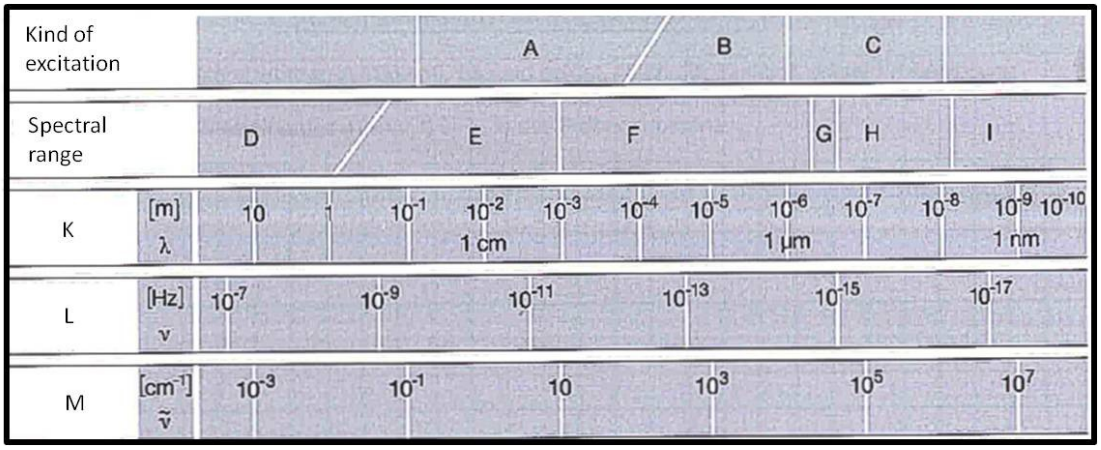
Questions from the "PAL Prüfungsbuch"
Application of Spectroscopic Methods
All tasks are to be scored with 10 to 0 points

2:
Given are the following terms:

Wave number	UV-range
Frequency	X-ray
Radio waves	Rotations
Micro waves	Vibration respectively vibration rotation
IR-range	Electron transition

Assign these terms to the remaining letters A to M in the electromagnetic given below spectrum like it is shown by the two given examples



A		G	VIS-Range
B		H	
C		I	
D		K	Wave length
E		L	
F		M	

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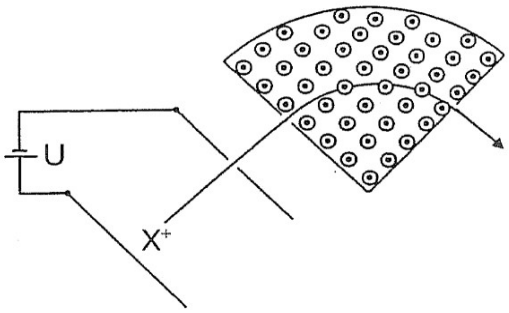
3:

1. What is the function of a monchromator in an UV/VIS-spectral photometer?
2. Name **two** types of monochromators and specify their functional principle and mode of action, respectively.

6:

Describe how the path of the particle is changed in the adjoining pictured sector field by the following modifications



1. Decreasing the acceleration voltage
2. Increasing the magnetic flux density
3. Usage of the ion X^{2+}
4. Usage of the molecule ion X_2^+

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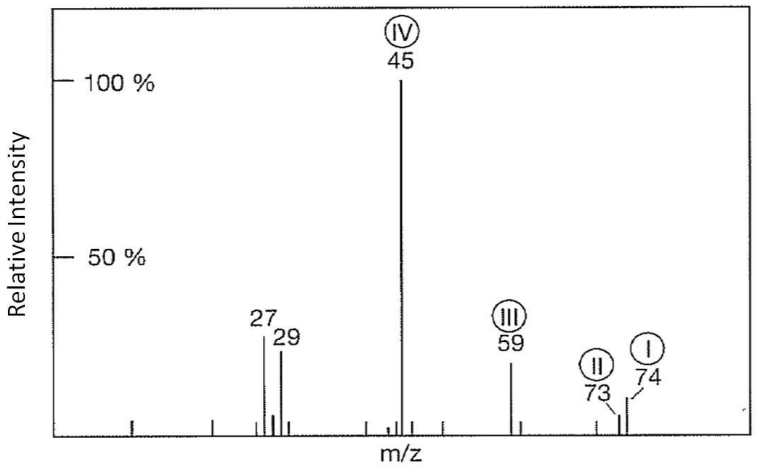
7:

The adjoining design shows the mass spectrum of the compound C_4H_9OH.
Explain the signals I - IV and make a statement about the distribution of the intensity of the signals II to IV



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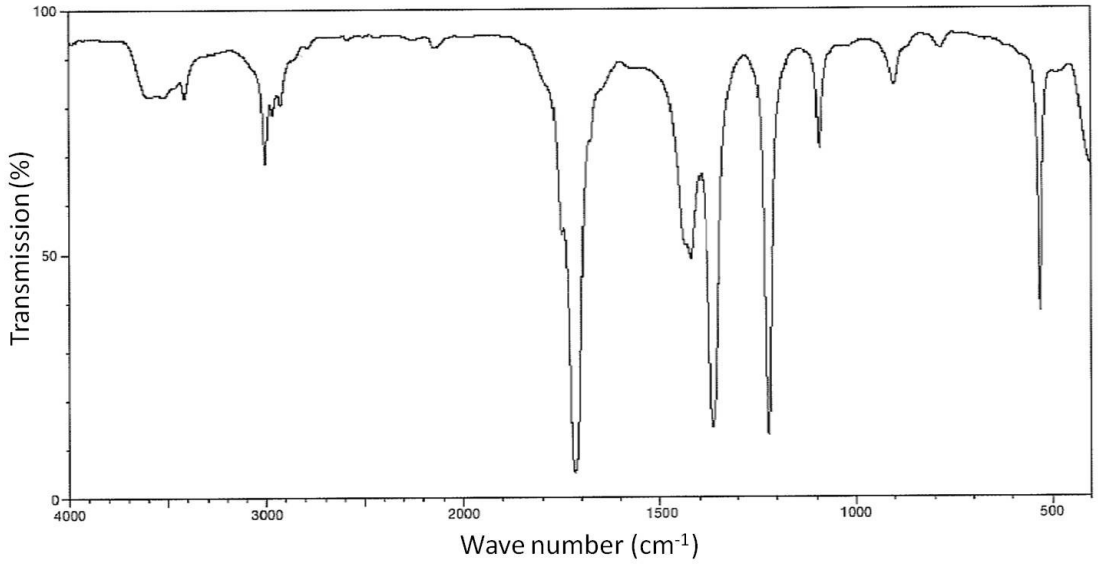
9:

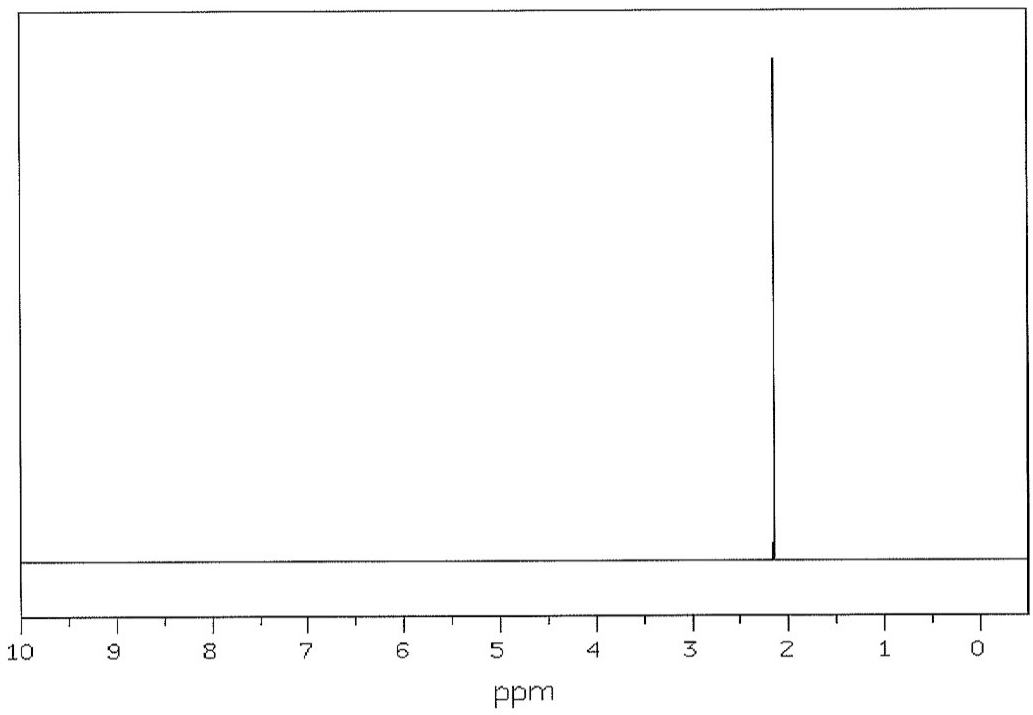
The elementary analysis of an unknown substance shows a content of 62.07 % C; 10.35 % H and 27.58 % O.

Identify the substance using the following three spectra as well as the elementary analysis. Specify the structural formula and the name of the substance.

Explain your answers (please use the writing space on the opposite page)

M(C) = 12.0 g/mol; *M*(O) = 16.0 g/mol; *M*(H) = 1.0 g/mol





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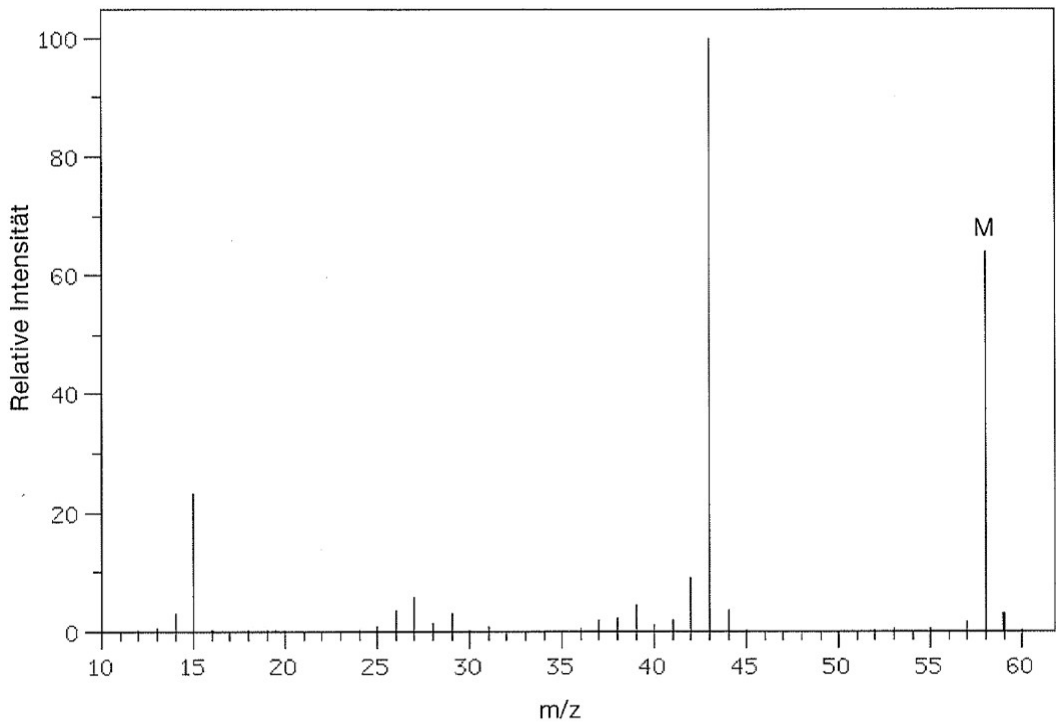

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