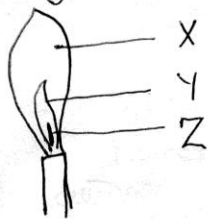


1. The diagram below shows part of non-luminous flame of the bunsen burner. Study it to answer questions that follows.



- (a) Name the parts of the flame labelled as;
- X - pale blue region ✓
  - Y - green blue region ✓
  - Z - almost colourless region ✓
- [3mk]

- (b) Which part of the flame above is the hottest? Explain [2mk]

X // pale blue region ✓

There is complete combustion // oxidation of the gas ✓

- (c) A non-luminous flame is preferred for heating. Explain [1mk]
- It's hotter than luminous ✓  
It's not sooty.

- (d) Name the other type of flame and condition under which that flame is produced. [1mk]

- Luminous

- when air is closed ✓

Q2. State Four laboratory rules.

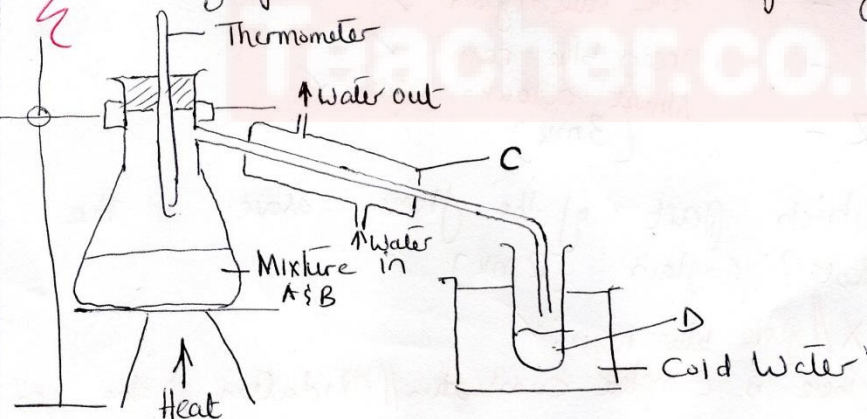
{4mk}

- Label all chemicals ✓
  - Never lean on benches ✓
  - Work on clean benches ✓
  - dispose of chemical used to avoid Contaminants ✓
  - Never smell gas directly, instead fan the gas toward your nose ✓
- N/B or any other ✓

(b) Name three frequently abused drugs. {3mk}

- Khat/miraa ✓
- Tobacco ✓
- Alcohol ✓

Q3 (a) The set-up below represents the apparatus that may be used to separate two miscible liquids A and B whose boiling points are 80°C and 110°C respectively.



(i) Name C & D  
 C --- Liebig Condenser  
 D --- Distillate {2mk}

(ii) What is the purpose of thermometer  
 To record temperature of gaseous product passing at that point. {1mk}



(iii) Which liquid was collected first? Explain [2mk]

A ✓ Has lower boiling point than B. ✓

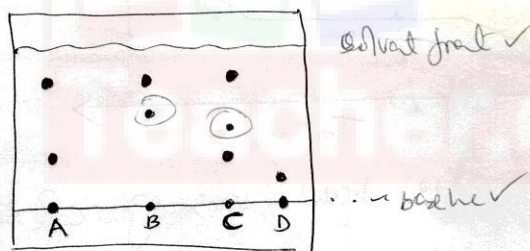
(iv) Name the above method of separation of mixture [1mk]

~~Fractional~~ Simple distillation ✓

(v) Name two mixture that can be separated using above method of separation. [2mk]

Ethanol & water ✓ or petrol diesel, gasoline & kerosene etc.

(b) The spots in the diagram below represents a paper chromatogram for three brands of soda that contains unwanted food additives



The results showed presence of unwanted food additives in B and C only. On the diagram

(i) ~~Show~~ label the base line or origin and the solvent front [2mk]

(ii) Circle the spots which showed unwanted food additives [2mk]

(iii) Which food additive was pure? Explain

D ✓ [2mk]

Moved only one spot on chromatograph. ✓

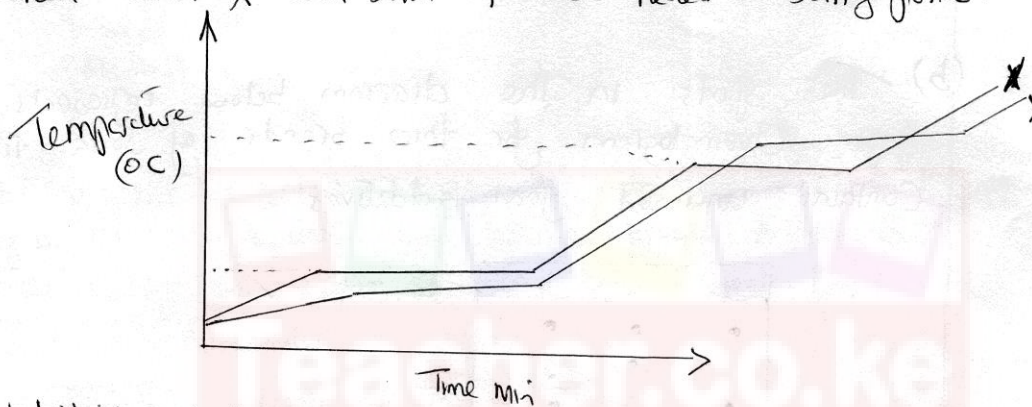
Q4 (a) List the three states of matter [3mk]

- Liquid ✓
- Solid ✓
- gas ✓

(b) State the kinetic theory of matter [1mk]

Matter made of tiny particles that are in continuous random motion. ✓

(c) The graph below shows the heating curves obtained when solid X and solid Y were heated to boiling point.



(i) Which of the two liquids was pure? Explain [2mk]  
 Y ✓  
 Sharp m.p.'s B.P ✓

(ii) What would be the effect of adding an impurity to the boiling point of a substance [1mk]  
 B.P. raised

(d) Name the elements present in the following compounds

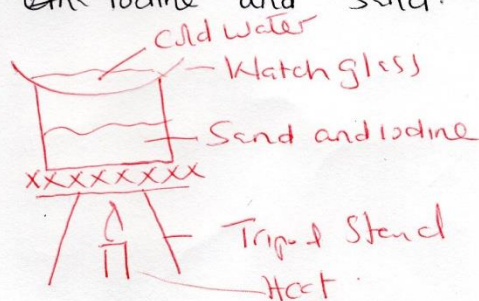
(i) Zinc sulphide [1mk] Zinc & Sulphur ✓

(ii) Magnesium oxide [1mk] Magnesium & oxygen ✓

(iii) Potassium iodide [1mk] potassium & iodine ✓



Q5 (a) Draw a set-up of apparatus that can be used to separate ~~the~~ iodine and sand. [3mk]



- Functionality of apparatus ✓  
- Isobelling of apparatus ✓

(b) Table below shows pH values of various solutions

Solution	pH
A	1
B	7
C	14
D	9

Classify the solutions in the table above as

- (i) strong acid A ✓
- (ii) weak base D ✓
- (iii) strong base C ✓
- (iv) Neutral B ✓

[4mk]

(c) Name two examples of mineral acid and one organic acid.

- (i) Mineral acid - Hydrochloric acid ✓ ~~2mk~~
- (ii) - Nitric acid ✓ ~~2mk~~

(iii) Organic acid -

ethanoic acid ✓ [3mk]

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