

NAME: _____ SIGN: _____.

1 HOUR 20 MINUTES

Instruction:

Attempt all the items in this paper.

ITEM 1.

During a recent study at Makerere University, researchers in dermatology have discovered that glycerol-based lipids containing **oleic** and **stearic** fatty acids are one of the most effective and healthiest organic skin moisturizers. The researchers also discovered that shea nut is an ideal source of those fatty acids.

The faculty of dermatology has therefore decided to establish facilities that can be used to isolate oleic and stearic fatty acids from shea nut seeds to be used in the manufacture of skin care products. Oleic and stearic fatty acids have the formulae **$C_{17}H_{33}COOH$** and **$C_{17}H_{35}COOH$** respectively, which when reacted with glycerol form **triolein** and **tristearin**.

TASK:

- a) i) As a S.5 learner who has knowledge about lipids, show how triolein and tristearin can be manufactured by the dermatologists to be used in making the skin care products.

Triolein.

(05 scores)

Tristearin.

(05 scores)

ii) With a reason, identify the type of reaction that leads to the formation of triolein and tristearin.

(02 scores)

b) Giving a reason in each case, suggest which of the two products is;

i. A liquid at room temperature. **(02 scores)**

ii. A solid at room temperature. **(02 scores)**

c) Describe the **physiological** functions of lipids in the body of an organism.

(04 scores)
