



CHEMISTRY

BOOKS - ARIHANT PUBLICATION JHARKHAND

ATOMIC STRUCTURE

Exam Booster For Cracking Exam

1. Milkman's oil drop experiment gives the value of

A. e

B. m

C. e/m

D. e-m

Answer: A



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2. Electron was discovered by

A. Crookes

B. JJ Thomson

C. Henry

D. Rutherford

Answer: B



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3. Alpha particle is

- A. helium atom
- B. joined helium molecule
- C. ionised helium atom
- D. double ionised helium atom

Answer: D

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4. Anode rays were discovered by

- A. Goldstein

B. J stenely

C. Rutherford

D. Thomson

Answer: A



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5. Cathode rays are made up of

A. postively charged particles

B. negatively charged particles

C. neutral particles

D. None of the above

Answer: B



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6. The size of nucleus is

A. $10^{-12}m$

B. $10^{-8}m$

C. $10^{-15}m$

D. $10^{-10}m$

Answer: C



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7. Neutron was discovered by

A. Rutherford

B. Langnuin

C. Chadwick

D. Austin

Answer: C



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8. Rutherford's scattering experiment is related to the size of the

A. nucleus

B. atom

C. electrons

D. neutrons

Answer: A



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9. Electromagnetic radiation with maximum wavelength is

A. ultraviolet

B. radiowave

C. X-rays

D. infrared

Answer: B



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10. First atomic model was proposed by

A. Rutherford

B. JJ Thomson

C. Bohr

D. Maxwell

Answer: B



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11. Neutron are present in all atoms except

A. He

B. C

C. H

D. N

Answer: C



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12. The wavelength of light having wave number 4000 cm^{-1} is

A. 10μ

B. 1.5μ

C. 2.0μ

D. 2.5μ

Answer: D



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13. Who modified Bohr's theory of introducing elliptical orbits for electron path?

A. Hund

B. Thomson

C. Sommerfied

D. Rutherford

Answer: C



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14. Number of electron is CO_2 is

A. 11

B. 22

C. 33

D. 44

Answer: B



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15. Bohr's theory is applicable to

A. H atom

B. He ion

C. Li^+ ions

D. All of these

Answer: D



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16. The electronic configuration of Cr is

A. 2,8,13,1

B. 2,8,14

C. 2,8,12,2

D. 2,8,10,4

Answer: A



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17. Relative mass of electron is

A. $1/1837$

B. $1/183$

C. $1/18$

D. $1/18367$

Answer: A

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18. The fundamental particle not present in nucleus is

A. electron

B. proton

C. neutron

D. None of these

Answer: A

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19. The value of Planck's constant is

A. $6.6 \times 10^{-32} \text{g}/\text{m}^2\text{s}$

B. $6.6 \times 10^{-34} \text{kg}/\text{m}^2/\text{s}^{-1}$

C. $6.6 \times 10^{-33} \text{kg}/\text{m}/\text{s}^{-1}$

D. $6.6 \times 10^{-34} \text{g}/\text{s}^{-1}$

Answer: B



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20. According to Dalton's atomic theory , the smallest particle which is capable of independent existence is

A. element

B. atom

C. molecule

D. ion

Answer: B



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21. Maximum number of electrons in first orbit may be

A. 2

B. 1

C. 8

D. 16

Answer: A



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22. Electromagnetic radiation with minimum wavelength is

A. cosmic rays

B. microwaves

C. γ -rays

D. X-rays

Answer: C



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23. Which has the smallest wave length ?

A. Red colour

B. Violet colour

C. yellow colour

D. Blur colour

Answer: B



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24. According to Bohr's model of an elements

A. $mvr = mh / 2\pi$

B. $mvr = 2\pi / nh$

C. $mvr = n^2 h^2 / 2\pi^2$

D. $mvr^2 = \frac{nh}{\pi}$

Answer: A



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25. According to Bohr's model of an element are

A. similar

B. different

C. identical

D. almost identical

Answer: B



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26. Which one of correct ?

A. $\pi = \frac{nh}{mvr \times 2}$

B. $\pi = \frac{2nh}{mvr}$

C. $\pi = \frac{2mvr}{nh}$

D. $\pi = \frac{mvr}{2nh}$

Answer: A



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27. Mn has electronic configuration

A. 2,8,8,7

B. 2,8,13,2

C. 1,8,14,1

D. 2,8,12,3

Answer: B



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28. The ratio of

r_n / r_0 (r_n = radius of nucleus and r_0 is radius of atom)

A. A

B. $A^{1/3}$

C. $A^{2/3}$

D. $A^{3/2}$

Answer: B



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29. Which fundamental particle has negative charge ?

- A. Electron
- B. Proton
- C. Neutron
- D. (a) and (b)

Answer: A



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30. If an electron moves from a higher orbit to the lower orbit then

- A. emission of energy takes place
- B. the size of atom increases
- C. absorption of energy takes place
- D. an electron in an atom moves without emission or absorption

Answer: A



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31. Consider the following statements in reference to the structure of atom

1. Isopes are the atoms of the same element having same atomic number but different mass - numbers .

2. Isobars are the atoms of different elements having different atomic number of different atomic number but same mass - number .

Which of above statement is/are correct ?

A. Only 1

B. Only 2

C. 2 and 3

D. All of these

Answer: C



32. Consider the following statements

Rutherford's alpha particle scattering experiment proved that nucleus

1. contains massive particles
2. is a positively charged centre
3. is quite stable

Which of these statements are correct ?

- A. 1 and 3
- B. 1 and 2
- C. 2 and 3
- D. All of these

Answer: A



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33. Consider the following statements in ${}_{38}^{90}\text{Sr}^{2+}$

1. Atomic number is 36 .
2. Number of electrons is 38.
3. Number of neutron is 52.
4. Neutron of proton is 38.

Which of these are correct ?

A. 1 and 2

B. 2 and 3

C. 3 and 4

D. 1 and 4

Answer: C



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34. Which one of the following pairs is correctly matched ?

A. (a) Mass spectrograph – Chadwick

B. (b) Atomic number – Mosely

C. (c) Neutron – Milkan's

D.

(d) Measurement of charge of an electron – Astron

Answer: B



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35. An atom has 7 electrons in its M-shell and contains 18 neutrons in its nucleus .What is its mass number ?

A. 25

B. 27

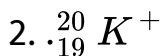
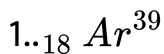
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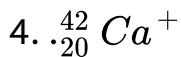
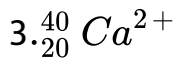
D. 43

Answer: C

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36. From amongst the following chemical species





The species having identical electronic configuration are

A. 1 and 2

B. 2 and 3

C. 3 and 4

D. All of these

Answer: D



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37. Emission of a beta particle from an atom

A. Increases the number of protons in the atom

B. Increases the number of neutrons in the atom

C. decreases the number of protons in the atom

D. does not change the number of neutrons and protons in the atoms

Answer: A

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38. Outermost orbit has electrons

A. 12

B. 11

C. 18

D. 8

Answer: D



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39. Which of the following principles/limits the maximum number of electrons in an orbital to two ?

- A. Aufbau's principle
- B. Pauli's exclusion principle
- C. Hund's rule of maximum multiplicity
- D. Heisenberg uncertainly principle

Answer: D





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40. The electronic configuration of iron (26) is

A. 2,8,14

B. 2,8,12,2

C. 2,8,10,4

D. 2,8,14,1

Answer: B



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41. The increasing order (lowest first) for the value of e/m (charge/mass) for electron (e), proton (p) neutron (n)

and alpha particle (α) is

A. e,p,n, α

B. n,p,e, α

C. n,p, α ,e

D. n, α ,p,e

Answer: D



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42. The discovery of neutrons became very late because

A. Neutrons are present in the nucleus

B. neutrons are fundamental particles

C. neutrons have no change

D. All of the above

Answer: C



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43. Which of the following statements is incorrect ?

A. Isobars possess same chemical properties .

B. Isotopes occupy same position in periodic table .

C. Isotopes possess same atomic number

D. In Isobars , the total number of protons and neutrons
in the nucleus is same .

Answer: A



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44. Nucleus contains

A. Only protons

B. Only neutrons

C. (a) and (b)

D. protons, neutrons and electrons

Answer: C



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45. Which is the correct statement ?

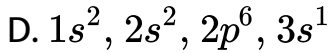
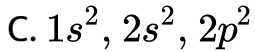
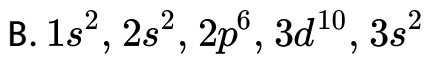
- A. Isotopes are always radioactive species .
- B. Beta rays are always negatively charged particles .
- C. Alpha rays are always negatively charged particles .
- D. Gamma rays can deflected by a magnetic field .

Answer: B

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46. Which of the following electronic configuration is not possible ?

A. $1s^2$



Answer: B



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47. If a certain element has an atomic number 19 , the element is

A. a metal with oxidation number +1

B. an inert gas

C. a non metal with oxidation number +3

D. a metal with oxidation number +3

Answer: A



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48. An element has atomic number 34. Its valency will be

A. 4

B. 6

C. 2

D. 3

Answer: C



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49. Graphite is used in nuclear reactors

- A. to reduce velocity of neutrons
- B. as a radiation shield
- C. for lining the inner surfaces of the reactors
- D. as a thermal insulator

Answer: A

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50. The rule which states that no two electrons can have same value of all the four quantum number is

- A. Paull's exclusion princples

B. Helsenburg's uncertainly principle

C. Aufbau principle

D. de - Brogile principle

Answer: A



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51. The rule which states that no two electrons can have same value of all the four quantum number is

A. $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^4, 4s^2$

B. $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^5, 4s^1$

C. $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4p^4$

D. $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 4p^4$

Answer: B



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52. An element M has atomic mass 19 and atomic number 9 .

Its ion is represented as



Answer: C



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53. Which of the following is correct sequence in terms of increasing mass ?

- A. Proton , electron alpha particle , hydrogen atom ,
alpha particle
- B. Electron , proton , hydrogen atom , alpha particle
- C. Hydrogen atom , proton , electron ,alpha particle
- D. Alpha particle , proton , hydrogen atom , electron

Answer: B



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54. The number of electrons is 1 an isotope of oxygen is

A. 8

B. 6

C. 12

D. 10

Answer: A



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55. The energy of sun is due to

A. fusion in uranium

B. fusion of hydrogen into helium

C. formation of helium by fusion of deuterium and tritium

D. fusion of deuterium and tritium

Answer: B

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56. M-shell contains sub shell

A. s,p, and d

B. s,p,d and f

C. Only s

D. s and p

Answer: A



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57. The atomic number of an element is 86 . The number of electrons present in the outer most orbit and the number of orbits are

A. 8 – 6

B. 8 – 7

C. 4 – 6

D. 7 – 7

Answer: A



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58. The half life period of a radioactive element is 4 s . What fraction of 100 g sample of this radioactive material will remain after 16 s ?

A. $1/64$

B. $1/4$

C. $1/16$

D. $1/32$

Answer: C



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59. Isotopes differ in

- A. the number of protons
- B. the valency electrons
- C. the chemical activity
- D. the number of neutrons

Answer: D

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60. A radioactive element has atomic number A and mass number M . It emits one α - particle. The atomic number and mass number of the new element will be

- A. $A-2, M-4$
- B. $A-2, M$

C. A,M-2

D. A-4,M-2

Answer: A



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61. The element obtained by emission of β - particle from is

A. ${}_{92}Pa$

B. ${}_{91}Pa$

C. ${}_{90}Pa$

D. ${}_{90}Pa$

Answer: B

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62. The half life of a radioactive isotope is 44 days . In how many days 1.0 g will be reduced to 62.5 mg ?

A. 275 days

B. 704 days

C. 353 days

D. 176 days

Answer: D

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63. The atomic weight of an element is 39. The number of neutrons in its nucleus is one more than the number of protons. The number of protons, neutrons and electrons respectively in its atom would be

A. 19,20,19

B. 19,19,20

C. 20,21,19

D. 20,19,20

Answer: A



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64. The half life period of radium is 1600 years . In how many years 1 g radium will be reduced to 0.125 g ?

A. 1600

B. 3200

C. 4800

D. 800

Answer: C



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65. A radioactive isotope having a half life of 3 days was received after 12 days. It was found that there were 3 gm of

the isotopes in the container. The initial weight of the isotope when packed was a)12 gm b)24gm c)36 gm d)48 gm

A. 12 g

B. 24 g

C. 36 g

D. 48 g

Answer: D



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66. Atomic number of an element is 30 and its atomic weight is 65 . The number of protons and neutrons are

A. 30 and 65

B. 35 and 30

C. 35 and 65

D. 30 and 35

Answer: D



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