Student's name ……

Chemistry

April/May

1 hour and 30 minutes

Paper 1

THE CHEMISTRY DEPARTMENT

S.5 End of term one

Instructions

This paper consists of three compulsory items

Attempt all items

All answers should be written in the spaces provided

No extra answer sheets should be used

Non programmable scientific calculators may be used

Where necessary use

Fe =56, C=12, H=1, O=16, S=32

For scorers use only

1	2	3	Total

1.In the process of making anti acids to treat heartburn using magnesium, the pharmacist was tasked by the pharmaceutical company to determine the actual relative atomic mass of the magnesium sample. Using the mass spectrometer, he analyzed the sample and recorded the information below.

Isotopes	Isotopic masses	Relative abundance (%)
Mg-24	23.985	78.99
Mg-25	24.986	10.00
Mg-26	25.983	11.01

Task

a) As a young chemist, explain to your group discussion members the meaning of

i)Isotopes (1 score)

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ii) Relative abundance (1 score)

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ii) Relative atomic mass (1 score)

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b) Determine the actual relative atomic mass of magnesium (2 scores)

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2. Lithium, carbon, oxygen and fluorine with atomic numbers 3,6,8 and 9 can randomly bond with each other at right conditions to form products of different properties depending on the types of bonds found in those compounds. These properties determine their application in daily life.

Task

a) Using the outermost energy levels only, show how lithium and oxygen, carbon and oxygen, carbon and fluorine atoms can bond (3 scores)

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b) Draw and name the structures adopted by compounds formed between carbon and oxygen and carbon and fluorine (3 scores)

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c) suggest the physical states of the substances formed between lithium and oxygen and carbon and fluorine. Explain your response (4scores)

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3. Scientists left a radioactive substance in a nuclear plant to decay but radioactive wastes were released into the nearby environment due to a leak. The local authorities are concerned about the potential health risks to the community. Measurements indicate that the leak is emitting radiations.

Task

a) Help the local people understand the types of radiations emitted by the radioactive sample and how they affect the nuclei of radioactive substances (3 scores)

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b) Help the local people understand the potential risks associated with exposure to this waste and how they can mitigate them (3 scores)

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c) A senior radiographer informed the local people that radioactivity is important but the local people were confused. Help them understand the importance of radioactivity.

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END

Habt einen schonen feiertag

Tr Brown