

3(a)	Using the data in Table 1.3, calculate the payback period for PPP's proposed new machine. Definition of payback: the amount of time it takes for the initial investment cost to be recovered (1 if no valid calculation) $(1.9) + 0.5 + 0.6 + 0.8 = 0$ payback is 3 years or 36 months (2) $0.5 + 0.6 + 0.8 = 1.9$ (1) Correct units needed for full marks – years or months.																												
3(b)	Using the data in Table 1.3, calculate the accounting rate of return (ARR) for PPP's proposed new machine. ARR = average annual profit / average investment $\times 100$ (1 if no valid calculation) $ARR = 0.2 / 0.95 \times 100 = 21.05\%$ or 21.1% or 21% (2) Use of 'old' formula $0.2 / 1.9 \times 100 = 10.53\%$ (1) Correct units required for full marks – %																												
3(c)	Evaluate whether PPP should invest in the new machine. <table border="1"> <thead> <tr> <th>Level</th><th>AO1 Knowledge and understanding 2 marks</th><th>AO2 Application 2 marks</th><th>AO3 Analysis 2 marks</th><th>AO4 Evaluation 6 marks</th></tr> </thead> <tbody> <tr> <td>3</td><td></td><td></td><td></td><td> 5–6 marks Developed evaluation in context - A developed judgement/conclusion is made in the business context. - Developed evaluative comments which balance some key arguments in the business context. </td></tr> <tr> <td>2</td><td> 2 marks Developed knowledge of relevant key term(s) and/or factor(s) is used to answer the question. </td><td> 2 marks Developed application of relevant point(s) to the business context. </td><td> 2 marks Developed analysis that identifies connections between causes, impacts and/or consequences. </td><td> 3–4 marks Developed evaluation - A developed judgement/conclusion is made. - Developed evaluative comments which balance some key arguments. </td></tr> <tr> <td>1</td><td> 1 mark Limited knowledge of relevant key term(s) and/or factor(s) is used to answer the question. </td><td> 1 mark Limited application of relevant point(s) to the business context. </td><td> 1 mark Limited analysis that identifies connections between causes, impacts and/or consequences. </td><td> 1–2 marks Limited evaluation - A judgement/conclusion is made with limited supporting comment/evidence. - An attempt is made to balance the arguments. </td></tr> <tr> <td>0</td><td> 0 marks No creditable response. </td><td> 0 marks No creditable response. </td><td> 0 marks No creditable response. </td><td> 0 marks No creditable response. </td></tr> </tbody> </table>				Level	AO1 Knowledge and understanding 2 marks	AO2 Application 2 marks	AO3 Analysis 2 marks	AO4 Evaluation 6 marks	3				5–6 marks Developed evaluation in context - A developed judgement/conclusion is made in the business context. - Developed evaluative comments which balance some key arguments in the business context.	2	2 marks Developed knowledge of relevant key term(s) and/or factor(s) is used to answer the question.	2 marks Developed application of relevant point(s) to the business context.	2 marks Developed analysis that identifies connections between causes, impacts and/or consequences.	3–4 marks Developed evaluation - A developed judgement/conclusion is made. - Developed evaluative comments which balance some key arguments.	1	1 mark Limited knowledge of relevant key term(s) and/or factor(s) is used to answer the question.	1 mark Limited application of relevant point(s) to the business context.	1 mark Limited analysis that identifies connections between causes, impacts and/or consequences.	1–2 marks Limited evaluation - A judgement/conclusion is made with limited supporting comment/evidence. - An attempt is made to balance the arguments.	0	0 marks No creditable response.	0 marks No creditable response.	0 marks No creditable response.	0 marks No creditable response.
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3(c)	Responses may include: AO1 Knowledge and understanding <i>Limited knowledge [K]</i> will be demonstrated through knowledge of one factor in investment decision / knowledge of impacts of process innovation. <i>Developed knowledge [K] + [K]</i> will be demonstrated through knowledge of two factors in the investment decision / impacts of process innovation. Knowledge of process innovation and its impacts Definition of process innovation: the move to new methods of production, in this case computer-controlled automation. Less labour required. Knowledge of factors in decision - Investment cost. - Availability of finance. - Impact on employees. - ARR and Payback results. - Technical economies of scale possible. - Reduction in average cost of production. - Impact on quality. AO2 Application <i>Limited application, [APP]</i> applies knowledge to PPP once. <i>Developed application, [APP] + [APP]</i> applies knowledge to PPP twice. - Payback of 3 years – within 4 years of estimated life. - Return of \$800 000 over 4 year period. - ARR of 21.05% - Cost of machine \$1 900 000 - NCL are \$6 million and gearing is 45%, total CE is therefore \$13.3 million - Extra borrowing of \$1.9 m would make gearing $7.9 / 15.2 = 51.97\%$ - Pies have a shelf-life, therefore over-stocking inadvisable
3(c)	AO3 Analysis <i>Limited analysis [AN]</i> – candidate shows one link in the chain of analysis. <i>Developed analysis [L2/AN]</i> – candidate shows two or more links in the chain of analysis. - Machine is costly, but the relatively high gearing of PPP increases risk of further borrowir[AN] causing cash flow problems for PPP [L2/AN] especially if sales fail to increase at the same rate as capacity increase. - Employee training to deal with computer automated system will result in increased cos[AN], but PPP has a reputation for good employee training, which could be boosted by thi[L2/AN] - Automation leads to increased efficiency[AN] and therefore eventually increased prof[L2/AN] - Introducing automation may cause disruption to operations in the short-term reducing output whilst it is install[AN] possible damage to reputation if orders are not fulfilled resulting in lower sale[L2/AN] - Automation will help PPP fulfil customer orders more quickly resulting in customer satisfactio[AN] and therefore an increase in sales [L2/AN] - Automation may result in a reduction in the number of employees engaged in production which will reduce operating costs [AN] but this will also result in redundancy payments being made[L2/AN] - If automation leads to excess stocks, waste may increase[AN], which could lead to increased production cost[L2/AN] - Work may become more boring for employees resulting in a reduction in motivation and therefore an increase in labour turnover[AN] increasing costs[L2/AN]

3(c)	AO4 Evaluation Limited evaluation EVAL – limited supported judgement and/or a weak attempt at evaluative comment Developed evaluation L2 EVAL – supported judgement and/or reasonable evaluative comment Developed evaluation in context L3 EVAL – supported judgement in context and/or reasonable evaluative comment in context. - A judgement about whether to invest in automation/process innovation. - Elements that the evaluation/judgement might depend on: - If automation is used, then success greatly depends on increased demand. - How flexible might the machine be in changing from one type of pie to another? - How well does automation fit with the 'social objectives' of PPP's employment practices? - How important might the 'handmade' aspect of PPP's pies be in marketing? - Other factors to consider e.g. - NPV as this considers time value of money. - Depends on availability of finance linked to relatively high gearing and interest rate. - How long will it take to install the automated system? - Will specialist IT employees be required and how expensive is that? - Opportunity cost of this project. - Weighing up of the factors and their relative influence on PPP's decision whether to invest in the new machine Accept all valid responses
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3(a)	Using the data in Table 1.2, calculate the payback of the country C location. Responses may include Payback is in the fifth year (1) <table><tr><th>Year</th><th>Net cashflow (\$m)</th><th>Cumulative Cashflow</th></tr><tr><td>0</td><td>(10)</td><td>(10)</td></tr><tr><td>1</td><td>0.5</td><td>(9.5)</td></tr><tr><td>2</td><td>1.5</td><td>(8)</td></tr><tr><td>3</td><td>3</td><td>(5)</td></tr><tr><td>4</td><td>4</td><td>(1)</td></tr><tr><td>5</td><td>4</td><td>3</td></tr></table> Payback is 4 years 3 months OR 4.25 years (2) Units required for full marks (Years/months) Common error 5 years 3 months (1 mark if with evidence of appropriate working e.g. attempt at cumulative cashflow)	Year	Net cashflow (\$m)	Cumulative Cashflow	0	(10)	(10)	1	0.5	(9.5)	2	1.5	(8)	3	3	(5)	4	4	(1)	5	4	3
Year	Net cashflow (\$m)	Cumulative Cashflow																				
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3(b)	Using the data in Table 1.3, calculate the accounting rate of return (ARR) of the country D location. Responses may include ARR = Average profit / average investment × 100 (1) = 2.8 / 12 × 100 = 23.3% (2) Answer of 23.3 or \$23.3 (1 mark only) Using alternative ARR equation: 2.8 / 20 × 100 = 14% (1)																					

3(c)

Evaluate which location KTJ should choose for its new factory.

Level	AO1 Knowledge and understanding 2 marks	AO2 Application 2 marks	AO3 Analysis 2 marks	AO4 Evaluation 6 marks
3				5–6 marks Developed evaluation in context - A developed judgement/conclusion is made in the business context. - Developed evaluative comments which balance some key arguments in the business context.
2	2 marks Developed knowledge of relevant key term(s) and/or factor(s) is used to answer the question.	2 marks Developed application of relevant point(s) to the business context.	2 marks Developed analysis that identifies connections between causes, impacts and/or consequences.	3–4 marks Developed evaluation - A developed judgement/conclusion is made. - Developed evaluative comments which balance some key arguments.
1	1 mark Limited knowledge of relevant key term(s) and/or factor(s) is used to answer the question.	1 mark Limited application of relevant point(s) to the business context.	1 mark Limited analysis that identifies connections between causes, impacts and/or consequences.	1–2 marks Limited evaluation - A judgement/conclusion is made with limited supporting comment/evidence. - An attempt is made to balance the arguments.
0	0 marks No creditable response.	0 marks No creditable response.	0 marks No creditable response.	0 marks No creditable response.

3(c)

Responses may include:

AO1 Knowledge and understanding

Definition of payback / ARR / NPV (max 1 mark for definitions of any or all of these terms)

Factors in the decision

- Shorter payback.
- Higher ARR.
- Capital cost.
- Revenue expenditure required.
- Quality of infrastructure.
- Access to labour and utilities.
- Political/legal environment.
- Quantitative and qualitative factors.

AO2 Application

Limited application, APPI applies knowledge to KTJ once. Developed application APPI APPI applies knowledge to KTJ twice.

Application is making use of relevant case information not just repeating it.

Using data from Tables 1.1, 1.2 and 1.3

- Country D location is double the capital cost
- Country C has quicker payback by 9 months
- Country C has higher ARR by 1.7% points
- Country C may have lower wages
- Easier to export from Country D
- Bigger potential market in Country D
- Competition between farmers in country C
- Economies of scale in country D farming of fruit
- Mission statement regarding sustainability and ethical relationships with farmers.

3(c)	AO3 Analysis <i>Limited analysis</i> [AN] – candidate shows one link in the chain of analysis. <i>Developed analysis</i> L2[AN] – candidate shows two or more links in the chain of analysis or balance of argument. - Country D is a middle-income country and therefore households will have a higher income [AN] this will result in higher sales of juices L2[AN] - KTJ juices are a premium product so will be relatively expensive [AN] so juices may be less affordable in country C - leading to lower sales L2[AN] - Seaport in country D will facilitate exports of KTJ's juice resulting in higher sales [AN] and may therefore increase profit L2[AN] - Reliable infrastructure in D could reduce delays and protect brand image resulting in higher sales [AN] - Lower fixed costs in C could improve cash flow reducing risk of liquidity problems for K[AN] - Economies of scale in D may reduce per-unit costs and therefore increase profit [AN] AO4 Evaluation <i>Limited evaluation</i> [EVAL] – limited supported judgement and/or a weak attempt at evaluative comment. <i>Developed evaluation</i> L2[EVAL] – supported judgement and/or reasonable evaluative comment. <i>Developed evaluation in context</i> L3[EVAL] – supported judgement in context and/or reasonable evaluative comment in context. - Supported judgement as to whether country C or D is better. - Factors that decision might depend on: - Ability of KTJ to raise finance for more expensive option. - Willingness to take risk – electricity supply in country C and additional capital cost in D - Fit with KTJ's CSR – small farms rather than large scale fruit production - Importance of profit. C is marginally more profitable than D. - Depends on KTJ's tolerance for operational risk versus willingness to commit higher capital expenditure - Country D offers greater stability and scalability but requires larger upfront investment - Country C better supports CSR positioning but may compromise operational reliability - A phased investment strategy could balance initial risk with future growth potential - Decision may be influenced by external factors such as currency movements, access to finance and market growth trends - Questioning whether Gudaf has the necessary experience / skill to conduct this investment appraisal. Accept all valid responses.
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3(a)	Using the data in Table 1.1, calculate the payback period. Payback period is time taken to recover the initial investment. OR Initial investment = \$320m. OR Payback in sixth year (1 mark) (no of months = $10/120 \times 12 = 1$ month) Payback period is 5 years 1 month OR 5.08 years (2 marks)
3(b)	Using the data in Table 1.1, calculate the net present value (NPV) over six years discounted at 8%. NPV is the value today of future cash flows net of the original cost of investment. OR Total discounted net cash flows = \$307.63m OR Discounted capital cost = \$311.11m (1 mark) $NPV = 307.63 - 311.11 = (\\$3.48m)$ (2 marks) Accept 3.5

3(c)	Evaluate LBM's decision to go ahead with the hot water test mine.			
Level	AO1 Knowledge and understanding 2 marks	AO2 Application 2 marks	AO3 Analysis 2 marks	AO4 Evaluation 6 marks
3				5–6 marks Developed evaluation in context - A developed judgement/conclusion is made in the business context. - Developed evaluative comments which balance some key arguments in the business context.
2	2 marks Developed knowledge of relevant key term(s) and/or factor(s) is used to answer the question.	2 marks Developed application of relevant point(s) to the business context.	2 marks Developed analysis that identifies connections between causes, impacts and/or consequences.	3–4 marks Developed evaluation - A developed judgement/conclusion is made. - Developed evaluative comments which balance some key arguments.
1	1 mark Limited knowledge of relevant key term(s) and/or factor(s) is used to answer the question.	1 mark Limited application of relevant point(s) to the business context.	1 mark Limited analysis that identifies connections between causes, impacts and/or consequences.	1–2 marks Limited evaluation - A judgement/conclusion is made with limited supporting comment/evidence. - An attempt is made to balance the arguments.
0	0 marks No creditable response.	0 marks No creditable response.	0 marks No creditable response.	0 marks No creditable response.

3(c)	Responses may include: AO1 Knowledge and understanding - Understanding of the use of investment appraisal – payback period, NPV including advantages (quantitative, based on data, NPV factors in time value,) and disadvantages (predictions may be inaccurate as circumstances change, false sense of accuracy, providers of data may be biased and provide misleading data). - Qualitative factors in investment decisions include: - Attitude to risk. - Impact on stakeholders e.g. environmental/social considerations, future economic changes. - How well the project fits the business objectives. AO2 Application <i>Limited application</i>, [APPI] applies knowledge to LBM once. <i>Developed application</i>, [APPI], [APPI] applies knowledge to LBM twice. Application is making use of relevant case information not just repeating it. - Quantitative results (Payback 5 years 1 month; NPV –\$3.48m over 6 years). - Project life span is 15 years, but cash flows are only appraised for 6 years. - LBM has strict finance limitations (no adverse variances allowed). - The project has local opposition. - The hot water extraction process allows water to be used for heating local housing. - LBM is currently losing \$2–3 million per year. - Estimated 15 year life span. - Uncertain forecasting beyond six years. - Non-inclusion of data relating to possible extraction of other metals. - Objective of LBM is to produce lithium. - Decreasing supply/demand gap (after 2030 demand>supply). - LBM only producer in country G. - Test mine is the first project, next is hard rock mining. - Government concerned to get lithium production in country G. - LBM has the finance.
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3(c)	AO3 Analysis <i>Limited analysis</i> AN – candidate shows one link in the chain of analysis. <i>Developed analysis</i> L2/AN – candidate shows two or more links in the chain of analysis. - The negative NPV (-\$3.48m) over six years suggests the project does not cover its costs of capital and should be rejected AN, thus ensuring LBM does not deepen its existing losses L2/AN. - The project lifespan is 15 years, and the uncounted positive cash flows in Years 7–15, coupled with rapidly rising global demand for lithium, could lead to a highly positive overall NPV AN, significantly increasing future revenue L2/AN. - If LBM experiences adverse variances, they may run out of finance, leading to project failure AN and a loss of the large initial investment (\$200m + \$120m) L2/AN. - The dual benefit of extraction and heating local housing may satisfy social objectives and reduce local opposition AN, thereby lowering the risk of delay L2/AN. - Learning from this project will enhance performance in future projects, therefore increasing the likely success of the hard rock mining project AN. - The price of lithium is likely to continue to rise resulting in higher revenues in years 7–15 AN. - Other producers may appear causing lower lithium prices and therefore reduce forecast net cash flow AN. - If other metals can be recovered the revenue figures may be higher than forecast AN. AO4 Evaluation <i>Limited evaluation</i> EWAL – limited supported judgement and/or a weak attempt at evaluative comment. <i>Developed evaluation</i> L2/EVAL – supported judgement and/or reasonable evaluative comment. <i>Developed evaluation in context</i> L3/EVAL – supported judgement in context and/or reasonable evaluative comment in context. - Supported judgement as to whether LBM should proceed. - Quantitative investment appraisal indicates the decision is unwise as NPV is negative but likely positive ARR, and NPV very close to zero mean qualitative factors may be more important. - Factors that decision might depend on: - Reliability of the estimated cash flows for the remaining 9 years; - LBM's willingness to accept high financial and operational risk (local opposition, tight budget); - the importance of social benefits (heating local housing) versus financial return. - Accuracy of the discount factor and forecast cash flow. In the changing lithium market the indicators are that they are possibly neither, but the most likely possibility is that revenues will be higher than forecast.
3(c)	- the risk appears to be low and the finance is available. - If LBM does not go ahead, it is likely to go out of business due to increasing losses. - The decision is highly subjective due to high uncertainty beyond Year 6. Given that LBM is currently unprofitable and operates with tight funding, the negative NPV indicates high risk. However, strategically, LBM must establish mining operations to leverage the rapid revenue forecast. - The project should probably be delayed or redesigned until LBM can secure sufficient finance to absorb potential adverse variances and until a more reliable long-term forecast can demonstrate a clearly positive NPV over the full 15 years Accept all valid responses Exemplar L3 Evaluation The decision hinges on LBM's risk tolerance and belief in the long-term forecast. While the negative NPV over the appraised period suggests that rejecting the project would be financially prudent for a company currently operating at a loss, strategically, LBM must establish mining operations to survive and capture future revenue. However, the decision is contingent on securing a buffer of finance to tolerate adverse variances. Given the extremely tight financial limitations, LBM should consider conducting a sensitivity analysis on the cash flows for years 7–15 to demonstrate that the strategic gain outweighs the immediate financial risk. If LBM cannot demonstrate a substantial expected NPV over the full 15 years, or if the tight budget cannot be loosened, the project should be delayed until funding is more secure to protect the business from insolvency.