Advanced Database Management Systems
Quiz 2

Duration: 45 Minutes

The given two relations, **Product** and **Mix**, are part of a database and their sizes are given below.

Product

Product#	P_Name	Unit_Price	Unit_Size	Standard_Batch_Qty
10	Pudding	100	10	5000
20	Jelly	50	20	100,000
30	Fish Paste	40	5	250,000

Mix

Product#	**Ingredient#**	**Quantity**	**Measure**
10	1	1000	Pounds
10	2	1500	Pounds
10	4	20	Ounces
20	1	1000	Kilos
20	2	100	Kilos
20	3	300	Kilos
20	5	500	Kilos
30	3	500	Pounds
30	4	100	Ounces

Consider the evaluation of the following query:

```
SELECT    Product.P_Name
FROM      Product, Mix
WHERE     Product.Product# = Mix.Product#
AND       Mix.Ingredient#=5
```

Assuming that:

i) The **Product** Relation contains 3000 records;
ii) The **Mix** relation contains 10,000 records.
iii) Among them only 200 are for Ingredient# = 5
iv) It is Possible to hold up to 250 records in main memory,

Answer the following questions:

a) Choose <u>two</u> possible methods to evaluate the query. Use relational algebra to express clearly all the steps in the evaluation. Calculate sizes of intermediate files for each of the two methods. **(8 marks)**
b) Compare the two methods on the basis of the results from (a). Recommend your choice with justification. **(1 marks)**
c) Explain whether the results from (a) will be different if there exists an index table indexed on the attribute Ingredient# of the **Mix** relation. **(1 marks)**