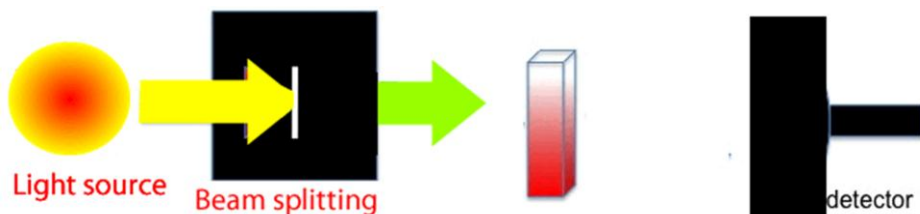# Exercise in UV-visible spectrometry

The absorbance of several standard solutions was analysed using a UV-visible spectrometer pictured below.

Concentration of I_2 % ($^m/_v$)	Absorbance
0.000	0.033
0.100	0.133
0.300	0.333
0.600	0.633
0.700	0.514
0.900	0.933

A 10.45 g sample of fish meat was analysed for iodine (I_2) contamination. It was placed in a blender for 10 minutes after which distilled water was added to bring the volume to 50.00 mL. A 30.00 mL sample of the mixture in the blender was filtered to remove all solid particles. 2.00 mL of the filtrate was placed in a flask with 18.00 mL of a starch solution. A 2.00 mL sample of this final solution was analysed using the same UV-visible spectrometer as that used above. The absorbance of the sample was 0.142.

1) Using the graph paper provided construct a calibration curve for the equipment used.

4 marks

2) Explain why the calibration curve does not pass through the point (0,0)

2 marks

3) Calculate the molarity of I_2 (atomic mass of I = 126.90) in the 2 mL sample analysed in the UV-visible spectrometer.

2 marks

4) Calculate the mass of Iodine (I_2) in the fish sample.

4 marks

5) Calculate the concentration of I_2 in the fish sample in
   - $\%\ (^m/_m)$

   - ppm

2+2 = 4 marks