



RAFFLES INSTITUTION
2025 YEAR 5 TERM 3 TIMED PRACTICE
Higher 2

ECONOMICS

9570/1

July 2025

1 hour

Additional Materials: Answer Paper

READ THESE INSTRUCTIONS FIRST

Write your name, index number and CT class on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a soft pencil for diagrams, graphs or rough working.
Do not use paper clips, highlighters, glue or correction fluid.

Answer all questions.

Answer each section on a fresh sheet of paper.

At the end of the examination, fasten answer script for Section A securely together with this sheet as cover page.

The number of marks is given in brackets [] at the end of each part question.

Name: _____

Civics Class: _____

Economics Tutor: _____

Section A	Marks
Question 1	/24

This document consists of **4** printed pages and **1** blank page.



Raffles Institution

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Section A

Answer **all** questions in this section.

Question 1: The DRAM (Memory Chip) Industry

Table 1: Global Revenue of DRAM manufacturers (in million USD)

Company	2 nd Quarter 2016	3 rd Quarter 2016	4 th Quarter 2016
Samsung	4,318	5,286	5,918
SK Hynix	2,409	2,617	3,330
Micron	1,728	1,946	2,421
Others (including Nanya, Winbond and Powerchip)	646	687	785
Total	9,101	10,536	12,454

Source: www.dramexchange.com

Extract 1: The DRAM (memory chip) Market

DRAM (Dynamic Random Access Memory) is commonly used as a form of temporary memory storage in various electronic products including computers, servers, mobile phones, video game consoles, digital televisions and DVD players. The rise in global incomes and the increasing adoption of advanced technology across the world have seen the rapid expansion in the usage of such electronic devices over the years. "Prices of personal computer DRAMs surged by more than 30% due to insufficient market supply." said Avril Wu of DRAMeXchange. Looking ahead, memory content for various electronic devices will continue to increase as more and more technological applications require new memory capacity.

Various Sources: www.dramexchange.com, www.press.trendforce.com

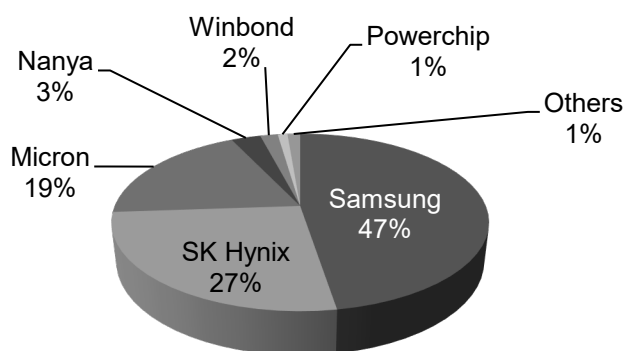
Extract 2: Costs Considerations In DRAM Manufacturing

In the DRAM industry, consolidation has been steadily occurring since 2010. From an industry that started off with 8 or 9 firms, the industry today is dominated by 3 firms such that each firm's market share has greatly increased, contributing to higher operating revenues. Yet, the main advantage that existing firms enjoy remains to be cost advantages. In fact, DRAM manufacturers often try to decrease their costs to become more competitive. One way to decrease costs is to invest and build larger plants. For example, Samsung has announced plans to invest in a new DRAM lab that could cost up to 10 trillion Korean won.

Industry studies have shown that unit costs will drop by 28% as output quantity doubles. Because unit profitability increases with increasing production quantities, producers rapidly build scale. In manufacturing DRAM chips, the vast majority of costs are huge startup costs related to equipment. Firms also have to bear the cost of risky research and development in order to improve the product or find new ways to produce at a cheaper cost. If new entrants enter on a small scale, they have a cost disadvantage.

Plant size is an important factor that can enhance productivity in the DRAM industry. Large plants in the DRAM industry use specialized assembly processes to divide tasks across thousands of chips, significantly boosting production output. These cost advantages that accrue to large firms also include advantages in the procurement of raw materials such as silicon from key suppliers.

Source: adapted from MIT Sloan School of Management

Figure 1: Market Share of DRAM Manufacturers in 2016 (%)Source: www.dramexchange.com**Extract 3: How Will China Affect The DRAM Market?**

China will stay on course with its agenda to build a domestic semiconductor sector that manufactures memory chips. Earlier this year, Hefei's city government signed an agreement with Sino King Technology, a Japanese semiconductor company, to jointly establish DRAM chip plants in China with the investment of more than US\$7.18bn. China's potential entry into the market will provide further worries to other firms in the DRAM market.

However, the top three DRAM suppliers (Samsung, SK Hynix and Micron) have a very strong grip over the market and are unlikely to share their technologies and research. They continue to expand production all over the world with increasingly large and complex DRAM manufacturing facilities. The strong position of these firms has also enabled them to engage significantly in research and development - creating DRAM chips which have faster data rates that allow for quicker data access and processing, leading to faster performance in devices. The top 3 DRAM suppliers are unlikely to work closely with the Chinese because they do not want new competitors to enter. Hence, Chinese companies entering the DRAM market will face entry barriers that are more difficult to overcome compared with markets of other semiconductor products.

Source: Adapted from www.businesskorea.co.kr**Extract 4: Intense Competition In The DRAM Industry**

The memory chip industry is sometimes known for its brutal price wars, often lasting several years at a time. The strategy to increase quantities sold through competitive pricing often resulted in lower profits. Given the nature of DRAMs, where substitutability is low, the result of price reductions is often not large enough for most vendors to become profitable. Smaller players like Micron are sometimes left with huge oversupply and plunging unit prices. That was the case in 2015. Micron's profits started that year north of 22%, but Samsung flooded the market with cheap DRAM memory chips and Micron's profits turned negative in early 2016.

Various Sources: www.businesskorea.co.kr, www.barrons.com

Complete ALL Questions

- (a) With reference to Table 1, compare the trends in revenue for the three largest DRAM manufacturers. [2]
- (b) (i) Define Production Possibility Curve (PPC). [1]
 (ii) With the aid of a PPC diagram, explain how an increase in productivity in the DRAM industry might affect the maximum possible output in an economy. [3]
- (c) With reference to the case material, explain what is meant by
 (i) fixed cost [2]
 (ii) variable cost [2]
- (d) (i) Using Figure 1, identify and explain the likely market structure associated with the DRAM manufacturing industry. [2]
 (ii) Extract 3 mentions that “companies entering the DRAM market will face entry barriers”. Explain **one** such **artificial** barriers to entry. [2]
- (e) Discuss the view that in the DRAM industry, large firms will always enjoy cost advantages. [10]

[Total:24m]

END OF PAPER

Copyright Acknowledgements:

Table 1	© www.dramexchange.com
Extract 1	© http://www.dramexchange.com/WeeklyResearch/Post/2/4592.html
Extract 1	© http://press.trendforce.com/press/20170214-2753.html
Extract 2	© https://dspace.mit.edu/handle/1721.1/59138
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