QUESTIONS

Question 1 Classification of costs

Classify each of the following costs as:

- variable
- fixed
- stepped
- semi-variable

i)   factory insurance costs

ii)   direct labour costs

iii)   costs of a royalty payable to a product designer for each item produced

iv)   cost of chartering planes by a tour operator (more planes are chartered as necessary when bookings are received)

v)   telephone charges which include line rental and charges for calls made

Question 2 Finnie & Fogg Limited

Finnie & Fogg Limited produces suit-bags which each sell for £42.50. The variable costs of manufacture include direct materials of £9 and direct labour of £11. In July 20X6 the company has budgeted to sell 850 suit-bags. Fixed overheads for the month are expected to total £14 250.

Calculate the company's

a) budgeted contribution for July 20X6

b) budgeted net profit for July 20X6

Question 3 Grass Green Products Limited

Grass Green Products Limited manufactures lawnmowers. The selling price of a mower is £325, and variable costs per mower are £158. The company's maximum production capacity in one year is 5000 lawnmowers, but, realistically, the company's directors do not expect to sell more than 4200 units in the coming year, 20X8. Fixed costs for 20X8 are budgeted at £574 750.

a) What is the company's break-even point in units (to the nearest whole unit)?

b) What is the company's margin of safety:

     i)   in units

     ii)   in £s

Question 4 Garth Goredale Limited

Garth Goredale Limited manufactures kitchen colanders. The selling price of a colander is £5.50. Variable costs per colander comprise £1.38 of direct materials and £0.98 of direct labour. The company's finance director estimates that fixed costs for 20X9 will be £588 530. Net profits in 20X8 were £52 000 based on sales of 200 000 colanders. The directors are aiming for a net profit of £72 000 in 20X9.

a) calculate the company's break-even point in units (to the nearest whole unit)

b) calculate the percentage increase in sales required in 20X9 that is necessary in order to hit the directors' target profit (to one decimal place).

Question 5 Hamer and Horsfall plc

Hamer and Horsfall plc runs a department store in a large city in Northern England. The company has always been profitable but in recent years profitability has declined because of keen competition from discount stores. The directors are, therefore, actively looking for ways to cut costs. The business sources some of its products from a subsidiary company, L&L Limited. L&L manufactures goods like underwear and nightwear which it sells both to Hamer and Horsfall and to other customers. L&L's managing director, Harry, is concerned that Hamer and Horsfall are likely to close down L&L's business in order to source cheaper goods from overseas. He has recently discovered that the building next door to the company's factory will soon become vacant, and he is preparing a business case to put to the board of Hamer and Horsfall to expand L&L's production capacity. He maintains that L&L will have more power in the marketplace if it is able to fulfil larger orders, and that the company will be well-placed for even greater expansion in the future.

Harry's figures include the following relevant information:

If the new space is taken on, L&L's sales could increase by 36% from their existing level of £1 395 000.

Fixed costs would increase by £300 000.

Variable costs constitute 32% of sales value.

a) advise the directors of Hamer & Horsfall whether or not Harry's case for expansion makes business sense
b) identify any non-financial factors which you think may have a bearing on the case that Harry has put forward

Question 6 Immingham Treadway Limited

Immingham Treadway Limited manufactures a range of industrial machines, each of which uses a quantity of a rare metal, velanium. The metal is mined commercially in only one country of the world, Pamania, although small deposits of it have been found elsewhere from time to time. The directors of Immingham Treadway have just been informed that rebel insurgents have started a civil war in Pamania. The war may last for a long time, and it seems likely that supplies of velanium will be cut off completely. The company's engineers have been working on the prototype of a new machine which will not require the use of velanium; however, testing has only just commenced, and the new machine will not be ready for commercial production for at least another year.

The company currently has 100kg of velanium in stock; it was purchased for £420 per kg. The production director thinks it likely that a further 90kg of velanium can be sourced through her contacts, although the price will be very much higher than previously: around £800 per kg. The sales director thinks that there is some scope for increasing selling prices to pass on at least part of the increased cost to customers. However, he has forecast only modest increases so as not to affect potential demand.

Cost and selling price information for each of the three machine types that the company produces are as follows:

	Type A	Type B	Type C
Selling price (new price per sales director's forecasts)	£6 000	£5 500	£4 500
Velanium usage per machine	2.5kg	3kg	2.8kg
Other raw materials costs	£1 500	£1 400	£880
Variable cost of labour	£1 750	£1 310	£960

Demand per year	35	30	40

i) calculate the contribution per unit of limiting factor for each of the three machine types

ii) advise the directors on the optimal production plan for the next year

ANSWERS

Answer 1 Classification of costs

Cost classification

i)   factory insurance costs – fixed

ii)   direct labour costs – variable

iii)   royalty costs – variable

iv)   plane charter cost – stepped

v)   telephone charges – semi-variable

Answer 2 Finnie & Fogg Limited

a)   budgeted contribution for July 20X6

	£
Sales: 850 x £42.50	36 125
Less: variable costs	
Direct materials: 850 x £9	(7 650)
Direct labour: 850 x £11	(9 350)
Contribution	19 125

b)   budgeted net profit for July 20X6

	£
Contribution (as in part a))	19 125
Less: fixed costs	(14 250)
Net profit	4 875

Answer 3 Grass Green Products Limited

a) Break even point in units = $\dfrac{\text{Fixed costs}}{\text{Contribution per unit}}$

Contribution per unit = selling price – variable costs per unit =

£325 – 158 = £167

Break-even point in units: £574 750   = 3442 units (to nearest whole unit)

                                  167

b) Margin of safety = the excess of planned sales above the break-even point.

i)   planned sales – break-even point = 4200 – 3442 = 758 units

ii)   margin of safety expressed in terms of sales: 758 units x selling price = 758 x £325 = £246 350

Answer 4 Garth Goredale Limited

a)

Break even point in units =   Fixed costs

                                     Contribution per unit

Contribution per unit:

                                          £

Selling price   5.50

Less: variable costs

Materials   (1.38)

Labour   (0.98)

Contribution per unit   £3.14

     Fixed costs   =   588 530   = 187 430 units

Contribution per unit   3.14

b) Target sales in units =   Fixed costs + target profit

                                    Contribution per unit

=   588 530 + 72 000   = 210 360 units

            3.14

Percentage increase in units: 210 360 – 200 000 x 100 = 5.2%

                                  200 000

Answer 5 Hamer and Horsfall plc

The basic decision rule is: if incremental revenue exceeds incremental costs, accept the project.
Applying the rule to the L&L proposal:

	£
Incremental revenue (£1 395 000 x 36%)	502 200
Incremental costs:	
Variable costs (£502 200 x 32%)	(160 704)
Fixed costs	(300 000)
Incremental profit	41 496

c) The proposed expansion into the neighbouring premises produces an incremental profit of
£41 496, and so it would seem like a good move for the company. However, the directors of
Hamer and Horsfall should look carefully at the data. Harry does not want L&L's business to
be closed down (presumably, if this were to happen Harry would lose his job). Therefore he
has a powerful incentive to persuade Hamer and Horsfall's directors that the expansion makes
sense. He may have exaggerated some of the figures to support the case he is making. The
incremental increase in fixed costs (a round sum of £300 000) looks very much like a 'broad
brush' estimate: the directors should ask Harry for evidence supporting the validity of that
figure.

Answer 6 Immingham Treadway Limited

i)   Contribution per limiting factor

	Type A	Type B	Type C
Selling price	6 000	5 500	4 500
Variable cost of raw materials			
Velanium (at £600 per kg) (see working)	(1 500)	(1 800)	(1 680)
Other raw materials	(1 500)	(1 400)	(880)
Variable cost of labour	(1 750)	(1 310)	(960)
Contribution	1 250	990	980
Kilos of material used	2.5kg	3.0kg	2.8kg
Contribution per unit of limiting	1250/2.5	990/3	980/2.8

factor	= £500	= £330	= £350

Working: cost of velanium per kg:

Existing stock	100 kg x £420	42 000
New purchase	90kg x £800	72 000
Total cost		114 000

This gives an average price of:

$$\frac{£114\ 000}{190} = £600 \text{ per kg.}$$

ii)   production plan

In order to maximise contribution the production plan should include as many units as possible of Type A machines. Type C machines are next in order of preference.

In total, the supply of the scarce raw material totals 190kg. To produce up to the maximum demand for Type A machines next year 87.5kg (35 x 2.5kg) would be required. This would leave 102.5kg available. This would be sufficient to produce 36 Type C machines (102.5/2.8kg = 36.6 machines). As demand for the Type C machines is in excess of 36, no type B machines would be produced.