

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.**

Complete, fold and seal
(see note 2 below)

SURNAME: Hill

FORENAME(S): Gareth

[illegible]

53/75

71%

Section A

①

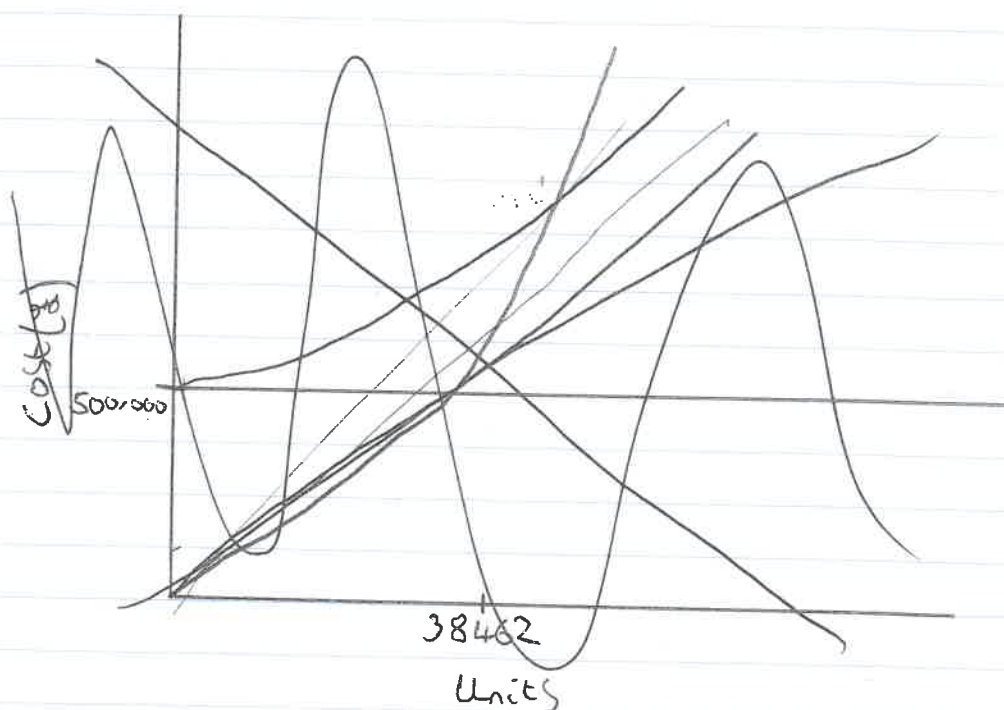
$$a) \text{ break even} = \frac{500,000}{20 - 7} = \frac{500,000}{13}$$

$$\text{break even} = 38461.5$$

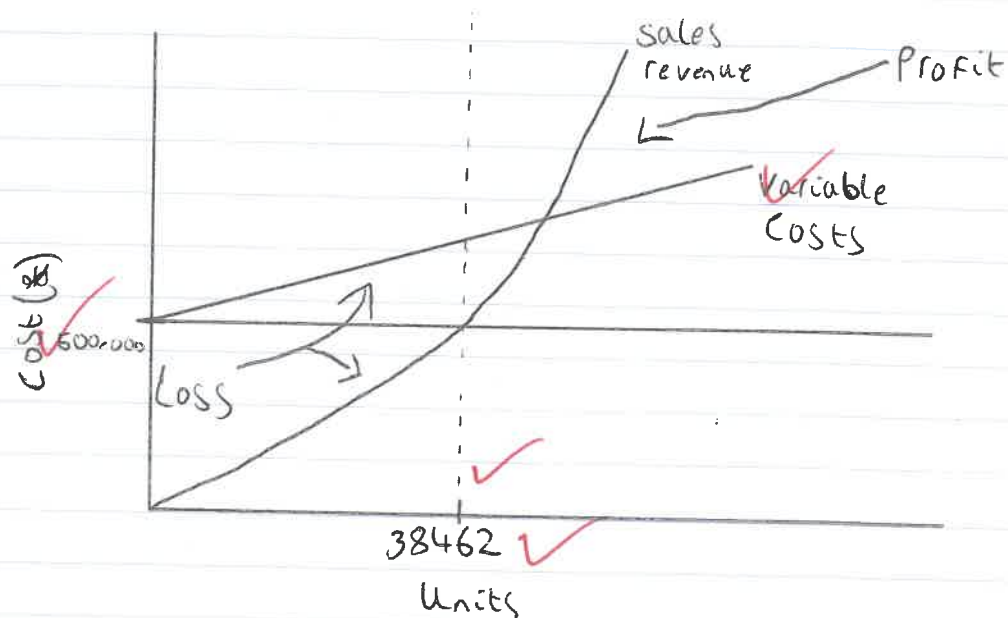
$$= 38462 \text{ units}$$

4

b)



b)



3

c) margin of Safety = 45,000 - break even

$$= 45,000 - 38462$$

margin of Safety = ~~45~~ 6538 units ✓

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

$45,000 \times 20 = \pounds 900,000$

$45,000 \times 7 = \pounds 315,000$

$900,000 - 315,000$
 $= \pounds 585,000$

$585,000 - 500,000$
 $= \pounds 85,000$ Profit

e) Break even analysis is only as accurate as the data provided,

Does not take stock into consideration which is something that many companies hold. ✓

Assumes revenue is a linear function when it is not. ✓

Does not take into account sudden increases in cost like wages, tax or material cost.

Section B

②

Year	Project A		Project B		Project C	
0	(200,000)	(200,000)	(200,000)	(200,000)	(200,000)	(200,000)
1	80,000	(120,000)	60,000	(140,000)	70,000	(130,000)
2	50,000	(70,000)	50,000	(90,000)	60,000	(70,000)
3	45,000	(25,000)	50,000	(40,000)	50,000	(20,000)
4	40,000	15,000	60,000	20,000	60,000	40,000

Project A

~~$$\frac{200,000}{15,000} = 13.33 \text{ years}$$~~

$$\frac{40,000}{12} = 3333.3/\text{month}$$

$$\frac{25,000}{3333.3} = 7.5$$

$$= 8 \text{ months}$$

3 years and 8 months For Payback

✓ 3

Project B

$$\frac{60,000}{12} = 5000/\text{month}$$

$$\frac{40,000}{5,000} = 8 \text{ months}$$

3 years and 8 months For Payback

✓

3

Project C

$$\frac{60,000}{12} = 5000/\text{month}$$

$$\frac{20,000}{5,000} = 4 \text{ months}$$

3 years and 4 months For Payback

✓

3

b)

Year	Project A	Disc Factor	Net Discount
0	(200,000)	~~(200,000)~~ 1.0	(200,000)
1	80,000	0.9091	72,728
2	50,000	0.8264	41,320
3	45,000	0.7513	33,808.5 ✓
4	40,000	0.6830	27,320
			<u>375,176.5</u>

$$375,176.5 - 200,000 = \pounds 175,176.50 \quad 3y + 8m$$

Year	Project B	DF	Net Disc
0	(200,000)	1.0	(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
			<u>374,411</u>

$$374,411 - 200,000 = \pounds 174,411 \quad 3y + 8m$$

Year	Project C	DF	Net Disc
0	(200,000)	1.0	(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
			<u>391,766</u>

$$391,766 - 200,000 = \pounds 191,766 \quad 3y + 4m$$

- c) Project C is the best project as it returns the highest net present value along with the shortest payback.

A+B both payback in the same month with B having a slightly lower net present value, making it the worst choice.

2

3

- d) How much capital will the investment tie up and how this will effect revenue. How long it will take to return the investment + how much extra money will be made. How much risk is involved in the investment.

(3)

a) Skill levels and wage demands of workers in the surrounding area need to be considered. ✓

Will the location be easily accessible to infrastructure + supply routes. ✓

Cost of land rental/purchase in the area. ✓

Access to utilities such as electric, gas etc. ✓

Are there any restrictions in this area? An example of this could be a low emission zone or a tax free zone for industry. ✓

Political stability/environment of the location. ✓

Are there any grants available from a government/organisation. ✓

Will it allow the company to remain competitive with competitors? ✓

Is it too close to a competitor? ✓

8

Location	X coord	Y coord	Demand	X weight	Y weight
S1	91	18	40	$91 \times 40 = 3640$	$18 \times 40 = 720$
S2	93	25	90	8370	2250
S3	4	46	60	240	2760
C1	83	26	24	1992	624
C2	89	24	86	7654	2064
C3	63	57	32	2016	1824
C4	11	85	78	858	6630
C5	9	27	92	828	2484
C6	44	57	48	2112	2736
Total			550	27710	22092

$$X \text{ coordinate} = \frac{27710}{550} = 50.381$$

$$Y \text{ coordinate} = \frac{22092}{550} = 40.167$$