



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

A. Very short answers - 1 mark each

1. What is an element?
2. What is a compound?
3. Classify oxygen, water and air.
4. Explain the basis for each classification.
5. Write symbols for hydrogen, oxygen and carbon.
6. Write symbols for iron, copper and aluminium.
7. Can a compound's components generally be separated by filtration?
8. Compare separating a mixture with decomposing a compound.

B. Short answers / practice - 2 marks each

9. Is salt water a pure substance?
10. Explain why composition of a mixture can vary.
11. Name the elements present in carbon dioxide.
12. Count the total atoms in one CO_2 molecule.
13. Name the elements in common salt, NaCl .
14. Explain why a compound can differ greatly from its constituent elements.
15. Is a mixture of iron filings and sulphur the same as iron sulphide?
16. Compare their response to a magnet before and after chemical combination.
17. Does an element always consist of single separate atoms?
18. Explain with oxygen gas, O_2 .
19. Classify brass as element, compound or mixture.
20. Explain why alloys may have useful properties.

C. Application / reasoning - 3 marks each

21. Are all non-metals gases?
22. Give solid and liquid non-metal examples.

23. A mixture contains 30 g sand and 20 g salt. Find total mass.

24. Find the salt mass percentage.

25. Does a chemical symbol always have one letter?

26. Explain capitalisation using Co and CO.

27. Classify copper, sugar and soil as element, compound or mixture.

28. How many oxygen atoms occur in one H_2SO_4 molecule?

29. A mixture has 12 g sulphur and 28 g iron. Find sulphur mass percentage.

30. Can two samples of the same pure compound have arbitrarily different element ratios?

31. Explain why oxygen and ozone are forms of an element but water is a compound.

D. Extended practice - 5 marks per pair

32. Name a physical method for separating sand and iron filings.
33. Plan how to separate sand, salt and iron filings.
34. Is water's hydrogen-to-oxygen atom ratio fixed?
35. Compare elements, compounds and mixtures using composition, properties, separation and three examples each.

ANSWER KEY - Numerical / closed questions

1) A pure substance of one type of atom. 2) A pure substance of chemically combined elements in fixed proportions. 3) Element, compound, mixture. 5) H, O, C. 6) Fe, Cu, Al. 7) No. 9) No; mixture. 11) Carbon and oxygen. 12) 3. 13) Sodium and chlorine. 15) No. 17) No. 19) Mixture/alloy. 21) No. 22) Carbon/sulphur; bromine. 23) 50 g. 24) 40%. 25) No. 26) Co:cobalt; CO:carbon monoxide. 27) Element, compound, mixture. 28) Four. 29) 30%. 30) No. 32) Magnetic separation. 34) Yes; 2:1.