



Attempt questions first; check the separate key afterward. Show all working. Draw accurate figures where required.

A. Very short answers - 1 mark each

1. Name the three familiar physical states of matter.
2. Compare their shapes and volumes.
3. Does matter consist of tiny particles?
4. Explain dissolving using a particle model.
5. Which state is usually most compressible?
6. Explain compressibility in terms of particle spacing.
7. Name the spreading of particles from high to low concentration.
8. Explain why perfume can be detected across a room.

B. Short answers / practice - 2 marks each

9. Does heating usually increase particle motion?
10. Explain why diffusion is generally faster at higher temperature.
11. Name the change from solid to liquid.
12. Name the change from liquid to gas throughout the liquid.
13. Name the change from gas to liquid.
14. Explain droplets forming outside a cold glass.
15. Can evaporation occur below a liquid's boiling point?
16. Distinguish evaporation and boiling.
17. Name the direct change from solid to gas.
18. Give a substance that can demonstrate sublimation.
19. Convert 25°C to kelvin using $K = ^{\circ}\text{C} + 273$.
20. Convert 300 K to $^{\circ}\text{C}$ using the same approximation.

C. Application / reasoning - 3 marks each

21. Does a solid's particle model imply completely motionless particles?

22. Compare particle motion in solids, liquids and gases.

23. Why do wet clothes dry faster in moving air?

24. Explain how surface area, temperature and humidity affect evaporation.

25. A closed container has 100 g matter before melting. What is its mass afterward if nothing enters or leaves?

26. Explain why a state change does not create or destroy matter.

27. Convert -10°C to kelvin using $K = ^{\circ}\text{C} + 273$.

28. Why does a gas fill the entire available container?

29. Does crushing a solid into powder change its chemical identity by itself?

30. Explain why puddles disappear faster on a hot, dry day than on a cool, humid day.

31. Draw particle arrangements for melting and freezing and indicate energy-transfer direction.

D. Extended practice - 5 marks per pair

32. Does evaporation cause cooling?

33. Explain this using particles with different energies.

34. Is steam at 100°C energetically identical to liquid water at 100°C ?

35. Draw a heating curve from ice to steam and explain flat portions during phase changes.

ANSWER KEY - Numerical / closed questions

- 1) Solid, liquid, gas. 3) Yes. 5) Gas. 7) Diffusion.
9) Yes. 11) Melting. 12) Boiling. 13) Condensation. 15) Yes. 17) Sublimation. 18) Example: camphor or dry ice. 19) 298 K. 20) 27°C .
21) No; particles vibrate. 25) 100 g. 27) 263 K.
29) No. 32) Yes. 34) No; steam has additional latent energy.