WANYANGE GIRLS SEC. SCHOOL

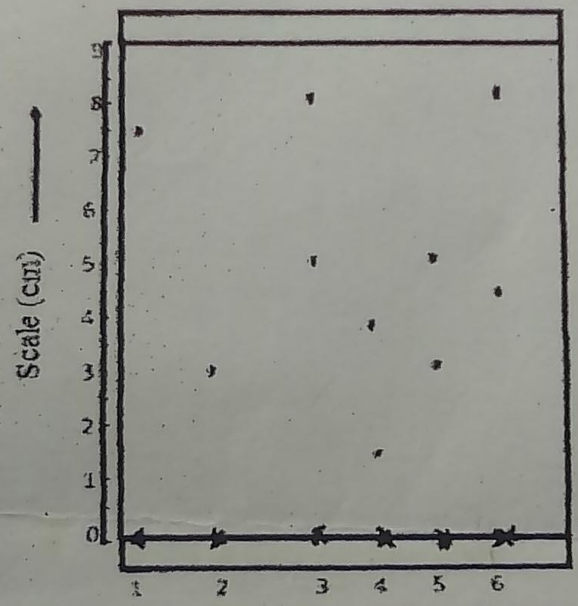
S4 HOLIDAY PACKAGE

1. (a) (i) Define the term chromatography?

(ii) State the principle of chromatography.

(b) Chromatography is used by the 'International Olympics Committee Forensic Laboratory' to test for presence of illegal drugs such as cocaine and "kubba' in atheletes.

A concentrated sample of urine of the athelete is spotted onto chromatography paper on the base line. A chromatogram of urine from four athletes is shown below:



Spot	Description
1.	Cocaine
2.	'Kubba'
3.	Urine sample for Johnson
4.	Urine sample for Stallone
5.	Urine sample for Brown
6.	Urine sample for Bruce

Explain the meaning of the following terms in relation to chromatography: (2marks each)

(i) 'Solvent'

(ii) Base line

(iii) Solvent front

(iv) Chromatogram

(c) The results for known drugs are given as "R_f values'

$$R_f \text{ value} = \frac{\text{distance travelled by the substance}}{\text{distance travelled by the solvent}}$$

Calculate the R_f value for

(i) Cocaine (2marks)

(ii) 'Kubba' (2marks)

(c) State factors which determine the distance a substance travels up the paper (2marks)

(e) From the results, the sample from one athlete contains an illegal substance. State the name of the athlete and the drug present. (2marks)

(f) Give one other example of application of chromatography (1 mark)