

12 Pages

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 venue.**

1	Student Number	1503509/3
2	Title of Examination Paper	MANAGEMENT INNOVATION AND SUSTAINABILITY
3	Module Code	MSX01176 GOAC 5004
4	Date and Time of Examination	17 TH MAY 2019 2PM
5	Examination Venue	GOWER COLLEGE HALL
6	Seat Number	
7	Number of Answer Books handed in	

[illegible]

(Gweler yr ochr arall am y fersiwn Cymraeg)

Complete, fold and seal
(see note 2 below)

SURNAME: BREWIS

FORENAME(S): IAN RICHARD

66/75

 88%

1.

a, Break-even point = $\frac{\text{Fixed cost}}{\text{Fixed cost} - \text{Variable cost}}$

$$= \frac{500,000}{(20 - 7)}$$

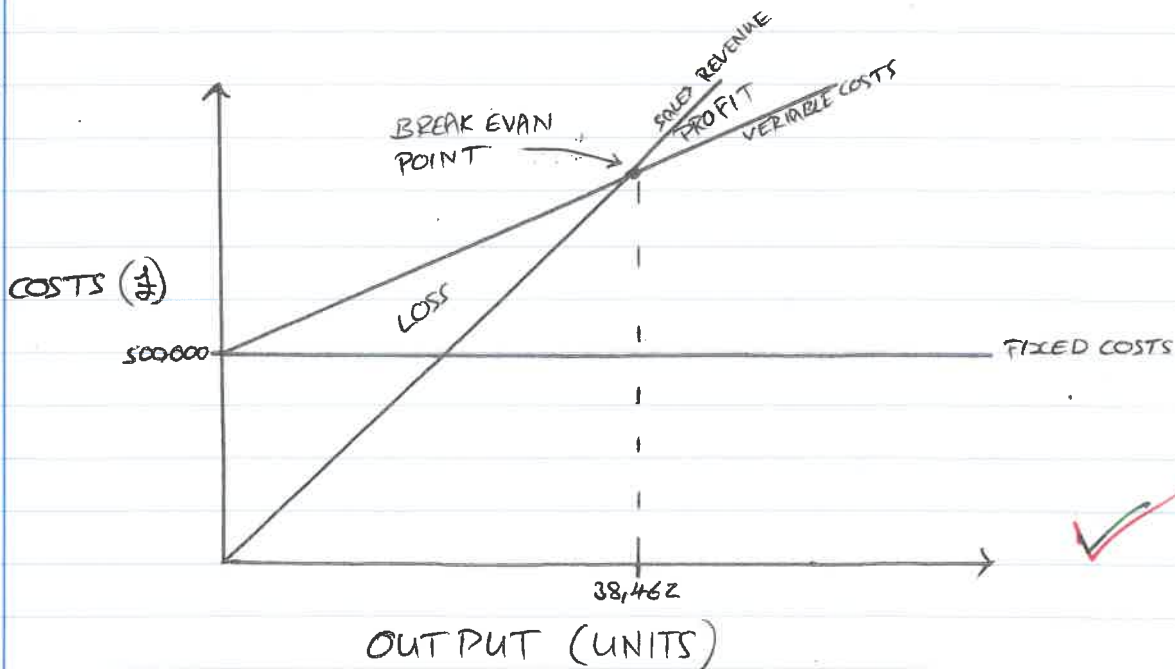
$$= 38461.5$$

$$= 38,462 \text{ UNITS}$$



4

b,



5.

c, Margin of safety at 45,000 units

$$= 45,000 - 38,462$$

The margin of safety = 6538 units.

d. ~~The profit if~~ ~~annual output falls to 75%.~~

The profit if annual output falls to 75%.

$$\text{Output at 75\%} = 60,000 \times 0.75 = 45,000 \text{ units} \quad \checkmark \quad 2$$

$$\text{SALES REVENUE} = 45,000 \times 20 = \pounds 900,000$$

$$\text{Variable costs} = 45,000 \times 7 = \pounds 315,000$$

$$\text{Contribution} = 900,000 - 315,000 = \pounds 585,000 \quad \checkmark \quad 3$$

$$\text{Profit} = \pounds 585,000 - \pounds 500,000$$

$$\text{Profit at 75\%} = \underline{\underline{\pounds 85,000.}} \quad \checkmark \quad 2$$

e.

+ The break even chart is only as good as the data provided. $\checkmark$

+ The break even analysis assumed that all products are sold. $\checkmark$

+ It assumed that all products are sold at the same rate regardless of output. $\checkmark$

+ Many companies hold stock back as finished goods. $\checkmark$

+ It only analyses one product a company manufactures numerous products.

+ It assumes that all costs are fixed.

2. Pay back

a, Project A

Yr	NET CASH FLOW	CUMULATIVE CASH
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

$$\frac{(25,000 + 15,000)}{12} = \frac{40,000}{12} = 3,333.33 \quad \frac{25,000}{3,333.33} = 7.5 = 8 \text{ months}$$

PROJECT A PAYS BACK = 3 YEARS AND 8 MONTHS.

Project B

Yr	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

$$\frac{(40,000 + 20,000)}{12} = 5000 \quad \frac{40,000}{5000} = 8 \text{ MONTHS}$$

PROJECT B PAYS BACK IN 3 YEARS AND 8 MONTHS

Project C

YR	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

$$\frac{(20,000 + 40,000)}{12} = 5000 \quad \frac{20,000}{5000} = 4 \text{ MONTHS}$$

PROJECT C PAYS BACK IN 3 YEARS AND 4 MONTHS.

b1. NET PRESENT VALUE PROJECT A

YEAR	DISCOUNT FACTOR	PRESENT VALUE
0	1.00	(200,000)
1	0.9091	
2	0.8264	
3	0.7513	
4	0.6830	

Project A

YEAR	DISCOUNT FACTOR	CASH FLOW (£)	NET VALUE (£)
0	1.000	(200,000)	(200,000)
1	0.9091	80,000	72,728
2	0.8264	80,000	41,320
3	0.7513	45,000	33,808.5
4	0.6830	40,000	27,320
5	0.6210	—	—

175,176.5

$$\text{NET PRESENT VALUE} = 175,176.5 - 200,000 = \underline{24,823.5 \text{ LOSS}}$$

3

Project B

YEAR	DISCOUNT FACTOR	CASH FLOW (£)	NET VALUE (£)
0	1.000	(200,000)	(200,000)
1	0.9091	60,000	54,546
2	0.8264	50,000	41,320
3	0.7513	50,000	37,565
4	0.6830	60,000	40,980
5	0.6210	—	—

174,411

$$\text{NET PRESENT VALUE} = 174,411 - 200,000 = \underline{25,589 \text{ LOSS}}$$

3

Project C

YEAR	DISCOUNT FACTOR	CASH FLOW (£)	NET VALUE (£)
0	1.000	(200,000)	(200,000)
1	0.9091	70,000	63,637
2	0.8264	60,000	49,584
3	0.7513	50,000	37,565
4	0.6830	60,000	40,980
5	0.6210	—	—

Net present value = $191,766 - 200,000 = \pounds 8,234$ LOSS

3

C.

	Project A	Project B	Project C
PAY BACK	3Yrs 8 months	3Yrs 8 months	3Yrs 3 months
Net Present Value	$\pounds 24,823.5$ LOSS	$\pounds 25,589$ LOSS	$\pounds 8,234$ LOSS

+ Projects A and B both have the same pay back times but project A has a better net present value over project B.

+ Project C has the quickest payback time, 4 months quicker than Project A or B. It has the best net present value of all the projects.

+ If I had to choose a project it would be project C. However all the projects have net present values that are losses so all projects are worth less.

3

d,

Factors

- + Why the investment is necessary
 - + Build new plant due to existing plant to old.
 - + Expanding production
 - + Comply with legislation
 - + New technology (machines)
 - + New process.

+ External factors

- + Interest rates levels
- + Exchange rates levels
- + Inflation rising / falling
- + Global market
- + Government policies ✓

+ The return on investment

- + How successful ~~was~~ previous investments have been.
- + ~~Government policies~~ Time for investment to be returned.
- + Market share
- + Current sales and predicted sales.

(4)

3.

9.

- + The closer to the Supplier and customer the lower the transport costs.
- + Customers are more knowledgeable, they demand better service at lower costs. ✓
- + Competition is becoming greater so companies have to consider every angle to remain competitive. ✓
- + Companies are moving from product to process ^{service} to improve operations. ✓
- + There is a growing concern about pollution caused by vehicles and companies need to reduce emissions. Also the amount of vehicles on the road at any given time and companies are looking to reduce their fleets of vehicles. ✓
- + There has been a change in the supply chain and companies now expect customised service. ✓
- + Some areas offer grants to businesses to attract investment in the area. ✓
- + The area must have the right level of skilled workers, in close proximity. ✓
- + Some area cost more to build on than other that are cheaper but not as near to the companies market or suppliers. ✓
- + Specialist jobs can be outsourced to other companies. ✓

9.

3

b)

LOCATION	X Y COORDINATES	SUPPLY/demand (UNITS)	X	Y
SUPPLIER 1	91, 18	40	3640	720
" " 2	93, 25	90	8370	2250
" " 3	4, 46	60	240	2760
CUSTOMER 1	83, 26	24	1992	624
" " 2	89, 24	86	7654	2064
" " 3	63, 57	32	2016	1824
" " 4	11, 85	78	858	6630
" " 5	9, 27	92	828	2484
" " 6	44, 57	48	2112	2736
		550	27,710	22,092

$$X = \frac{27,710}{550}$$

$$= 50.4$$

$$Y = \frac{22,092}{550}$$

$$= 40.2$$

A good place to start looking for a manufacturing facility is around the coordinates (50.4, 40.2).