



Complete, fold and seal
(see note 2 below)

FORENAME(S): Luke Ashley

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination ver**

1	Student Number	1603319/1
2	Title of Examination Paper	management innovation & sustainability
3	Module Code	GOAC5004
4	Date and Time of Examination	17/5/19 2.00
5	Examination Venue	Gower College Swansea - Hall
6	Seat Number	
7	Number of Answer Books handed in	

List the numbers of the questions you have attempted	Office Use
1	22
2	23
3	20
Total	65

(Gweler yr ochr arall am y fersiwn Cymraeg)

65/75

87%

Section A

21/

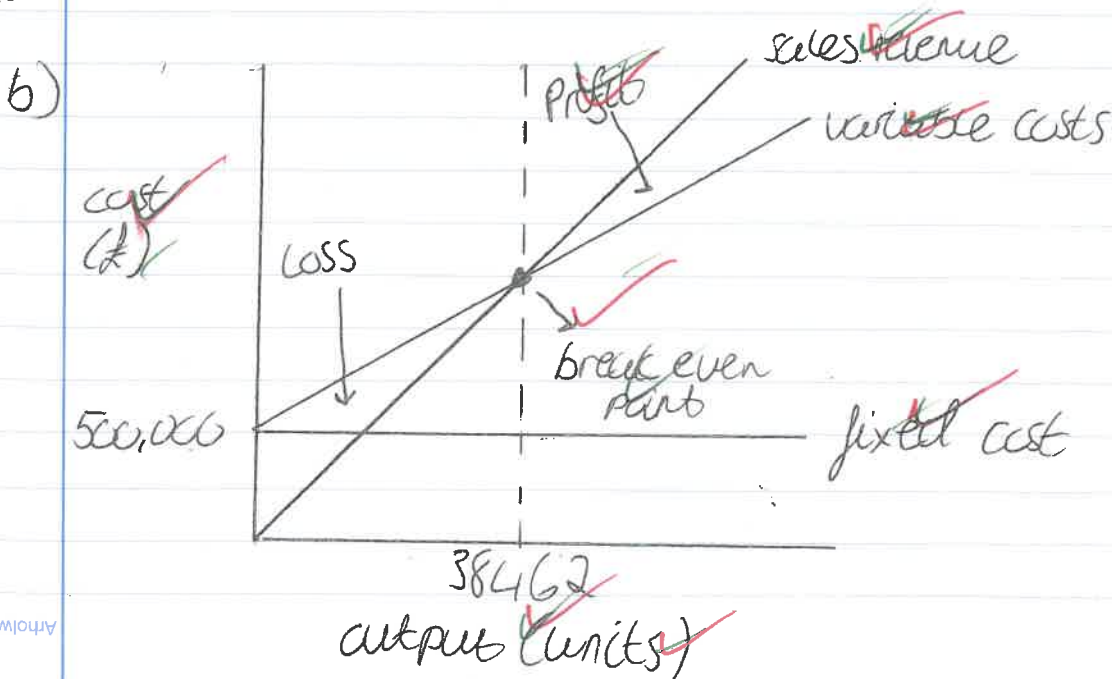
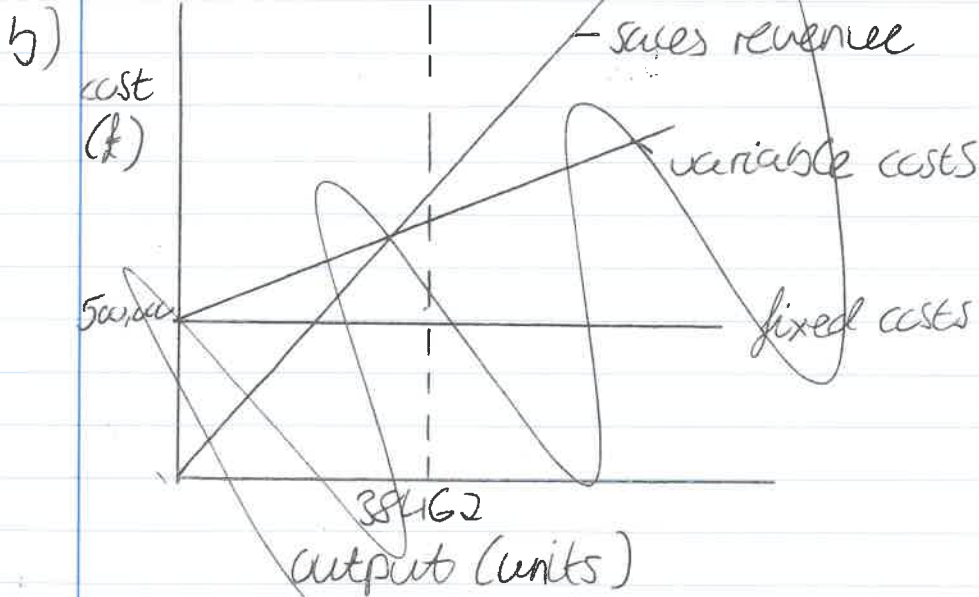
a) Break even point =

$$= \frac{\text{fixed costs}}{\text{Selling price per unit} - \text{variable price per unit}}$$

$$\frac{500,000}{20 - 7} = \frac{500,000}{13} = 38461.538$$

$$= 38462 \text{ units}$$

✓ 4



5

c) margin of safety = $45,000 - 38462$
 $= 6538$ units



4

d) $60,000$ units $\times 0.75$
 $= 45,000$



2

contribution per unit = sales revenue - variable costs

sales revenue = $45,000 \times 20 = £900,000$

variable costs = $45,000 \times 7 = £315,000$

contribution = $£900,000 - £315,000$
 $= £585,000$



3

profit = contribution - fixed costs

$= £585,000 - £500,000$

Profit = $£85,000$



2

e) with the use of break-even analysis the output is steady and also suggests that ^{which} stock is sold.

~~Planning ahead would be difficult as the~~
~~analysis can only~~ use of break even analysis
 is for ~~the~~ ^{current}

2

only with the ^{current} data provided can break even analysis be used. which limits any form of planning for the future.

Linear

variable costs are linear which can change amount per unit, given circumstances affecting the unit being sold. such as a defect of the unit which needs fixing before selling.

Section B

sk, Extended factors, payback
new Tech, improved process,
variable costs - funding



22/

w) Project A

Year	Net cash flow	cumulative cash flow
0	£ (200,000)	£ (200,000)
1	£ 80,000	£ (120,000)
2	£ 50,000	£ (70,000)
3	£ 45,000	£ (25,000)
4	£ 40,000	£ 15,000

Payback in years = 3
 payback in months = $\frac{40,000}{25,000} \times 12 = 3333.3$
 $25,000 / 3333.3 = 7.5$

payback time for Project A = 3 years 8 months

3

Project B

Year	Net cash flow	cumulative cash flow
0	£ (200,000)	£ (200,000)
1	£ 60,000	£ (140,000)
2	£ 50,000	£ (90,000)
3	£ 50,000	£ (40,000)
4	£ 60,000	£ 20,000

payback in years = 3
 payback in months = $\frac{60,000}{40,000} \times 12 = 5000$
 $40,000 / 5000 = 8$

payback time for project B = 3 years 8 months

3

Project C

Year	Net cash flow	cumulative cash flow
0	£ (200,000)	£ (200,000)
1	£ 70,000	£ (130,000)
2	£ 60,000	£ (70,000)
3	£ 50,000	£ (20,000)
4	£ 60,000	£ 40,000

payback in years = 3

$$\text{payback in months} = \frac{60,000}{12} = 5000$$

$$= \frac{20,000}{5000} = 4$$

payback time for project C = 3 years 4 months

3

b) Project A

Year	cash flow	d.f.	present value
0	£ (200,000)	1	£ (200,000)
1	£ 80,000	0.9091	£ 72728
2	£ 50,000	0.8264	£ 41320
3	£ 45,000	0.7513	£ 33808.5
4	£ 40,000	0.6830	£ 27320
5	No data	0.6210	

total cash flow = 175176.5

$$\begin{aligned} \text{total net present value} &= \text{cash flow} - \text{initial investment} \\ &= £175,176.5 - £200,000 \\ &= -£24823.5 \end{aligned}$$

3

Project B

Year	cash flow	d.f.	present value
0	£(200,000)	1	£(200,000)
1	£ 60,000	0.9091	£ +54,546
2	£ 50,000	0.8264	£ +41,320
3	£ 50,000	0.7513	£ +37,565
4	£ 60,000	0.6830	£ +40,980

No data for Year 5. (cash flow)

$$\text{Total cash flow} = \text{£170,691} \quad \text{£174,411}$$

$$\begin{aligned} \text{Net present value} &= \text{cash flow} - \text{initial investment} \\ &= \text{£170,691} - \text{£200,000} \\ &= \text{£29,309} \\ &= \text{£174,411} - \text{£200,000} = -\text{£25,589} \end{aligned}$$

3

Project C

Year	cash flow	d.f.	present value
0	£(200,000)	1	£(200,000)
1	£ 70,000	0.9091	£ +63,637
2	£ 60,000	0.8264	£ +49,584
3	£ 50,000	0.7513	£ +37,565
4	£ 60,000	0.6830	£ +40,980

No data for Year 5's cash flow

$$\text{Total cash flow} = \text{£191,766}$$

$$\begin{aligned} \text{Net present value} &= \text{£191,766} - \text{£200,000} \\ &= -\text{£8,234} \end{aligned}$$

✓

3

	Project A	Project B	Project C
c) time taken to payback	3 years 8 months	3 years 8 months	3 years 4 months
Net present value	-£24,823.5	-£25,589	-£8234

As shown above all 3 projects finish with a negative net present value, but project C is ~~considerably~~ loses considerably less than projects A and B. Project C also has the quickest payback time, by 4 months quicker than projects A and B. After taking a look at my findings the obvious project I would ~~choose~~ choose is project C.

- a) A risk when investing is that the economy can fluctuate. Extended factors like such as variable costs and can have a massive impact on turnover and profits. New technology or an overall improved process could be an incentive as to why investing would be a viable option.

b)

Location	x	y	demand	x weight	y weight
Supplier 1	91	18	40	3640	720
Supplier 2	93	25	90	8370	2250
Supplier 3	4	46	60	240	2760
Customer 1	83	26	24	1992	624
Customer 2	89	24	86	7654	2064
Customer 3	63	57	32	2016	1824
Customer 4	11	85	78	858	6630
Customer 5	9	27	92	828	2484
Customer 6	44	57	48	2112	2756

$$X_{ab} = 27710 \quad Y_{ab} = 22092 \quad \text{Total demand} = 550 \quad \checkmark 3$$

$$X_0 = \frac{X_{ab}}{\text{Total demand}} = \frac{27710}{550} = 50.38$$

$$Y_0 = \frac{Y_{ab}}{\text{Total demand}} = \frac{22092}{550} = 40.16$$

Best possible area (50.38), (40.16) $\checkmark$