

# Chemistry Class 9

## Structure of Atoms

### Important MCQs



1. Atoms are so \_\_\_\_\_ that they can only be visualized by a scanning tunneling microscope.

- A.large
- B.charged
- C.small**
- D.electronic

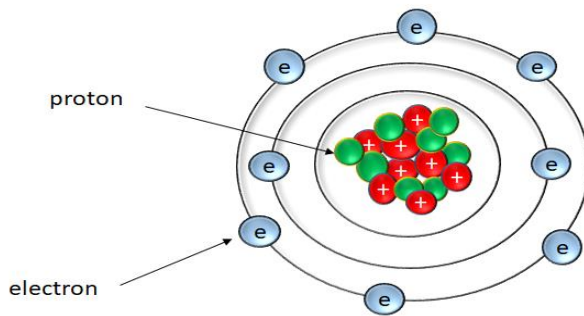
Answer: C

#### Note!!

A scanning tunneling microscope (STM) is a type of microscope used to capture atomic-level images of surfaces.

2. In 1911 \_\_\_\_\_ performed an experiment in order to know the arrangement of electrons and protons in an atom.

### Atom



A. Schrodinger

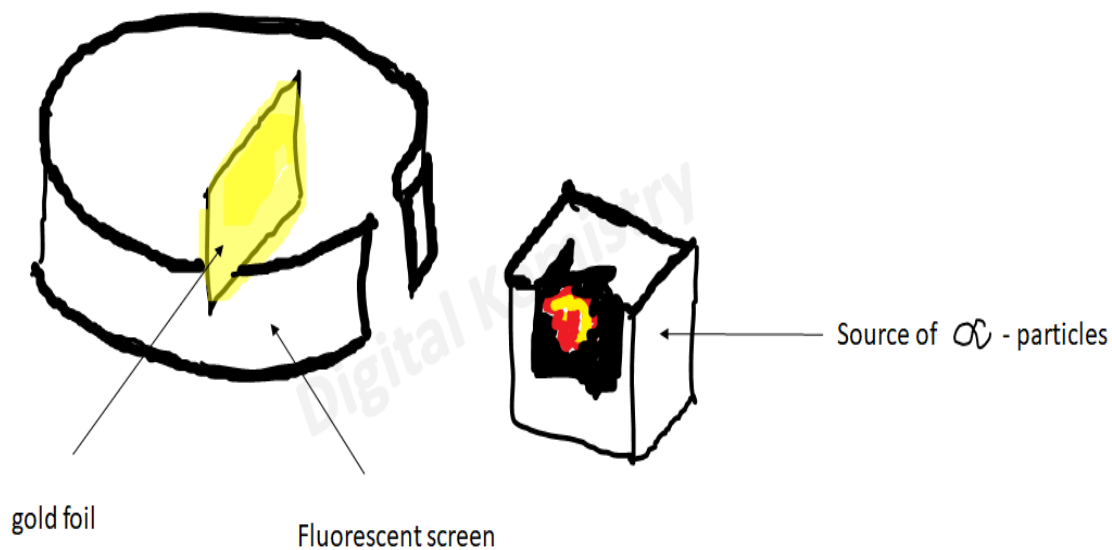
**B. Rutherford**

C. Bohr

D. Newton

Answer: B

3. Rutherford bombarded a very thin gold foil with \_\_\_\_\_ particles.



Alpha particles obtained from disintegration of polonium.  
Alpha particles are helium nuclei i.e.  $\text{He}^{++}$  is doubly positively charged.

**A. Alpha**

B. Beta

C. Gamma

D. Tera

Answer: A

4. Rutherford used alpha particles from the disintegration of \_\_\_\_\_

A. Boron

B. Silicon

C. Tin

D. Polonium

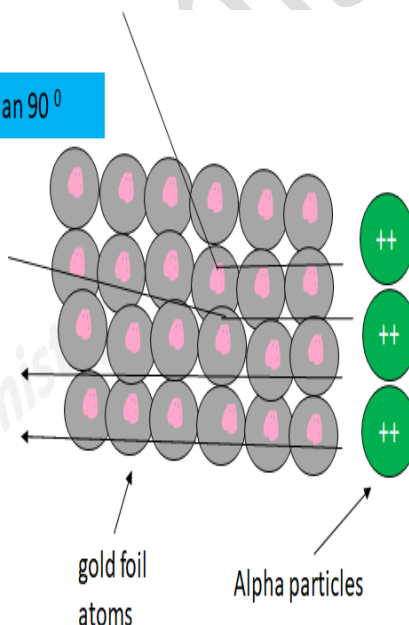
ANSWER : D

4. In Rutherford's experiment only one in one million (Alpha particle) was deflected through an angle greater than \_\_\_\_ from their straight path.

very few particles was deflected through an angle greater than  $90^\circ$

few particles are slightly deflected

most of the alpha particles pass straight



A.  $97^\circ$

B.  $90^\circ$

C.  $180^\circ$

D.  $100^\circ$

Answer: B

**6. On the basis of his (Rutherford) experiment he proposed a \_\_\_\_\_ model for an atom.**

- A. Geological
- B. Mathematical
- C. Planetary**
- D. None of these

Answer: C

**7. According to classical physics electron being charged particle will emit energy \_\_\_\_\_ while revolving around the nucleus.**

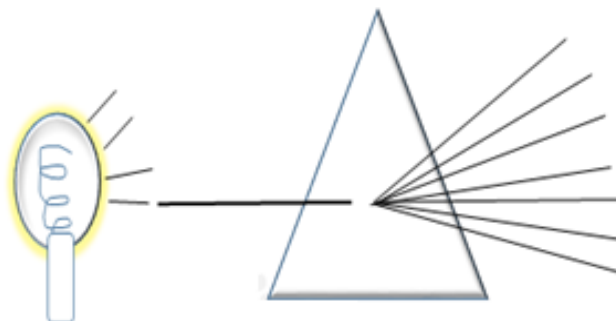
- A. Continuously**
- B. Discontinuously
- C. Slowly
- D. Both b & c

Answer: A

**8. If a revolving electron emits energy continuously it should form a \_\_\_\_\_ spectrum.**

- A. Line
- B. Continuous**
- C. Atomic
- D. None of the above

Answer: B



**Note !!**

- When white light is passed through a prism it is scattered into 7 colors.
- **Continuous spectrum:**
- In a continuous spectrum, different colors are diffused into one another and not separated by dark spaces.
- **Line Spectrum:**
- In the line spectrum, different colors are not diffused into one another and are separated by dark spaces.

**9. According to Bohr each orbit has a \_\_\_\_ energy.**

- A. Fixed
- B. Variable
- C. Large
- D. Minute

ANSWER: A

**10. According to Bohr energy of an electron is directly proportional to its \_\_\_\_ from the nucleus.**

- A. size
- B. distance**
- C. electronegativity

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D. none of the above

Answer: B

**11. Value of Plank's constant is \_\_\_\_**

A.  $6.626 \times 10^{-34}$  J.s

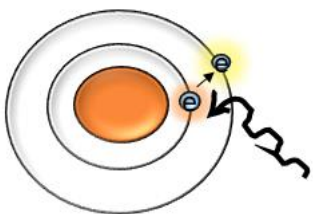
B.  $5.52 \times 10^{34}$  J.s

C.  $9.011 \times 10^{-31}$  J.s

D.  $1.6011 \times 10^{16}$  J.s

Answer: A

**12. An electron jumps from K shell to L shell in this the electron \_\_\_\_ energy.**



A. emits

B. donates

**C. absorbs**

D. none of these

Answer: C

**13. Electron present in a particular orbit does not \_\_\_\_ energy.**

A. absorbs

B. radiates

C. emits

**D. all of these**

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Answer: D

**14. According to Bohr  $mvr =$**

A.  $nh/2v$

B.  $nh/4\pi$

C.  $nh/4v$

**D.  $nh/2\pi$**

ANSWER: D

**15. Which one of the following is correct according to Bohr's model?**

A.  $\Delta E = E_3 - v$

**B.  $\Delta E = E_2 - E_1$**

C.  $\Delta E = F.s$

D. All of these

Answer: B

**16. Which of the following is true for isotopes?**

A. they have the same number of neutron

B. they have the same atomic mass

**C. they have the same atomic number**

D. all of these

Answer: C

**17. Isotopes have different atomic mass due to \_\_\_\_**

- A. different number of electrons
- B. different number of protons
- C. different number of neutron**
- D. different atomic number

Answer: C

**18. Isotopes are \_\_\_\_ alike.**

- A. chemically**
- B. physically
- C. neutral
- D. none of the above

ANSWER: A

**19. Physical properties of an element depend upon its \_\_\_\_.**

- A. Atomic number
- B. Protons
- C. Electrons
- D. Atomic mass**

Answer :D

**20. Atomic mass can also be called \_\_\_\_.**

- A. electron affinity
- B. mass number
- C. nucleon number
- D. both b & c**



Answer: D

**21. The first man to use the word “isotope” was \_\_\_\_.**

A. Einstein

**B. Sodday**

C. Newton

D. G.N Lewis

ANSWER: B

**22. Hydrogen has \_\_ isotopes.**

A. 4

B. 6

**C. 3**

D. 5

Answer: C

**23. Tritium has how many neutrons?**

A. 0

B. 1

**C. 2**

D. 3

Answer: C

**24. Melting point of heavy water is \_\_\_ °C.**

- A. 0
- B. 3.81**
- C. 4.3
- D. 5.4

Answer: B

**Note!!**

Heavy water (D<sub>2</sub>O) also referred to as deuterium oxide.

**25. The number of isotopes of carbon are \_\_\_**

- A. 2
- B. 4
- C. 3**
- D. 6

Answer: C

**26. Natural abundance of C-12 = \_\_\_**

- A. 98.8%**
- B. 99%
- C. 97%
- D. 99.7

Answer: A

**27. Chlorine has how many isotopes?**

- A. 3
- B. 4
- C. 5
- D. 2**

Answer: D

**28. Chlorine-37 occurs in nature at about \_\_\_\_%.**

- A. 75.78%
- B. 24.23%**
- C. 35%
- D. 65%

Answer: B

**29. Chlorine is fairly \_\_\_ in water.**

- A. insoluble
- B. soluble**
- C. reactive
- D. none of these

Answer: B

**30. Chlorine is a greyish \_\_\_ gas with a sharp pungent irritating smell.**

- A. pink
- B. blue
- C. red
- D. yellow**

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Answer: D

**31. If Uranium( $^{234}\text{U}$ ) has 92 protons then it has \_\_\_ number of neutrons.**

**A. 142**

B. 134

C. 122

D. none of the above

Answer: A

**32. Radioactive iodine -131 is used as a tracer in diagnosing \_\_\_ problem.**

A. ulcer

B. lungs

C. heart

**D. thyroid**

Answer: D

**33. Cobalt-60 is commonly used to irradiate \_\_\_ Cells in the hope of killing or shrinking the tumors.**

A. nerve

B. red blood cells

**C. cancer**

D. white blood cells

Answer : C

**34. As the value of n\_\_\_ the distance of an electron from the nucleus and the energy of the shell increases.**

**A. increases**

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- B. decreases
- C. stays the same
- D. All of these

Answer: A

**35. s sub-shell can accommodate maximum \_ electrons.**

- A. 3
- B. 4
- C. 2**
- D. 6

Answer: C

**36. f sub-shell can accommodate maximum electrons.**

- A. 14**
- B. 12
- C. 10
- D. 8

Answer: A

**37.  $1s < 2s < 2p < 3s < 3p < 4s < \underline{\hspace{1cm}}$**

- A. 3d**
- B. 4s
- C. 4p
- D. 5s

Answer: A

38.  $^{11}\text{Na} = 1s^2, 2s^2, 2p^6$  \_\_\_ .

- A.  $3p^1$
- B.  $3d^{10}$
- C.  $4s^1$
- D.  $3s^1$

Answer: D

39. Using Bohr's formula i.e  $2n^2$ , determine the number of electrons that can be added into M – shell .

- A. 12
- B. 18
- C. 8
- D. 28

Answer: B

40. If an element has 20 electrons how many sub-shells will it have?

- A. 2
- B. 3
- C. 4
- D. 6

Answer: D

41. \_\_\_ subshell is spherical shaped.

- A. s
- B. p

C. d

D. f

Answer: A

**42. \_\_\_ subshell has a very complicated shape.**

A. s

B. p

C. d

**D. f**

Answer: D

**43. Heavy water is made by using \_\_\_.**

A. protium

**B. deuterium**

C. tritium

D. none of these

Answer: B

**44. Boiling point of water is \_\_\_ .**

A. 101°C

**B. 100°C**

C. 102°C

D. 103°C

Answer: B

**45. L shell can accommodate a maximum of \_\_\_ electrons.**

A. 3

B. 2

**C. 8**

D. 6

Answer: C

**46. Which one of the following shell has the lowest energy?**

A. L

B. N

C. M

**D. K**

Answer: D

**47. How many neutrons are there in chlorine – 37 if it has 17 electrons?**

A. 21

**B. 20**

C. 19

D. 12

Answer: B

**48. d Sub shell has \_\_\_\_ shape.**

A. spherical

B. dumbell

**C. double dumbell**



D. none of them

Answer: C

**49. Keeping in mind the Auf Bau principle the electron will first enter into which subshell?**

A. 3s

**B. 1s**

C. 2s

D. 4s

Answer: B

**50. How many neutrons are there in  $^{27}\text{M}$  if its atomic number is 13?**

A. 12

B. 13

**C. 14**

D. 16

Answer: C