

# Melting Point Measurement – MCQ Exam (30 Questions)

1. The melting point of an organic compound is defined as:
  - A. The temperature when the solid becomes gas
  - B. The temperature from the first crystal melting until the last crystal disappears
  - C. The temperature at which liquid becomes solid
  - D. The boiling temperature of a solid
2. The melting point of an organic compound mainly depends on:
  - A. Molecular color
  - B. Molecular structure and intermolecular forces
  - C. Molecular weight only
  - D. Boiling point of the compound
3. When a small amount of soluble impurity is present in a compound, the melting point will:
  - A. Increase and become sharper
  - B. Decrease and the melting range becomes broader
  - C. Remain unchanged
  - D. Increase and become broader
4. Which of the following impurities does NOT affect the melting point?
  - A. Soluble impurities
  - B. Miscible impurities
  - C. Insoluble impurities such as sand
  - D. Organic impurities
5. A compound melts at 147–149°C. The value 147°C represents:
  - A. Midpoint temperature
  - B. Final melting point
  - C. Start of melting (first crystal melts)
  - D. Boiling point
6. The value 149°C in a melting range represents:
  - A. Temperature when melting begins
  - B. Temperature when last crystal disappears
  - C. Average melting temperature
  - D. Cooling temperature
7. The melting point midpoint is calculated by:
  - A.  $(\text{Start} - \text{End})/2$
  - B.  $(\text{Start} + \text{End})/2$
  - C.  $\text{Start} \times \text{End}$
  - D.  $\text{End} - \text{Start}$
8. If two compounds have the same melting point, the best way to verify if they are identical is by:
  - A. Measuring boiling point
  - B. Performing mixture melting point test
  - C. Measuring density
  - D. Observing color

9. If compound A and compound B are identical, their mixture melting point will:
- Decrease significantly
  - Increase significantly
  - Remain sharp at the same temperature
  - Become extremely broad
10. If compound A is different from compound B but both have similar melting points, their mixture melting point will:
- Increase and sharpen
  - Decrease and broaden
  - Remain unchanged
  - Increase only
11. Which factor causes melting point depression in the presence of impurities?
- Increased vapor pressure of the molten compound
  - Reduced vapor pressure of the molten compound
  - Increased intermolecular forces
  - Decreased molecular mass
12. Increasing the amount of impurity in a compound will:
- Increase melting point
  - Increase melting point sharpness
  - Cause greater melting point depression
  - Eliminate melting range
13. The melting process may extend over 2–20°C mainly when:
- The compound is pure
  - The compound contains impurities
  - The heating rate is slow
  - The sample size is small
14. During melting point determination, the start point corresponds to:
- When the compound boils
  - When crystals first appear
  - When crystals begin to look wet
  - When the sample vaporizes
15. The end point of melting is reached when:
- Some crystals remain
  - Half the sample melts
  - The sample becomes completely clear liquid
  - Temperature stops increasing
16. In sample preparation, approximately how much sample is placed in the capillary tube?
- 5 cm
  - 2 cm
  - 0.5 cm
  - 3 cm
17. The main purpose of tapping the capillary tube on the desk is to:
- Heat the sample

- B. Compact the solid at the bottom
- C. Break crystals
- D. Remove impurities

18. The closed end of the capillary tube must face:

- A. Upwards
- B. Downwards
- C. Sideways
- D. Toward the lens

19. The melting point apparatus should always be kept:

- A. Horizontal
- B. Tilted slightly
- C. Upright
- D. Inverted

20. Grinding large crystals before measurement helps to:

- A. Increase melting point
- B. Fit the sample into the capillary tube
- C. Change molecular structure
- D. Remove impurities

21. The digital melting point apparatus allows viewing of up to:

- A. One sample
- B. Two samples
- C. Three samples
- D. Five samples

22. The fast ramp rate recommended for preliminary determination is:

- A. 2°C/min
- B. 5°C/min
- C. 20°C/min
- D. 50°C/min

23. The slow ramp rate used for accurate measurement is:

- A. 20°C/min
- B. 2°C/min
- C. 10°C/min
- D. 30°C/min

24. The slow careful melting range should start approximately:

- A. 5°C above the expected melting point
- B. 15°C below the expected melting range
- C. Exactly at the melting point
- D. 50°C below the melting point

25. Before starting the first melting range, the apparatus temperature must be:

- A. Above 100°C
- B. Above 150°C
- C. Below 70°C
- D. Exactly 70°C

26. Large samples are avoided because they:

- A. Melt too quickly
- B. Heat unevenly
- C. Lower melting point
- D. Increase purity

27. If the sample is loosely packed in the capillary tube:

- A. It melts faster
- B. Heating becomes uneven
- C. Melting point increases
- D. Melting range disappears

28. Why should the same sample not be remelted?

- A. The capillary tube breaks
- B. Chemical changes may occur (oxidation, decomposition)
- C. It increases melting point
- D. It wastes chemicals

29. Repeating melting point determination using the same capillary tube is discouraged because:

- A. The capillary tube expands
- B. Organic compounds may decompose upon heating
- C. The tube becomes opaque
- D. It changes the heating rate

30. The two main purposes of melting point measurement are:

- A. Determining color and odor
- B. Determining purity and identifying unknowns
- C. Determining density and viscosity
- D. Determining solubility and boiling point

# Answer Key

1. B

2. B

3. B

4. C

5. C

6. B

7. B

8. B

9. C

10. B

11. B

12. C

13. B

14. C

15. C

16. C

17. B

18. B

19. C

20. B

21. C

22. C

23. B

24. B

25. C

26. B

27. B

28. B

29. B

30. B