PRACTICE VERSION – ADVANCED PROBLEM SOLVING TEST

McKinsey & Company

January 2001

Instructions for candidates.

(Consider your answer to each question carefully, as accuracy is important as well as amount completed.

- **The test contains 1 business case. The case has two "teams", each with five questions, making a total of ten questions in the test. Ensure that you read the background to the case carefully.**
- **The questions are multiple choice. You must select one correct answer for each question.**
- **Mark your answer by circling it on the answer sheet provided. Ensure that you are using the correct answer sheet for the particular case you are working on.**
- **calculators are allowed in this test. Paper is provided for workings out.**
- **You have 45 minutes to complete this test.**

Case I – Fiji Cola

As part of a two very lucky McKinsey teams, you are sent to Fiji to work on a project for Fiji Cola, which is sold only on Viti Levu, the main island of Fiji, but is the leading brand of cola on this island.

Fiji Cola's sales have been dropping in recent years due to the entry of several rival brands of soft drinks into the market. As a result, Fiji Cola are considering expanding sales to the other islands in the Fijian archipelago. The aim of Team A is to work out the potential amount of cola that could be sold in the whole of Fiji and investigate how Fiji Cola is currently sold, while Team B will investigate and aim to improve production efficiency for Fiji Cola.

TEAM A

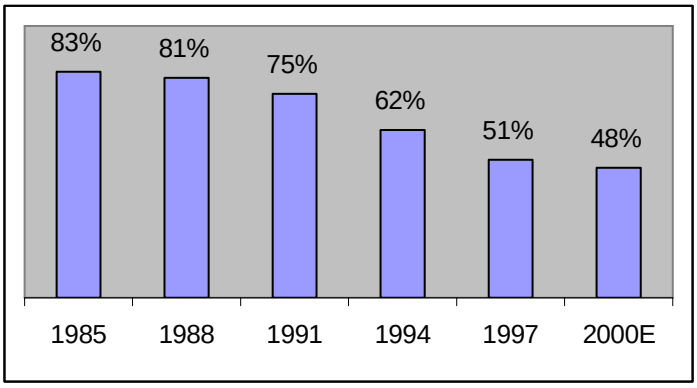

Fig 1: Fiji Cola's Market Share in Viti Levu 1985-2000(Estimate)

	1985	1988	1991	1994	1997	2000E
Total Cola Sales in Viti Levu	$2.72m	$2.77m	$2.71m	$2.81m	$2.88m	$2.90m

1. Here are some pieces of information which the Managing Director of Fiji Cola says he could obtain for you:

I The number of Cola-producing factories in the entire Fijian archipelago

II The average number of litres of cola produced per factory

III An estimate of the average consumption of cola per person in Viti Levu

IV The results of a marketing survey on Fiji Cola performed in 1998

V The population of Fiji

Which of the following sets of information would be most useful to you in working out how much cola could be sold in the whole of Fiji?

A I, II

B IV, V

C I, II, IV

D III, V

E I, II, III

2. In investigating some of the specific reasons why competitor brands are winning market share from Fiji Cola, Bob Sunshine, Fiji Cola's sales analyst, suggest the following reasons:

I More effective advertising by competitors

II Cheaper prices from competitors

III Competitors have state of the art production facilities

IV Better distribution by competitors

V Competitors are more "with it"

Which of the above would you consider valid reasons?

A I, II, III

B I, II, IV

C I, II, V

D II, III, IV

E All of the above

3. By how much, in $m, did Fiji Cola's sales revenue fall between 1985 and 1997?

A $0.1m

B $0.71m

C $0.79m

D $0.87m

E $0.35m

Fiji Cola is sold via a sales force who visit stores in Fiji and negotiate a price per litre with the store. The store will then sell the cola at a higher price to the end customer. The sales force are given a minimum price per litre to obtain from the store, below which they receive no incentive. For any price they obtain above the minimum price, they receive 10% of the difference. Currently the minimum price per litre is $1.12. The following table shows the average store price (to the end-customer) and volume of cola sold in the various regions of Viti Levu last year.

	North	South	East	West
Average store price per litre	$1.50	$1.45	$1.55	$1.50
Litres sold to end customers	0.5m	0.4m	0.4m	0.6m

4. Tom Paradise, Fiji Cola's sales manager, tells you that all sales were made above minimum price last year, and that average prices obtained by the sales force in the North, South and West last year were $1.22, $1.22 and $1.27 respectively. He also tells you that in total, Fiji Cola paid its sales force $88,000 of which 25% was sales incentives and the rest was basic salary. What average price was obtained by the sales force in the East?

A $1.12

B $1.22

C $1.25

D $1.27

E $1.32

5. Tom informs you that the minimum price for the sales force is calculated to allow a certain share of profits for the stores. If the sales force sold all cola at minimum price, and the cost of production of a litre of Fiji Cola is 80c, what percentage share of overall profit on cola would have been taken by the stores last year?

A 49%

B 50%

C 54%

D 60%

E 61%

TEAM B

Pete Daydream, Fiji Cola's production manager, gives you the following data on Fiji Cola's production facilities:

	Suva	Nadi	Sigatoka
Litres produced per week	**22000**	**8000**	**10000**
Staff Employed full time (40 hours per week)	**23**	**13**	**12**
Staff Employed Part Time (20 hours per week)	**18**	**2**	**4**

6. Which of the following ratios do you think most effectively measures the *physical* efficiency of a production facility?

A $\dfrac{\textit{Litres produced per week}}{\textit{Total Staff Employed}}$

B $\dfrac{\textit{Litres produced per week}}{1.5\,x\,\textit{Total Full Time Staff Employed}}$

C $\dfrac{\textit{Litres produced per week}}{\textit{Average weekly hours worked by staff}}$

D $\dfrac{\textit{Litres produced per week}}{\textit{Total weekly hours worked by staff}}$

E $\dfrac{\textit{Litres produced per hour}}{\textit{Total Staff Employed}}$

A few hours later, Pete gives you the following data:

	Suva	Nadi	Sigatoka
Hourly Rate paid to staff	**$8.00**	**$8.10**	**$8.50**

7. Given the above information, in which order would you rate the plants from the most to the least *cost* efficient?

A Suva, Nadi, Sigatoka

B Sigatoka, Nadi, Suva

C Suva, Sigatoka, Nadi

D Nadi, Suva, Sigatoka

E Sigatoka, Suva, Nadi

8. As well as the information above, which of the following sets of additional information would be most useful to you in assessing a production facility's efficiency?

A Equipment rental cost, Utility costs (eg Gas and Electricity)

B Utility cost, maintenance costs of building/premises (eg cleaning, security), Raw material cost

C Utility Costs, Equipment rental cost, Rental and maintenance of building/premises

D Utility cost, Raw material cost

E Staff cost, Utility costs, Maintenance costs of building/premises

The McKinsey team does some analysis to assess the incremental production capacity due to added staff in the Nadi production facility, and produces the following table:

No. of additional full-time staff	1	2	3	4	5
Weekly extra production (litres)	1200	2300	3300	4200	5000

Assuming that Fiji Cola currently make a profit of 42c per litre:

9. How much extra profit will Fiji Cola get from employing 2 extra full time staff?

A $966

B $912

C $318

D $326

E $286

10. Which of the following would you tell the managing director of Fiji Cola at the final meeting of the project?

A Fiji Cola should increase the number of staff at their Nadi production plant

B Fiji Cola should increase the number of staff at the Nadi production plant by 2 in order to gain profit

C Assuming that a market for the extra cola is identified, Fiji Cola should increase the number of staff at the Nadi production plant by 5 in order to gain maximum extra profit

D Fiji Cola should increase the number of staff at the Nadi production facility in order to satisfy demand for Cola in new markets

E Fiji Cola should build a new facility as production capacity in the Nadi production facility is not enough to cope with demand from new markets.

Answers -

Fiji Cola	
1	**D**
2	**B**
3	**C**
4	**B**
5	**C**
6	**D**
7	**C**
8	**C**
9	**C**
10	**C**