Answers

Section C

Bellahouston Co

(a) (i) Identify the limiting factor:

	Road	Spikes	Trail	Total required
Direct material/pair (metres)	1·5	0·6	1·2	6,930
Direct labour/pair (hours)	1	1·5	1	6,750
Machine time/pair (hours)	0·4	0·2	0·3	1,875

Based on the above, machine time is the limiting factor.

Calculate contribution per unit of limiting factor and rank the products:

	Road	Spikes	Trail
Contribution per pair of shoes ($)	41·50	29·50	36·00
Machine hours required	0·40	0·20	0·30
Contribution per machine hour ($)	103·75	147·50	120·00
Ranking	3	1	2

Prepare optimum production plan and calculate resultant total contribution earned:

	Machine hours used (1,815 available)	Contribution per pair of shoes ($)	Total contribution ($)
Fulfil customer order:			
200 Road	80	33·50	6,700
200 Spikes	40	21·50	4,300
200 Trail	60	28·00	5,600
	1,635 hours remaining		
Apply ranking:			
1,400 Spikes – 1st	280	29·50	41,300
1,650 Trail – 2nd	495	36·00	59,400
2,150 Road – 3rd	860	41·50	89,225
			206,525

(ii) Calculate the profit maximising mix:

	Machine hours used (1,815 available)	Contribution per pair of shoes ($)	Total contribution ($)
Apply ranking for the general sales in March:			
1,400 Spikes	280	29·50	41,300
1,650 Trail	495	36·00	59,400
2,300 Road	920	41·50	95,450
	120 hours remaining		
Apply ranking for the special order:			
200 Spikes	40	21·50	4,300
200 Trail	60	28·00	5,600
50 Road	20	33·50	1,675
			207,725

The loss of contribution from fulfilling RunWild's order is $1,200 ($207,725 – $206,525), therefore the maximum financial penalty acceptable would be $1,200.

Alternative approach:

If RunWild's order could only be partially completed, then Bellahouston Co would divert machine hours from making Road shoes for the specific order to making Road shoes for general sale to other retailers. The number of Road shoes for general sale in part (a)(i) fails to meet demand by 150 pairs of shoes and the difference in the contribution earned from making them available for general sale and not to RunWild is $8 per pair. Therefore, the difference in the contribution earned is $1,200 (150 pairs of Road shoes x $8), which would be the maximum financial penalty Bellahouston Co would be willing to accept.

(b) Although the contribution earned is higher if the order is only partially completed, if Bellahouston Co does not fully complete the order, then RunWild may not enter into a regular supply contract and future sales revenue would therefore be lost. In addition, the customer base and reputation of RunWild will help to market Bellahouston Co's products and increase awareness of their products. This benefit will also be lost if RunWild choose not to order from Bellahouston Co again.

It would also not be good for Bellahouston Co's existing reputation if it becomes known for not fulfilling its obligations. This could make other sports retailers reluctant to order from them. It might also impact the end-customer's perception of their product if they cannot buy Bellahouston Co's running shoes due to a lack of availability.

(c) Define the variables:

R = number of pairs of Road shoes
S = number of pairs of Spikes shoes
T = number of pairs of Trail shoes

Constraints:

Direct material	$1·5R + 0·6S + 1·2T \leq 6,120$
Direct labour	$1R + 1·5S + 1T \leq 5,865$
Machine time	$0·4R + 0·2S + 0·3T \leq 1,815$
Demand	$R \leq 2,300$
	$S \leq 1,400$
	$T \leq 1,650$
Non-negativity	$R, S, T \geq 0$

Objective function:

$C = 41·50R + 29·50S + 36·00T$

Flag Co and Budget Co

(a) Profitability

	Flag Co	Budget Co
ROCE	12·8%	13·7%
Operating margin	10·93%	6·07%
Asset turnover	1·17	2·26

Budget Co has a better return on capital employed and is therefore making better returns for its investors. The main cause of this is Budget Co's ability to generate sales. For every $ of capital employed, it generates $2·26 of sales revenue as compared to only $1·17 in the case of Flag Co. Budget Co has much shorter flight times than Flag Co and therefore could be making more journeys and spending less time parked at airports.

Budget Co earns a lower operating margin than Flag Co, as Budget Co's operating costs as a percentage of revenue are 94% compared to Flag Co at 89%. This is probably due to Budget Co's pricing strategy. The lower operating margin is more than offset by Budget Co's higher asset turnover, resulting in a higher capital employed (asset turnover x operating margin = ROCE, therefore 6·07% x 2·26 = 13·7%).

Analysis of the other information provided shows that Budget Co has a much higher seat occupancy rate.

	Flag Co	Budget Co
Seat occupancy rate	66·29%	95·00%

This is probably a consequence of its low fares policy resulting in higher sales of seats relative to Flag Co and therefore a higher asset turnover.

Budget Co also appears more fuel efficient than Flag Co.

	Flag Co	Budget Co
Available seat kilometre per litre of fuel	8,802	12,001

The better fuel economy is probably related to Budget Co's newer fleet of aircraft. Better fuel economy would tend to improve Budget Co's operating margin, however, it is still lower than Flag Co's.

Liquidity

	Flag Co	Budget Co
Current ratio	0·60	0·79

The current ratios of the two businesses are below the text book norm of 2:1, however, they are both service companies which carry little inventory, so this is not surprising or worrying. There is no apparent reason for the difference between the two companies.

Risk

	Flag Co	Budget Co
Capital gearing (debt:equity)	110·44%	51·47%
Interest cover	4·96 times	8·08 times
Operating gearing	950%	820%

Flag Co has a relatively high level of long-term borrowings. This adds to the risks of the business as interest on these borrowings has to be paid no matter the company's operating profit. At present, its operating profit is nearly five times larger than its interest bill

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and it appears to be able to comfortably pay its commitments. Its operating gearing is 950%, indicating that if sales volume fell by 10%, then its profit before interest and tax would fall by 95% (that is 950% or 9·5 times more). This would cause Flag Co difficulty in covering its interest payments. As demand for business travel is very sensitive to economic conditions, there is a strong probability that at some point Flag Co will experience a fall in sales volume.

As a result of its owner's equity investment, Budget Co carries less financial gearing than Flag Co and has better interest cover. Its operating gearing is slightly lower and given its relative insensitivity to economic conditions, it can be considered a safer company than Flag Co.

(b) Fitzgerald and Moon's building block model provides a framework for service companies to design performance measurement systems which are linked to management rewards. It provides a system of targets (standards) which will motivate managers to improve business performance.

There are three building blocks in the model. The first block gives six *dimensions*, meaning the aspects of performance which must be measured in a service business. These are:

Financial performance, for example, profitability and growth.

Competitiveness which measures an organisation's standing against its competition.

Quality of the service offered.

Flexibility of the organisation in providing the service.

Innovation which addresses the ability to introduce new processes and services.

Resource utilisation which measures productivity and efficiency.

These six dimensions should be split into results (financial performance and competitiveness) which are the outcomes of past decisions and determinants (quality, flexibility, innovation and resource utilisation) which drive future performance and results.

The second block relates to setting *standards*. To motivate managers, it is important that they take ownership of standards (that is accept or internalise them) and the standards appear achievable and equitable (fair).

The third block relates to the *rewards* managers are offered for achieving the standards. These must have clarity (the performance measurement scheme must be understood by managers), they must be motivating (rewards must be attractive) and controllable (not subject to influences outside the manager's control).

Section C			Maximum marks	Marks awarded

Bellahouston Co

(a)	**(i)**	Production plan	7	
	(ii)	Financial penalty	4	
(b)		Discussion	4	
(c)		Linear programming model	5	
			20	

Flag Co and Budget Co

		Maximum marks	Marks awarded
(a)	Calculations	6	
	Discussion	8	
		14	
(b)	Explanation	6	
		20	

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