

NAME: _____
BLOCK: _____
DATE: _____

ATOMIC STRUCTURE TEST

PART I- Atomic Model

1. In detail discuss the following atomic models (2 marks each)

a) Rutherford Model:

b) Dalton Model:

PART II - Atomic Structure

2. How was the electron discovered? What evidence proved that the beam was actually a particle beam and not a beam of light? (2 marks)
3. What is the difference between an isotope and an ion? (2 marks)
4. In terms of atomic structure, what is an atom's atomic number?
5. What distinguishes an atom of nitrogen from an atom of oxygen?

6. Complete the following table: (5 marks)

SYMBOL	CHARGE ON ION	NUMBER OF PROTONS	NUMBER OF ELECTRONS	NUMBER OF NEUTRONS
$^{133}_{55}\text{Cs}$	0			
$^{115}_{48}\text{Cd}$	2+			
$^{35}_{17}\text{Cl}^-$	1-			19
$^{40}_{20}\text{Ca}^{2+}$	2+			20
$^{205}_{81}\text{Tl}$	0			113

PART III - The Bohr Model

7. State the number of electrons found in each of the energy levels in the Bohr model. (1 mark)

8. Draw the Bohr Model of the atom for each atom/ion indicated. (3 marks each)

a) S

b) Mg ion

9. A general comparison between the electron configurations of ions and noble gases is: _____

PART IV - The Quantum Mechanical Model

10. Write the ground state electron configuration of chlorine and chromium (Cr) atoms, labelling core electrons and outer electrons. (2 marks)

11. Describe the Bohr model of the atom. What initial evidence was there that Bohr's theory might be correct? Why was his theory eventually discarded? (3 marks)

12. How do the 1s and the 2s orbital differ? How are they alike? (2 marks)

13. Using the quantum mechanical model, write the electron configuration for the following (5 marks)

ELEMENT/ION

ELECTRON CONFIGURATION

oxygen

fluoride ion (F^{-1})

sodium ion (Na^{+})

Sn

nitrogen ion (N^{3-})

***** BONUS *****

Chemically speaking how does a T.V. work? (2 marks)

