1. How does the liquid stationary phase separate organic compounds? (1 mark)
2. What is the mobile phase when in GC-MS? (1 mark)
3. What kind of mixtures is GC-MS useful for separating? (1 mark)
4. A mixture of ethyl ethanoate, propyl ethanoate, ethanol and hexane is analysed by GC-MS. Suggest the order in which the substances would be eluted and indicate what the output from the GC-MS would be. (7 marks)
8. Answers

8.5 13C NMR spectroscopy

8.6 Molecular true or false

8.7 Thin layer chromatography

1 and 2 as above total = 5 marks
3. Measurement from origin to centre of spot (1 mark), measurement of origin to solvent front (1 mark) division of measurement 1 by measurement 2 (1 mark)
4. UV light (1 mark) and staining/names stain such as DNP/DCPIP (1 mark)

8.8. Gas Chromatography – Mass Spectrometry
1. (relative) solubility (1 mark)
2. The gas stream (1 mark)
3. Mixtures of volatile organic compounds (1 mark, QoL for volatile)

4.

✓ Ethanol first
✓ Hexane last
✓ Each substance appears as a single peak
✓ m/z for each ethyl ethanoate (88), propyl ethanoate (102), ethanol (46), hexane (96) (1 mark each)