Lakhmir Singh Class 9 CBSE Chemistry Text Book Page No 193
Answers
Solution 35
Protons are positively charged particle found in the atoms of all the elements.
Relative mass of proton is 1u.
Relative charge of proton is +1 C.
Solution 36

Absolute mass of proton - 1.6×10^{-27} Kg
Absolute charge of proton - 1.6×10^{-19} C

Solution 37
Difference between proton and neutron-
(1) Proton is positively charged while electron is negatively charged.
(2) Proton is much heavier than electron.
Solution 38
Two observations which shows that atom is not indivisible are-
(1) In J. J. Thomson's experiment, the stream of cathode rays in the gas discharge tube shows the presence of negatively charged subatomic particles called electrons.
(2) In Goldstein's experiment, the faint red glow in the gas discharge tube shows the presence of positively charged subatomic particles called protons.
Solution 39
(i) Formation of cathode rays tells about the presence of negatively charged electrons in all the atoms.
(ii) Formation of anode rays tells about the presence of positively charged protons in all the atoms.
Solution 40
The arrangement of electrons in various shells of an atom of the element is known as electronic configuration of the element.
Electronic configuration of oxygen (atomic no. = 8) is (2,6)
Solution 41
Electronic configuration of element with atomic no. 12- (2,8,2)
So, K-2 ; L-8 ; M-2
Solution 42
(a) Nucleus is a small positively charged part at the center of an atom. Nucleus is positively charged.
(b) Rutherford discovered nucleus of an atom.
Solution 43
Alpha - particles were used by Rutherford in his experiment on the discovery of nucleus.
Alpha - particles have +2 units of charge.
Solution 44
(a). There are 13 e^- in each atom of the element.
(b). Electronic configuration of given element - (2,8,3)
K-2 ; L-8 ; M-3
Solution 45
Atomic No. - 18
Electronic configuration - (2,8,8)
The special thing about the outermost shell is that it is completely filled with the electrons.
Solution 46
The neutron is a neutral particle found in the nucleus of an atom. Its

relative mass is 1 u. It has no charge.
Solution 47
Electron has relative mass of 1/1840 u, proton has 1u and neutron also has 1u.
Electron has relative charge of -1u, proton has +1u and neutron has 0 relative charge.
Solution 48
Protons are positively charged particle found in the atoms of all the elements whereas neutron is a neutral particle found in the nucleus of an atom.
Solution 49
Electron has relative mass of 1/1840 u and proton has relative mass of 1u.
Electron has relative charge of -1u while proton has +1u of relative charge.
Solution 50
Proton has relative mass of 1u and neutron also has relative mass of 1u.
Proton has relative charge of +1u and neutron has no relative charge.
Solution 51
Electron has relative charge of -1 u whereas neutron has no relative charge.
Also, electron has relative mass of 1/1840 u and neutron has relative mass of 1 u.
Solution 52
Protons and neutrons are collectively present in the nucleus at the center while electrons revolve rapidly round the nucleus in fixed circular orbits called energy levels.
Solution 53

ATOMIC NO.	MASS NO.	PROTONS	NEUTRONS	ELECTRONS	SYMBOL
10	22	10	12	10	Ne

Solution 54

NO. OF PROTONS	NO. OF NEUTRONS	MASS NO.	ATOMIC NO.	NO.OF ELECTRONS	SYMBOL
11	12	23	11	11	Na

Solution 55
(a) The stream of particles coming out from cathode (negative electrode) are called cathode rays. Cathode rays are negatively charged.
(b) When electricity at high voltage is passed through a gas at very low pressure taken in discharge tube, stream of minute particles are given out by the cathode. These stream of particles are called cathode rays.
(c) The conclusion is that all the atoms contain negatively charged particles called electrons.
Solution 56
(a) According to Thomson model of atom- An atom consists of a sphere of positive charge with negatively charged electrons embedded in it. The positive and negative charges in an atom are equal in magnitude. Neutron was not present in the Thomson model of atom.
(b) When mass no. is 18 and no. of electrons is 7 then
(i) No. of protons = 7
(ii) No. of neutrons = 18 - 7 = 11
(iii) Atomic no. = 7
Solution 57
(a) Rutherford's model of atom:
1. An atom consists of positively charged, dense and very small nucleus containing all the protons and neutrons. Almost all the mass of atom is concentrated in the nucleus.
2. The nucleus is surrounded by negatively charged electrons. The

electrons are revolving at very high speed round the nucleus in fixed circular orbits.
3. The electrostatic attraction between the positively charged nucleus and negatively charged electrons keep the atom held together.
4. An atom is electrically neutral.
5. Most of the space in an atom is empty.
The major drawback of Rutherford model of atom is that it does not explain the stability of the atom.
(b) Given: Mass no. = 23
No. of electrons = 11
Then, no. of protons = 11
No. of neutrons = 23 - 11 = 12
Atomic no. = 11
Solution 58
(a) Bohr's model of atom:
1. An atom is made up of three particles, namely electrons, protons and neutrons.
2.The protons and neutrons are located in the small nucleus at the center of atom.
3. Electrons revolve round the nucleus in fixed circular orbits.
4. Maximum no. of electrons for any given shell is fixed. Any shell cannot exceed that maximum value.
5. Each given shell is associated with fixed amount of energy.
6. There is no change in energy of electrons as long as they keep revolving in the same energy level, and the atom remains stable.
(b) Given: Atomic no. = 11
Mass no. = 23
Then, electronic configuration - (2,8,1)
Nuclear composition is - 11 protons and 12 neutrons

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Solution 59
(a) (i) Atomic no. is the number of protons in one atom of an element.
(ii) Mass no. is the total number of protons and neutrons present in one atom of the element.
Example- The total no. of protons in a carbon atom is 6, so its atomic no. is 6.
Also, one atom of Na contains 11 protons and 12 neutrons, so its mass no. is 23.
(b) Mass No. = Atomic no. + No. of neutrons
(c) No. of neutrons = Mass No. - Atomic no.
= 24 - 12 = 12
Solution 71
(i) Mass no. = 31
(ii) Atomic no. = 15
(iii) E.C. = (2,8,5)
Solution 72
(a) E.C. - (2,8,7)
(b) Atomic No. = 17
(c) Non-metal
(d) Anion; X^-
(e) X must be Chlorine
Solution 73
(a) Atomic no. = 3
(b) Mass no. = 3 + 4 = 7
(c) E.C. - (2, 1)
(d) Metal
(e) Cation will be formed; because outermost single electron can be easily donated.
(f) E+
(g) Lithium

********** END **********