CHEMISTRY DEPARTMENT 2023
S.6 BRAINSTORMING TEST
TOPIC; PHYSICAL EQUILIBRIA
SUB-TOPIC; IMMISCIBLE LIQUID MIXTURES
PART ONE; STEAM DISTILLATION

NAME……**INDEX number**……..……

Signature …… **expected score(%)**……

Instructions; *Attempt all questions in this paper*.

SECTION A

1. (a) Explain what is meant by the term **steam distillation**. (01 mark)

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b) (i) Explain the principles of steam distillation. (05 marks)

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(ii) State one Advantage of isolating substances by steam distillation.(01 mk)

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2. (a) Bromobenzene can be separated from it impurities by steam distillation.

(i) State two conditions that enable purification of bromobenzene by steam distillation. (02 marks)

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(ii) Draw a diagram of the set-up of apparatus that can be used to purify aminobenzene by steam distillation (03 marks)

(iii) Name one other substance apart from aminobenzene that can be isolated by steam distillation. (01 mark)

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(b) (i) 20.0g of impure bromobenzene were steam distilled at 95^0c and 760mmHg to form a distillate containing 15.36g of water. The saturated vapour pressure of water at 95^0c is 680mmHg. Calculate the percentage by mass of bromobenzene. (03 marks)

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(ii) State one Application of steam distillation (01 mark)

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3. The following data was obtained for the steam distillation of Bromobenzene at a pressure of 760mmHg.

Temperature (^{0}c)		90	92	94	96	98	100
Vapour pressure (mmHg)	Water	526	567	610	658	707	760
	Bromobenzene	98	106	115	123	132	141

a) On the same axes, plot graphs of vapour pressure against temperature for water, bromobenzene and the mixture of water and bromobenzene. (05mks)

b) From the graphs, determine;

(i) the temperature at which distillation occurred. (01 mark)

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(ii) the vapour pressures exerted by water and bromobenzene at the distillation temperature. (01 mark)

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c) Calculate the percentage by mass of bromobenzene that would be obtained. (03 marks)

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d) Explain how bromobenzene can be isolated from the distillate. (02 marks)

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END.