



Class 9 Science Chapter 8 – Important MCQs

Journey Inside the Atom



New NCERT *Exploration* | 2026–27

These MCQs are based on the **new Chapter 8** and cover the exact core areas of the new syllabus: atomic models, subatomic particles, electronic configuration, valency, atomic number, mass number, isotopes, isobars and atomic mass.



SECTION A – ATOMIC THEORY

1. According to Dalton's atomic theory, matter is made up of:

- A. Molecules only
- B. Indivisible atoms
- C. Electrons only
- D. Energy levels



Answer: B. Indivisible atoms

2. Who proposed the scientific atomic theory in 1808?

- A. J. J. Thomson
- B. Ernest Rutherford
- C. John Dalton
- D. Niels Bohr



Answer: C. John Dalton

3. Who proposed the idea of Parmanu in ancient India?

- A. Aryabhata
- B. Acharya Kanada
- C. Sushruta
- D. Charaka

✓ **Answer: B. Acharya Kanada**

The textbook describes Kanada's idea of indivisible particles called **parmanus**.

4. The Greek word atomos means:

- A. Charged
- B. Divisible
- C. Indivisible
- D. Invisible

✓ **Answer: C. Indivisible**



SECTION B – ATOMIC MODELS

5. Who proposed the “plum pudding” model of the atom?

- A. Dalton
- B. Thomson
- C. Rutherford
- D. Bohr

✓ **Answer: B. J. J. Thomson**

6. According to Thomson's model, electrons are:

- A. Present inside a positively charged sphere
- B. Present only in the nucleus
- C. Outside the atom
- D. Mixed with neutrons only

✓ **Answer: A**

7. Rutherford's experiment led to the discovery of the:

- A. Electron
- B. Nucleus
- C. Neutron
- D. Energy shell

 **Answer: B. Nucleus**

8. According to Rutherford's model, most of the atom is:

- A. Solid matter
- B. Empty space
- C. Positively charged
- D. Filled with neutrons

 **Answer: B. Empty space**

9. The nucleus of an atom is:

- A. Very large and empty
- B. Small, dense and positively charged
- C. Negatively charged
- D. Made only of electrons

 **Answer: B**

10. Who proposed that electrons occupy fixed energy levels?

- A. Dalton
- B. Thomson
- C. Rutherford
- D. Bohr

 **Answer: D. Niels Bohr**

11. The shells around the nucleus are named:

- A. A, B, C, D
- B. K, L, M, N
- C. P, Q, R, S
- D. X, Y, Z

✓ **Answer: B. K, L, M, N**

12. Which sequence correctly represents the development of atomic models?

- A. Bohr → Rutherford → Thomson → Dalton
- B. Dalton → Thomson → Rutherford → Bohr
- C. Thomson → Dalton → Bohr → Rutherford
- D. Rutherford → Dalton → Thomson → Bohr

✓ **Answer: B**

The textbook presents the development as **Dalton → Thomson → Rutherford → Bohr → modern quantum mechanical model**.



SECTION C – SUBATOMIC PARTICLES

13. Which subatomic particle has a negative charge?

- A. Proton
- B. Neutron
- C. Electron
- D. Nucleus

✓ **Answer: C. Electron**

14. Which subatomic particle has a positive charge?

- A. Electron
- B. Proton

- C. Neutron
- D. Atom

 **Answer: B. Proton**

15. Which subatomic particle has no electrical charge?

- A. Proton
- B. Electron
- C. Neutron
- D. Nucleus

 **Answer: C. Neutron**

16. The relative charge of an electron is:

- A. +1
- B. -1
- C. 0
- D. +2

 **Answer: B. -1**

17. The relative charge of a proton is:

- A. +1
- B. -1
- C. 0
- D. -2

 **Answer: A. +1**

18. The relative charge of a neutron is:

- A. +1
- B. -1
- C. 0
- D. +2

✓ Answer: C. 0

19. Who discovered the neutron?

- A. J. J. Thomson
- B. James Chadwick
- C. John Dalton
- D. Niels Bohr

✓ Answer: B. James Chadwick

20. The neutron was discovered in:

- A. 1897
- B. 1908
- C. 1911
- D. 1932

✓ Answer: D. 1932

The textbook states that James Chadwick discovered the neutron in **1932**.

21. Most of the mass of an atom is concentrated in its:

- A. Electron cloud
- B. Nucleus
- C. Outer shell
- D. Valence shell

✓ Answer: B. Nucleus

**1 2
3 4** SECTION D – ATOMIC NUMBER &
MASS NUMBER

22. Atomic number is equal to the number of:

- A. Neutrons
- B. Protons
- C. Protons + neutrons
- D. Electrons + neutrons

 **Answer: B. Protons**

23. In a neutral atom, the number of electrons is equal to the number of:

- A. Neutrons
- B. Protons
- C. Nucleons
- D. Shells

 **Answer: B. Protons**

24. Mass number is equal to:

- A. Protons – neutrons
- B. Protons + neutrons
- C. Electrons + protons
- D. Electrons + neutrons

 **Answer: B. Protons + neutrons**

25. The particles present in the nucleus are:

- A. Electrons and protons
- B. Protons and neutrons
- C. Electrons and neutrons
- D. Electrons only

 **Answer: B. Protons and neutrons**

26. The number of neutrons in an atom is:

- A. Atomic number + mass number
- B. Mass number – atomic number

- C. Mass number + atomic number
- D. Atomic number – electrons

✓ Answer: B

★ Formula:

Number of neutrons = Mass number – Atomic number

27. An atom has atomic number 11 and mass number 23. The number of neutrons is:

- A. 11
- B. 12
- C. 23
- D. 34

✓ Answer: B. 12

Neutrons = 23 – 11 = 12

28. An atom has 17 protons and 18 neutrons. Its mass number is:

- A. 17
- B. 18
- C. 35
- D. 1

✓ Answer: C. 35

Mass number = 17 + 18 = 35

29. An atom has atomic number 8. A neutral atom of this element contains:

- A. 8 electrons
- B. 16 electrons
- C. 4 electrons
- D. 0 electrons

✓ Answer: A. 8 electrons

SECTION E – ELECTRONIC CONFIGURATION

30. The first shell of an atom is called:

- A. L shell
- B. K shell
- C. M shell
- D. N shell

 **Answer: B. K shell**

31. The maximum number of electrons in the K shell is:

- A. 2
- B. 8
- C. 18
- D. 32

 **Answer: A. 2**

32. The maximum number of electrons in a shell is given by:

- A. n^2
- B. $2n^2$
- C. $2n$
- D. $n/2$

 **Answer: B. $2n^2$**

33. The maximum number of electrons in the L shell is:

- A. 2
- B. 8

- C. 18
- D. 32

 **Answer: B. 8**

34. The electronic configuration of sodium (atomic number 11) is:

- A. 2, 9
- B. 8, 3
- C. 2, 8, 1
- D. 2, 7, 2

 **Answer: C. 2, 8, 1**

35. The electronic configuration of oxygen (atomic number 8) is:

- A. 2, 6
- B. 2, 8
- C. 4, 4
- D. 8

 **Answer: A. 2, 6**

36. The electronic configuration of chlorine (atomic number 17) is:

- A. 2, 8, 7
- B. 2, 7, 8
- C. 8, 9
- D. 2, 15

 **Answer: A. 2, 8, 7**

37. The electrons present in the outermost shell are called:

- A. Core electrons
- B. Valence electrons
- C. Nuclear electrons
- D. Free neutrons

✓ Answer: B. Valence electrons



SECTION F – VALENCY

38. Valency refers to the:

- A. Mass of an atom
- B. Combining capacity of an atom
- C. Number of neutrons
- D. Number of shells

✓ Answer: B. Combining capacity of an atom

39. An atom with one electron in its outermost shell generally has valency:

- A. 1
- B. 2
- C. 7
- D. 8

✓ Answer: A. 1

40. An atom with seven valence electrons generally has valency:

- A. 7
- B. 2
- C. 1
- D. 8

✓ Answer: C. 1

41. An atom with eight electrons in its outermost shell is generally:

- A. Highly reactive
- B. Stable

- C. Always positively charged
- D. Always negatively charged

✓ **Answer: B. Stable**

42. Helium is stable with:

- A. 1 electron in its outer shell
- B. 2 electrons in its outer shell
- C. 4 electrons in its outer shell
- D. 8 electrons in its outer shell

✓ **Answer: B. 2 electrons**

The textbook notes that an octet generally gives stability, while helium is stable with **two** electrons.



SECTION G – ISOTOPES

43. Isotopes are atoms of the same element having:

- A. Same mass number but different atomic numbers
- B. Same atomic number but different mass numbers
- C. Different atomic numbers and mass numbers
- D. Same number of neutrons only

✓ **Answer: B**

44. Which pair represents isotopes?

- A. ^{12}C and ^{14}C
- B. ^{14}C and ^{14}N
- C. ^{23}Na and ^{24}Mg
- D. ^{35}Cl and ^{37}Ar

✓ **Answer: A. ^{12}C and ^{14}C**

45. Isotopes have the same number of:

- A. Neutrons
- B. Protons
- C. Mass units
- D. Nucleons

✓ **Answer: B. Protons**

46. Isotopes differ in their number of:

- A. Protons
- B. Electrons in neutral atoms
- C. Neutrons
- D. Atomic numbers

✓ **Answer: C. Neutrons**

47. Which is an important medical application of isotopes?

- A. Diagnosis and treatment of certain diseases
- B. Making ordinary water
- C. Increasing atmospheric oxygen
- D. Producing friction

✓ **Answer: A**

The new syllabus specifically highlights the use of isotopes in medicine.



SECTION H – ISOBARS

48. Isobars are atoms of:

- A. The same element with different mass numbers
- B. Different elements having the same mass number
- C. The same element having the same mass number
- D. Different elements having the same atomic number

✓ Answer: B

49. Which pair represents isobars?

- A. ^{40}Ar and ^{40}Ca
- B. ^{12}C and ^{14}C
- C. ^1H and ^2H
- D. ^{23}Na and ^{24}Na

✓ Answer: A. ^{40}Ar and ^{40}Ca

50. Isobars have the same:

- A. Atomic number
- B. Number of protons
- C. Mass number
- D. Number of electrons

✓ Answer: C. Mass number

51. Isobars have different:

- A. Mass numbers
- B. Atomic numbers
- C. Total nucleons
- D. None of these

✓ Answer: B. Atomic numbers



SECTION I – APPLICATION-BASED MCQs

52. An atom has 12 protons, 12 electrons and 12 neutrons. Its atomic number is:

- A. 12
- B. 24
- C. 36
- D. 0

✓ Answer: A. 12

53. For the same atom, its mass number is:

- A. 12
- B. 24
- C. 36
- D. 0

✓ Answer: B. 24

54. An atom has mass number 39 and atomic number 19. Its number of neutrons is:

- A. 19
- B. 20
- C. 39
- D. 58

✓ Answer: B. 20

55. Magnesium has atomic number 12 and mass number 24. The number of protons, neutrons and electrons respectively is:

- A. 12, 12, 12
- B. 12, 24, 12
- C. 24, 12, 24
- D. 12, 10, 12

✓ Answer: A. 12, 12, 12

The textbook itself uses magnesium with **mass number 24 and atomic number 12** as an application question.

56. An atom has electronic configuration 2, 8, 1. Its valency is:

- A. 8
- B. 1
- C. 2
- D. 7

 **Answer: B. 1**

57. An atom has electronic configuration 2, 8, 7. It is likely to:

- A. Gain one electron
- B. Lose seven electrons
- C. Gain seven protons
- D. Lose all electrons

 **Answer: A. Gain one electron**

58. Which particle determines the atomic number of an element?

- A. Electron
- B. Neutron
- C. Proton
- D. Nucleon

 **Answer: C. Proton**

59. Two atoms have the same atomic number but different mass numbers. They are:

- A. Isobars
- B. Isotopes
- C. Ions
- D. Molecules

 **Answer: B. Isotopes**

60. Two atoms have the same mass number but different atomic numbers. They are:

- A. Isotopes
- B. Isobars
- C. Ions
- D. Isomers

✓ **Answer: B. Isobars**



QUICK ANSWER KEY

Q	Ans.	Q	Ans.	Q	Ans.
1	B	21	B	41	B
2	C	22	B	42	B
3	B	23	B	43	B
4	C	24	B	44	A
5	B	25	B	45	B
6	A	26	B	46	C
7	B	27	B	47	A
8	B	28	C	48	B
9	B	29	A	49	A
10	D	30	B	50	C
11	B	31	A	51	B
12	B	32	B	52	A
13	C	33	B	53	B
14	B	34	C	54	B
15	C	35	A	55	A

16	B	36	A	56	B
17	A	37	B	57	A
18	C	38	B	58	C
19	B	39	A	59	B
20	D	40	C	60	B

★ MUST-REMEMBER FORMULAS & FACTS

Atomic Number

Atomic number = Number of protons

For a neutral atom:

Number of protons = Number of electrons

Mass Number

Mass number = Number of protons + Number of neutrons

Number of Neutrons

Number of neutrons = Mass number – Atomic number

Maximum Electrons in a Shell

Maximum number of electrons = $2n^2$

Isotopes

Same atomic number + different mass numbers

Isobars

Same mass number + different atomic numbers

Valency

Valency = combining capacity of an atom

HIGH-PRIORITY REVISION

 Dalton, Thomson, Rutherford & Bohr models

 Rutherford's nuclear model

 Bohr's energy levels

 Proton, electron & neutron

 Atomic number & mass number

 Finding protons, neutrons & electrons

 Electronic configuration K, L, M, N

 Valence electrons & valency

 Isotopes

 Isobars

 Average atomic mass

 Acharya Kanada and Parmanu

 James Chadwick and neutron discovery

These areas correspond directly to the new 2026–27 learning outcomes for Chapter 8.