify the compound based on the following information: It has the formula C□H□O and the name ends with "-ol."

(A) Propanoate
(B) Propane
(C) Propan-2-ol
(D) Propanoic acid

Correct Answer: C

Explanation: C□H□O ending in "-ol" is propan-2-ol.

16. Which of the following names is incorrect for the given formula?

(A) But-2-ene: CH□CH = CHCH□
(B) But-1-ene: CH□ = CHCH□CH□
(C) Butane: CH□CH□CH□CH□
(D) Butan-2-ol: CH□CH(OH)CH□CH□

Correct Answer: D

Explanation: Butan-2-ol is CH□CH□CH(OH)CH□, not CH□CH(OH)CH□CH□.

17. Which of the following is the correct IUPAC name for CH□CH□CH□CH□OH?

(A) Butan-1-ol
(B) Butan-2-ol
(C) Butanol
(D) Butanoic acid

Correct Answer: A

Explanation: Butan-1-ol — this correctly answers the question.

18. Which of the following is the correct IUPAC name for CH□CH□COOH?

(A) Ethanoic acid
(B) Propanoic acid
(C) Butanoic acid
(D) Propanoic acid

Correct Answer: B

Explanation: Propanoic acid — this correctly answers the question.

19. Which of the following is the correct IUPAC name for CH□CH = CHCH□?

(A) But-1-ene
(B) Butane
(C) But-2-ene
(D) Butyne

Correct Answer: C

Explanation: But-2-ene — this correctly answers the question.

20. Which of the following is the correct IUPAC name for CH□C equiv CH?

(A) Propene
(B) Propane
(C) Propanol
(D) Propyne

Correct Answer: D

Explanation: Propyne — this correctly answers the question.

21. Which of the following is the correct IUPAC name for CH□CH(OH)CH□?

(A) Propan-2-ol
(B) Propan-1-ol
(C) Propanol
(D) Propanoic acid

Correct Answer: A

Explanation: Propan-2-ol — this correctly answers the question.

22. Which of the following is the correct IUPAC name for CH□COOCH□?

(A) Ethyl methanoate
(B) Methyl ethanoate
(C) Methyl methanoate
(D) Ethyl ethanoate

Correct Answer: B

Explanation: Methyl ethanoate — this correctly answers the question.

23. Which of the following is the correct IUPAC name for HCOOCH□CH□?

(A) Methyl ethanoate
(B) Methyl methanoate
(C) Ethyl methanoate
(D) Ethyl ethanoate

Correct Answer: C

Explanation: Ethyl methanoate — this correctly answers the question.

24. Which of the following is the correct IUPAC name for CH□CH□COOCH□?

(A) Ethyl propanoate
(B) Propyl methanoate
(C) Propyl ethanoate
(D) Methyl propanoate

Correct Answer: D

Explanation: Methyl propanoate — this correctly answers the question.

25. Which of the following is the correct IUPAC name for CH□COOCH□CH□?

(A) Ethyl ethanoate
(B) Methyl ethanoate
(C) Methyl propanoate
(D) Ethyl propanoate

Correct Answer: A

Explanation: Ethyl ethanoate — this correctly answers the question.

B. Less Important / Secondary Topics

26. Which of the following is the correct IUPAC name for CH□CH□CH□COOH?

(A) Butanoic acid
(B) Propanoic acid
(C) Butanal
(D) Butanol

Correct Answer: A

Explanation: Butanoic acid — this correctly answers the question.

27. Draw the structural formula of but-1-ene and but-2-ene. What is the difference between them?

(A) Position of the hydroxyl group
(B) Position of the double bond
(C) Position of the carboxyl group
(D) Type of bond

Correct Answer: B

Explanation: In but-1-ene, the double bond is between carbon 1 and 2. In but-2-ene, the double bond is between carbon 2 and 3.

28. Draw the displayed formula of ethyl butanoate. What is its condensed formula?

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

Correct Answer: C

Explanation: Ethyl butanoate is CH□CH□CH□COOCH□CH□.

29. Given the displayed formula CH□COOCH□CH□, identify the alcohol and carboxylic acid used to form the ester.

(A) Methanol and ethanoic acid
(B) Ethanol and propanoic acid
(C) Methanol and propanoic acid
(D) Ethanol and ethanoic acid

Correct Answer: D

Explanation: The ester is ethyl ethanoate. The alcohol used is ethanol and the carboxylic acid used is ethanoic acid.

30. From the displayed formula CH□ - C equiv C - CH□, identify the compound and its type.

(A) But-2-yne
(B) But-1-yne
(C) Butane
(D) Butene

Correct Answer: A

Explanation: The compound is but-2-yne. It is an alkyne.

31. Design the synthesis pathway for converting butan-1-ol into but-1-ene.

(A) Hydration
(B) Dehydration
(C) Oxidation
(D) Reduction

Correct Answer: B

Explanation: Butan-1-ol can be converted into but-1-ene by dehydration (loss of water).

32. Compare the functional groups of esters and carboxylic acids. What is the functional group of esters?

(A) -COOH
(B) -OH
(C) -COO-
(D) -CHO

Correct Answer: C

Explanation: -COO- — this correctly answers the question.

33. Develop a table that helps you to determine the type of organic compound based on its structural formula (having two carbon atoms) and functional groups. What type of compound is CH□CH□OH?

(A) Alkane

(B) Alkene
(C) Carboxylic acid
(D) Alcohol

Correct Answer: D

Explanation: CH□CH□OH contains the -OH group, so it is an alcohol.

34. What type of compound is CH□COOH?

(A) Carboxylic acid
(B) Alkane
(C) Alkene
(D) Alcohol

Correct Answer: A

Explanation: CH□COOH contains the -COOH group, so it is a carboxylic acid.

35. What type of compound is CH□COOCH□?

(A) Alkane
(B) Ester
(C) Alkene
(D) Carboxylic acid

Correct Answer: B

Explanation: CH□COOCH□ contains the -COO- group, so it is an ester.

36. A compound has the molecular formula C□H□O□. Draw all possible structural formulas for this molecular formula.

(A) CH□CH□CH□OH, CH□COCH□
(B) CH□CH□CHO, CH□COCH□
(C) CH□CH□COOH, CH□COOCH□, HCOOCH□CH□
(D) CH□CH□CH□COOH

Correct Answer: C

Explanation: The possible structures are propanoic acid (CH□CH□COOH), methyl ethanoate (CH□COOCH□), and ethyl methanoate (HCOOCH□CH□).

37. Which of these compounds is a carboxylic acid?

(A) CH□COOCH□
(B) HCOOCH□CH□
(C) CH□CH□OH
(D) CH□CH□COOH

Correct Answer: D

Explanation: CH□CH□COOH contains the -COOH group, so it is a carboxylic acid.

38. Which of these compounds is an ester?

(A) CH□COOCH□ and HCOOCH□CH□
(B) CH□CH□COOH
(C) CH□CH□OH
(D) CH□CH□CHO

Correct Answer: A

Explanation: Both CH□COOCH□ and HCOOCH□CH□ contain the -COO- group, so they are esters.

39. Name the carboxylic acid and the ester in the given structures.

(A) Ethanoic acid; Methyl ethanoate
(B) Propanoic acid; Methyl ethanoate and ethyl methanoate
(C) Propanoic acid; Ethyl ethanoate
(D) Butanoic acid; Methyl propanoate

Correct Answer: B

Explanation: “Propanoic acid; Methyl ethanoate and ethyl methanoate” is correct: it matches the idea asked in the question (“Name the carboxylic acid and the ester in the given structures”), while the other choices do not.

40. Which of the following statements about the structure of organic compounds is correct?

(A) Each carbon atom must have three bonds
(B) Each carbon atom must have two bonds
(C) Each carbon atom must have four bonds
(D) Each carbon atom must have one bond

Correct Answer: C

Explanation: Each carbon atom must have four bonds — this correctly answers the question.

41. Draw the structural formula of but-1-ene and but-2-ene. Which of the following is but-1-ene?

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

Correct Answer: D

Explanation: CH□ = CH - CH□ - CH□ — this correctly answers the question.

42. Which of the following is but-2-ene?

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

Correct Answer: A

Explanation: CH□ - CH = CH - CH□ — this correctly answers the question.

43. What is the difference between hex-1-ene and hex-2-ene?

(A) Position of the hydroxyl group
(B) Position of the double bond
(C) Position of the carboxyl group
(D) Type of bond

Correct Answer: B

Explanation: In hex-1-ene, the double bond is between carbon 1 and 2. In hex-2-ene, the double bond is between carbon 2 and 3.

44. What is the IUPAC name of CH□ - CH = CH - CH□ - CH□?

(A) Pent-1-ene
(B) Pentane
(C) Pent-2-ene
(D) Pentyne

Correct Answer: C

Explanation: The double bond starts at carbon 2, so the name is pent-2-ene.

45. What is the IUPAC name of CH□ - CH□ - CH = CH□?

(A) But-2-ene
(B) Butane
(C) Butyne
(D) But-1-ene

Correct Answer: D

Explanation: The double bond starts at carbon 1, so the name is but-1-ene.

46. What is the IUPAC name of CH□ - CH□ - CH□ - CH□ - OH?

(A) Butan-1-ol
(B) Butan-2-ol
(C) Butanol

(D) Butanoic acid

Correct Answer: A

Explanation: The -OH group is on carbon 1, so the name is butan-1-ol.

47. What is the IUPAC name of CH□ - CH□ - CH(OH) - CH□?

(A) Butan-1-ol
(B) Butan-2-ol
(C) Butanol
(D) Butanoic acid

Correct Answer: B

Explanation: The -OH group is on carbon 2, so the name is butan-2-ol.

48. What is the IUPAC name of CH□ - CH□ - CH□ - COOH?

(A) Propanoic acid
(B) Butanal
(C) Butanoic acid
(D) Butanol

Correct Answer: C

Explanation: The compound has 4 carbon atoms and a -COOH group, so it is butanoic acid.

49. What is the IUPAC name of CH□ - CH□ - COOH?

(A) Ethanoic acid
(B) Butanoic acid
(C) Propanoic acid
(D) Propanoic acid

Correct Answer: D

Explanation: The compound has 3 carbon atoms and a -COOH group, so it is propanoic acid.

50. What is the IUPAC name of HCOOH?

(A) Methanoic acid
(B) Ethanoic acid
(C) Propanoic acid
(D) Butanoic acid

Correct Answer: A

Explanation: The compound has 1 carbon atom and a -COOH group, so it is methanoic acid.