

01

The particles present in four atoms are given below in the table.

Atoms	Particles in one atom		
	Neutrons	Protons	Electrons
P	10	10	10
Q	12	11	11
R	12	10	10
S	12	12	?

- (a) (i) How many electrons are there in one atom of S ?
(ii) What is the nucleon number of S ?
(iii) Identify atom S and give its correct symbol.
- (b) Which atoms are isotopes ?

- (a) (i) 10 electrons
(ii) $12 + 12 = 24$
(iii) Magnesium (proton number 12); Mg
- (b) P and R because they have the same proton number but different nucleon numbers.

02

Use the information given below in the table to answer the following questions.

Elements	P	Q	R	S	T	U
Proton number	7	8	10	12	15	18

- Which of these elements have three filled electron shells ?
- Which of these elements have a complete outer shell ?
- Which of these elements have 5 valence electrons ?
- Which of these elements has a dual valency ?

- U (2, 8, 8)
- R (2, 8) and U (2, 8, 8)
- P (2, 5) and T (2, 8, 5)
- T (3, 5)

03 The table given below shows the information of five elements P, Q, R, S and T.

Elements	Atomic number	Nucleon number	Electronic configuration
P	4	9	
Q	19	39	
R	17	35	
S	8	16	
T	18	40	

- Write the electronic configuration of elements P to T in the last column of the above table.
- Which elements are poor conductors of electricity ?
- Which element has an octet electronic structure ?
- Which element has the least number of valence electrons ?

- (a) P: 2, 2 Q: 2, 8, 8, 1
 R: 2, 8, 7 S: 2, 6
 T: 2, 8, 8
- (b) R, S and T
- (c) T
- (d) Q

04

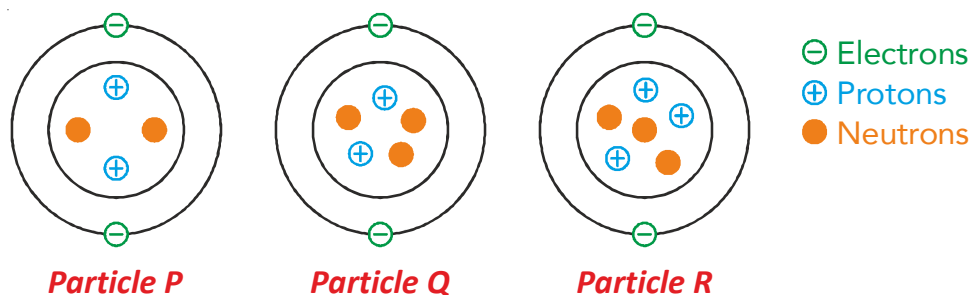
One of the isotopes of an element X has a proton (atomic) number of 16 and a nucleon (mass) number of 32.

- (a) What is meant by the term isotopes ?
- (b) The other isotope is X-36. complete the table given below about this isotope

Number of protons	
Number of neutrons	
Number of electrons	
Electronic configuration	

- (a) They are the atoms of the same element with different number of neutrons. /They are atoms with the same number of protons but different number of neutrons./ They are the atoms of the same element with different mass number.
- (b) Protons - 16; Neutrons - 20; Electrons - 16;
Electronic configuration -2, 8, 6

05 The diagrams given below show the atomic structures of different particles.



- (a) (i) Name the term that describes the relationship between particles P and Q.
- (ii) Give one similarity and one difference between particles P and Q.
- (b) (i) State one similarity of particles P, Q and R.
- (ii) Does particle R have the similar relationship with particle P the same way as particle Q with particle P in (a) (i) ? Explain your answer.

- (a) (i) Isotopes
- (ii) They have similar chemical properties.
They have different boiling points.
- (b) (i) They have a duplet electronic configuration.
- (ii) No. Particle P has two protons while particle R has three protons. This shows that they are different elements.