Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Atomic Structure (Standard Demand)

Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

Some street lamps contain sodium.

Below are two isotopes of sodium.

$^{23}_{11}Na$ $^{24}_{11}Na$

(a) What are isotopes?

_____

_____

_____

_____

(2)

(b) How many protons and neutrons are in a nucleus of $^{23}_{11}Na$?

Number of protons = _____

Number of neutrons = _____

(2)

(c) The sodium atoms emit light.

What would cause light to be emitted from a sodium atom?

Tick **one** box.

Electrons being emitted from the nucleus.	☐
Electrons falling to a lower energy level.	☐
Electrons leaving the atom when it is ionised.	☐
Electrons moving to a higher energy level.	☐

(1)

(d) In a street lamp, solid sodium is melted and vaporised.

Downloaded from www.merit-minds.com

Describe how the arrangement of the sodium atoms changes as the sodium goes from solid to liquid to gas.

_____

_____

_____

_____

_____

_____

_____

_____

(4)

The table shows the power ratings of some types of sodium lamp.

Type of sodium lamp	Power in Watts
A	35
B	50
C	70
D	100
E	150

(e) Some main roads are lit by type **E** sodium lamps.

Calculate the energy transferred by one type **E** sodium lamp in 1 hour.

_____

_____

_____

_____

_____

Energy transferred = _____ J

(3)

(f) Many housing estates are lit by type **A** sodium lamps.

Suggest **two** advantages of using type **A** sodium lamps on housing estates.

1. _____

2. _____

(2)

(Total 14 marks)

Downloaded from www.merit-minds.com

Q2.

Alpha particles, beta particles and gamma rays are types of nuclear radiation.

(a) Describe the structure of an alpha particle.

_____

_____

(1)

(b) Nuclear radiation can change atoms into ions by the process of ionisation.

(i) Which type of nuclear radiation is the least ionising?

Tick (✔) **one** box.

alpha particles ☐

beta particles ☐

gamma rays ☐

(1)

(ii) What happens to the structure of an atom when the atom is ionised?

_____

_____

(1)

(c) People working with sources of nuclear radiation risk damaging their health.

State **one** precaution these people should take to reduce the risk to their health.

_____

_____

(1)

(Total 4 marks)

Downloaded from www.merit-minds.com