



Barber & Rostron: Pharmaceutical Chemistry

Chapter 11: Multiple choice questions

Results

You have answered 5 out of 10 questions correctly.

Your percentage score is 50%.

Question 1

Which of the following statements is correct?

Your answer:

a) Medicines used in the UK must meet the standards of the BP.

Correct answer:

d) Medicines used in the UK must have received a product license from the MHRA.

Feedback:

Product licenses for medicines to be used in the UK are issued by the MHRA. Pharmacopoeial standards relate to the standards expected of a medicinal product during manufacture and its shelf-life.

Page reference: 297

Question 2

Which of the following wavelength ranges is associated with UV spectroscopy?

Your answer:

b) 400 - 100nm

Feedback:

0.8 - 500µm is in the IR spectroscopy range, 380 - 750nm is the visible spectroscopy range and 0.01 10nm is the X-ray range.

Page reference: 299

Question 3

Which of the following compounds does not absorb light in the UV/visible spectrum?

Your answer:

c) Chloral hydrate

Feedback:

In order to absorb light in the UV/visible spectrum, a molecule must possess a chromophore e.g. a benzene ring or conjugated double bonds. Chloral hydrate does not possess a chromophore.

Page reference: 301

Question 4

20 Carbamazepine tablets were found to weigh 10.000g in total. The tablets were ground to a fine powder using a pestle and mortar. A 0.3000g sample of the powder was boiled with 25ml ethanol for a few minutes. The hot mixture was stirred in a closed flask for 10 minutes and filtered through sintered glass. The flask and filter were washed with ethanol and the washings combined with the filtrate. The cooled mixture was made up to 100ml with ethanol. 5ml of the ethanol extract was diluted to 250ml with ethanol and the absorbance of the resulting solution was found to be 0.588 absorbance units at a wavelength of 285nm. What was the content of a single tablet if the $A_{1\%,1\text{cm}}$ was 490?

Your answer:

d) 120mg

Correct answer:

c) 100mg

Feedback:

Using the Beer-Lambert law expressed in grammes and following the principles involved in the example calculation on page 302 should enable you to arrive at the correct answer of 100mg (don't forget about the dilutions).

Page reference: 302

Question 5

A series of 3 coloured glass plates of equal thickness are placed in a light beam. Each sheet absorbs one quarter of the light incident upon it. What is the intensity of the light transmitted by the third glass plate?

Your answer:

b) 42.19%

Feedback:

As each plate absorbs one quarter of the incident light, it is simply a matter of multiplying by 0.75 on three consecutive occasions.

Page reference: 300

Question 6

In infrared spectroscopy which frequency range is known as the fingerprint region?

Your answer:

a) 400 - 1400cm⁻¹

Correct answer:

b) 1400 - 900cm⁻¹

Feedback:

The fingerprint region of an infrared spectrum, which is characteristic for each individual compound, is between 1400 and 900cm⁻¹.

Page reference: 305

Question 7

In which region of the infrared spectrum would you expect to find a peak characteristic of a triple bond stretch?

Your answer:

b) 2500 - 2000cm⁻¹

Feedback:

Carbon - carbon and carbon - nitrogen triple bond stretching absorbs in the 2500 - 2000cm⁻¹ range.

Page reference: 305

Question 8

In a chromatographic separation, which of the following indices is most appropriate for the qualitative identification of a substance?

Your answer:

c) Retention time

Correct answer:

a) Relative retention factor R_{rel}

Feedback:

The relative retention factor is a means of comparing the retention factor for a component with that of an authentic sample of the suspected substance.

Page reference: 320

Question 9

Which of the following techniques would be most useful to identify and quantify the presence of a known impurity in a drug substance?

Your answer:

d) HPLC

Feedback:

NMR, MS and IR are generally not able to be used quantitatively in mixtures of compounds. HPLC, however, is able to separate the compounds and quantify them, if authentic samples are available.

Page reference: 303-322

Question 10

Which of the following assays could not be performed by gas chromatography?

Your answer:

c) Characterisation of raw materials for drug synthesis

Correct answer:

d) Analysis of intravenous sodium chloride infusion

Feedback:

In order to be analysed by GLC, compounds must be able to be easily volatilised. Volatile oils, drugs, metabolites and raw materials for drug synthesis are all relatively volatile. Sodium chloride is not volatile.

Page reference: 323
