

Organic Chemistry in the Natural World

Organic Chemistry · Answer Key · 25 Questions

1. Which organic acid is primarily responsible for the stinging sensation caused by the defense mechanism of red ants?

- A) Citric acid
- B) Formic acid**
- C) Acetic acid
- D) Lactic acid

2. What is the primary organic compound that makes up the rigid cell walls of terrestrial plants?

- A) Cellulose**
- B) Chitin
- C) Glycogen
- D) Starch

3. Which organic molecule is responsible for the red colour in the blood of vertebrates, functioning as an oxygen carrier?

- A) Chlorophyll
- B) Hemoglobin**
- C) Carotene
- D) Melanin

4. Which class of organic compounds serves as the primary structural material for the exoskeleton of crustaceans and insects?

- A) Proteins
- B) Lipids
- C) Chitin**
- D) Nucleic acids

5. What is the main chemical component of the essential oil that gives lavender its characteristic floral scent?

- A) Linalool**
- B) Ethanol
- C) Methane
- D) Benzene

6. Which organic polymer is used by spiders to create silk that is stronger than steel by weight?

A) Collagen

B) Fibroin

C) Keratin

D) Elastin

7. What type of organic molecule is predominantly used by hibernating animals to store long-term energy?

A) Glucose

B) Triglycerides

C) Amino acids

D) Nucleotides

8. Which organic compound is synthesised by plants during photosynthesis to store chemical energy?

A) Glucose

B) Acetone

C) Glycerol

D) Methane

9. What organic pigment allows marine algae to perform photosynthesis in deep ocean water?

A) Fucoxanthin

B) Hemocyanin

C) Uric acid

D) Formaldehyde

10. The bioluminescence observed in fireflies is caused by a chemical reaction involving which organic compound?

A) Luciferin

B) Cholesterol

C) Thymine

D) Caffeine

11. Which sulfur-containing amino acid is essential for the formation of hair and feathers in animals?

A) Cysteine

B) Glycine

C) Alanine

D) Serine

12. What complex organic molecule acts as the primary genetic material in all living organisms?

A) RNA

B) DNA

C) ATP

D) NADPH

13. Which organic acid is commonly associated with the sour taste found in citrus fruits like lemons?

A) Citric acid

B) Malic acid

C) Butyric acid

D) Oleic acid

14. What organic compound is secreted by skunks as a primary defense mechanism, resulting in a pungent smell?

A) Thiols

B) Esters

C) Ketones

D) Aldehydes

15. Which organic molecule, found in the liver, is the primary storage form of glucose in animals?

A) Cellulose

B) Glycogen

C) Starch

D) Amylose

16. What organic class does the substance 'wax', used by bees to build honeycombs, belong to?

A) Esters

B) Alcohols

C) Amines

D) Ethers

17. Which organic compound gives carrots their vibrant orange colour?

A) Beta-carotene

B) Anthocyanin

C) Chlorophyll

D) Xanthophyll

18. What nitrogenous base is specifically found in RNA but replaced by Thymine in DNA?

- A) Uracil**
- B) Cytosine
- C) Adenine
- D) Guanine

19. Which organic compound is the primary component of natural rubber harvested from the *Hevea brasiliensis* tree?

- A) Isoprene**
- B) Ethylene
- C) Acetylene
- D) Propane

20. What class of organic molecules are the primary building blocks of enzymes in living organisms?

- A) Proteins**
- B) Lipids
- C) Carbohydrates
- D) Hydrocarbons

21. Which organic compound is released by many plants as a volatile signal to attract pollinators?

- A) Terpenes**
- B) Alkanes
- C) Alcohols
- D) Ketones

22. What organic molecule is responsible for the distinct scent of freshly cut grass?

- A) (Z)-3-hexenal**
- B) Methanol
- C) Benzene
- D) Toluene

23. Which organic acid is produced by muscles during anaerobic respiration in mammals?

- A) Lactic acid**
- B) Citric acid
- C) Ascorbic acid
- D) Folic acid

24. What is the main organic component of the shell of an egg?

A) Calcium carbonate

B) Keratin

C) Collagen

D) Chitin

25. Which organic compound is used by the body to transport cholesterol through the blood?

A) Lipoproteins

B) Glycoproteins

C) Nucleoproteins

D) Chromoproteins