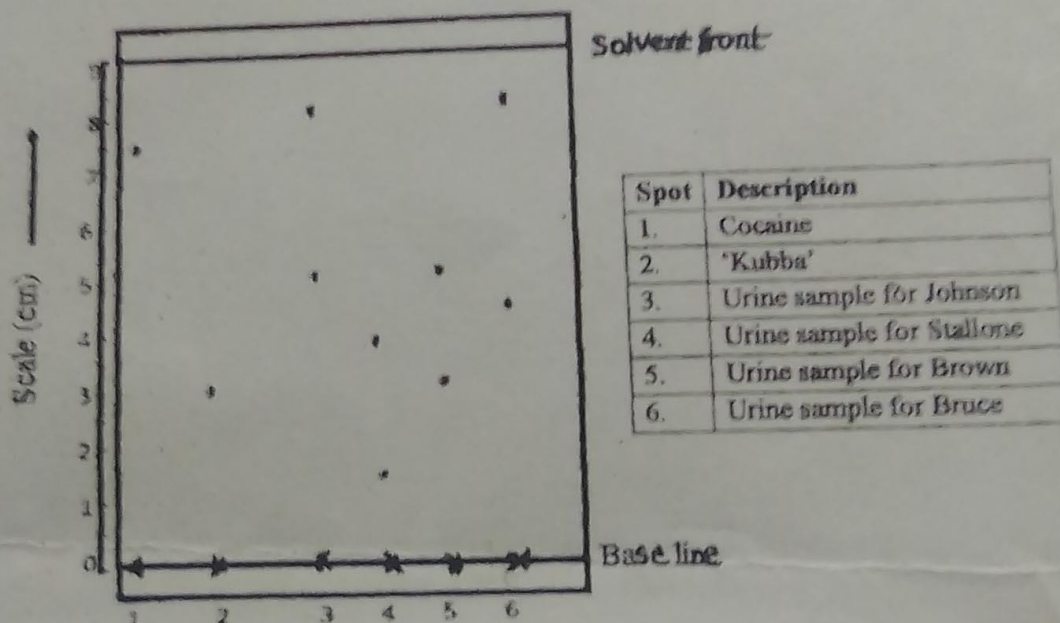


**WANYANGE GIRLS SEC. SCHOOL**  
**S2 HOLIDAY PACKAGE**

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



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)
- (Give one other example of application of chromatography) (1 mark)*