

| 4(a)  | <p><b>Using the data in Table 1.4, calculate the four period centred moving average for Quarter 1 2025.</b></p> <p><b>Responses may include:</b><br/>           4 period moving average = 8 period moving total / 8 (1 mark if no relevant calculation)<br/>           Calculation of one <b>or</b> two <b>relevant</b> 4 period totals (1)<br/> <math>7 + 5.5 + 4.2 + 6.4 = 23.1</math><br/> <b>AND/OR</b><br/> <math>5.5 + 4.2 + 6.4 + 7.6 = 23.7</math><br/>           Calculation of relevant 4 period totals <b>and</b> relevant 8 period total <b>OR</b> calculation of <b>relevant</b> 8 period total (2 marks)<br/>           8 period total = <math>23.1 + 23.7 = 46.8</math> (2)<br/>           Centred quarterly moving average = <math>46.8 / 8</math> (3)<br/>           = 5.85 <b>or</b> \$5.85m (4)<br/>           Other common answers:<br/> <math>23.1 / 4 = 5.775</math> <b>OR</b> <math>23.7 / 4 = 5.925</math> (2)<br/>           Not using the correct sales volume figures.<br/>           4 consecutive quarterly sales volumes added together and divided by 4 = 1 mark<br/>           e.g. <math>(6 + 7 + 5.5 + 4.2) / 4 = 22.7 / 4 = 5.675</math> (1)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                           |                                                                                                                   |                                                                                                                                                                                                                                                                                 |       |                                            |                            |                         |                        |   |  |  |  |                                                                                                                                                                                                                                                                                 |   |                                                                                                             |                                                                                    |                                                                                                            |                                                                                                                                                                                                                      |   |                                                                                                                    |                                                                                           |                                                                                                                   |                                                                                                                                                                                                                                |   |                                           |                                           |                                           |                                           |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------|----------------------------|-------------------------|------------------------|---|--|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| 4(b)  | <p><b>Evaluate the usefulness of time series analysis to KTJ in making business decisions.</b></p> <table border="1"> <thead> <tr> <th>Level</th><th>AO1 Knowledge and understanding<br/>2 marks</th><th>AO2 Application<br/>2 marks</th><th>AO3 Analysis<br/>2 marks</th><th>AO4 Evaluation 6 marks</th></tr> </thead> <tbody> <tr> <td>3</td><td></td><td></td><td></td><td> <b>5–6 marks</b><br/> <b>Developed evaluation in context</b> <ul style="list-style-type: none"> <li>A developed judgement/conclusion is made in the business context.</li> <li>Developed evaluative comments which balance some key arguments in the business context.</li> </ul> </td></tr> <tr> <td>2</td><td> <b>2 marks Developed knowledge</b> of relevant key term(s) and/or factor(s) is used to answer the question.         </td><td> <b>2 marks Developed application</b> of relevant point(s) to the business context.         </td><td> <b>2 marks Developed analysis</b> that identifies connections between causes, impacts and/or consequences.         </td><td> <b>3–4 marks</b><br/> <b>Developed evaluation</b> <ul style="list-style-type: none"> <li>A developed judgement/conclusion is made.</li> <li>Developed evaluative comments which balance some key arguments.</li> </ul> </td></tr> <tr> <td>1</td><td> <b>1 mark</b><br/> <b>Limited knowledge</b> of relevant key term(s) and/or factor(s) is used to answer the question.         </td><td> <b>1 mark</b><br/> <b>Limited application</b> of relevant point(s) to the business context.         </td><td> <b>1 mark</b><br/> <b>Limited analysis</b> that identifies connections between causes, impacts and/or consequences.         </td><td> <b>1–2 marks</b><br/> <b>Limited evaluation</b> <ul style="list-style-type: none"> <li>A judgement/conclusion is made with limited supporting comment/evidence.</li> <li>An attempt is made to balance the arguments.</li> </ul> </td></tr> <tr> <td>0</td><td> <b>0 marks</b><br/>           No creditable response.         </td><td> <b>0 marks</b><br/>           No creditable response.         </td><td> <b>0 marks</b><br/>           No creditable response.         </td><td> <b>0 marks</b><br/>           No creditable response.         </td></tr> </tbody> </table> |                                                                                           |                                                                                                                   |                                                                                                                                                                                                                                                                                 | Level | AO1 Knowledge and understanding<br>2 marks | AO2 Application<br>2 marks | AO3 Analysis<br>2 marks | AO4 Evaluation 6 marks | 3 |  |  |  | <b>5–6 marks</b><br><b>Developed evaluation in context</b> <ul style="list-style-type: none"> <li>A developed judgement/conclusion is made in the business context.</li> <li>Developed evaluative comments which balance some key arguments in the business context.</li> </ul> | 2 | <b>2 marks Developed knowledge</b> of relevant key term(s) and/or factor(s) is used to answer the question. | <b>2 marks Developed application</b> of relevant point(s) to the business context. | <b>2 marks Developed analysis</b> that identifies connections between causes, impacts and/or consequences. | <b>3–4 marks</b><br><b>Developed evaluation</b> <ul style="list-style-type: none"> <li>A developed judgement/conclusion is made.</li> <li>Developed evaluative comments which balance some key arguments.</li> </ul> | 1 | <b>1 mark</b><br><b>Limited knowledge</b> of relevant key term(s) and/or factor(s) is used to answer the question. | <b>1 mark</b><br><b>Limited application</b> of relevant point(s) to the business context. | <b>1 mark</b><br><b>Limited analysis</b> that identifies connections between causes, impacts and/or consequences. | <b>1–2 marks</b><br><b>Limited evaluation</b> <ul style="list-style-type: none"> <li>A judgement/conclusion is made with limited supporting comment/evidence.</li> <li>An attempt is made to balance the arguments.</li> </ul> | 0 | <b>0 marks</b><br>No creditable response. | <b>0 marks</b><br>No creditable response. | <b>0 marks</b><br>No creditable response. | <b>0 marks</b><br>No creditable response. |
| Level | AO1 Knowledge and understanding<br>2 marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | AO2 Application<br>2 marks                                                                | AO3 Analysis<br>2 marks                                                                                           | AO4 Evaluation 6 marks                                                                                                                                                                                                                                                          |       |                                            |                            |                         |                        |   |  |  |  |                                                                                                                                                                                                                                                                                 |   |                                                                                                             |                                                                                    |                                                                                                            |                                                                                                                                                                                                                      |   |                                                                                                                    |                                                                                           |                                                                                                                   |                                                                                                                                                                                                                                |   |                                           |                                           |                                           |                                           |
| 3     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                           |                                                                                                                   | <b>5–6 marks</b><br><b>Developed evaluation in context</b> <ul style="list-style-type: none"> <li>A developed judgement/conclusion is made in the business context.</li> <li>Developed evaluative comments which balance some key arguments in the business context.</li> </ul> |       |                                            |                            |                         |                        |   |  |  |  |                                                                                                                                                                                                                                                                                 |   |                                                                                                             |                                                                                    |                                                                                                            |                                                                                                                                                                                                                      |   |                                                                                                                    |                                                                                           |                                                                                                                   |                                                                                                                                                                                                                                |   |                                           |                                           |                                           |                                           |
| 2     | <b>2 marks Developed knowledge</b> of relevant key term(s) and/or factor(s) is used to answer the question.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>2 marks Developed application</b> of relevant point(s) to the business context.        | <b>2 marks Developed analysis</b> that identifies connections between causes, impacts and/or consequences.        | <b>3–4 marks</b><br><b>Developed evaluation</b> <ul style="list-style-type: none"> <li>A developed judgement/conclusion is made.</li> <li>Developed evaluative comments which balance some key arguments.</li> </ul>                                                            |       |                                            |                            |                         |                        |   |  |  |  |                                                                                                                                                                                                                                                                                 |   |                                                                                                             |                                                                                    |                                                                                                            |                                                                                                                                                                                                                      |   |                                                                                                                    |                                                                                           |                                                                                                                   |                                                                                                                                                                                                                                |   |                                           |                                           |                                           |                                           |
| 1     | <b>1 mark</b><br><b>Limited knowledge</b> of relevant key term(s) and/or factor(s) is used to answer the question.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>1 mark</b><br><b>Limited application</b> of relevant point(s) to the business context. | <b>1 mark</b><br><b>Limited analysis</b> that identifies connections between causes, impacts and/or consequences. | <b>1–2 marks</b><br><b>Limited evaluation</b> <ul style="list-style-type: none"> <li>A judgement/conclusion is made with limited supporting comment/evidence.</li> <li>An attempt is made to balance the arguments.</li> </ul>                                                  |       |                                            |                            |                         |                        |   |  |  |  |                                                                                                                                                                                                                                                                                 |   |                                                                                                             |                                                                                    |                                                                                                            |                                                                                                                                                                                                                      |   |                                                                                                                    |                                                                                           |                                                                                                                   |                                                                                                                                                                                                                                |   |                                           |                                           |                                           |                                           |
| 0     | <b>0 marks</b><br>No creditable response.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>0 marks</b><br>No creditable response.                                                 | <b>0 marks</b><br>No creditable response.                                                                         | <b>0 marks</b><br>No creditable response.                                                                                                                                                                                                                                       |       |                                            |                            |                         |                        |   |  |  |  |                                                                                                                                                                                                                                                                                 |   |                                                                                                             |                                                                                    |                                                                                                            |                                                                                                                                                                                                                      |   |                                                                                                                    |                                                                                           |                                                                                                                   |                                                                                                                                                                                                                                |   |                                           |                                           |                                           |                                           |

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4(b) | <p><b>Responses may include:</b><br/> <b>AO1 Knowledge and understanding</b><br/> <i>Limited knowledge <b>K</b> will be demonstrated through knowledge of TSA.</i><br/> <i>Developed knowledge <b>K</b> + <b>K</b> will be demonstrated through knowledge of TSA and its usefulness.</i></p> <p><b>Examiner note:</b> Do not reward comments that TSA is time consuming or calculations are complex or that workers require training.</p> <ul style="list-style-type: none"> <li>Sales forecasting involves making a prediction of future sales.</li> <li>Time series analysis is a method of forecasting based on extrapolation from past data. (maximum of 1 mark for definition of TSA / sales forecasting)</li> <li>Benefits include:             <ul style="list-style-type: none"> <li>Contribution to workforce planning.</li> <li>Planning purchase of resources.</li> <li>Greater accuracy in cash flow forecasting.</li> <li>Aids operational decisions such as need to increase capacity.</li> <li>Aids decisions about pricing.</li> <li>Improves forecasting accuracy</li> <li>Identifies both trend and seasonal variation.</li> </ul> </li> <li>Limitations             <ul style="list-style-type: none"> <li>Based on historical data</li> <li>Does not account for external changes</li> </ul> </li> </ul> <p><b>AO2 Application</b><br/> <i>Limited application <b>APPI</b> applies knowledge to KTJ once. Developed application <b>APPI</b> <b>APPI</b> applies knowledge to KTJ twice.</i><br/>           Application is making use of relevant case information not just repeating it.</p> <ul style="list-style-type: none"> <li>Q3 is peak month for sales.</li> <li>Juice is not produced in the US but is imported.</li> <li>Helps plan fruit imports.</li> <li>The US market is very competitive.</li> <li>Fluctuations in country B's exchange rate.</li> </ul> |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

  

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4(b) | <p><b>AO3 Analysis</b><br/> <i>Limited analysis <b>AN</b> – candidate shows one link in the chain of analysis.</i><br/> <i>Developed analysis <b>L2AN</b> – candidate shows two or more links in the chain of analysis.</i></p> <ul style="list-style-type: none"> <li>Helps ensure efficient use of labour and machinery helping to control costs of product <b>AN</b> and therefore profit.</li> <li><b>L2AN</b></li> <li>Contributes to creating cash flow forecast which will help ensure that KTJ has sufficient finance in place to deal with future needs <b>AN</b></li> <li>Identifying the trend in sales growth will help set realistic marketing objectives in the marketing plan thus ensuring that resources are not waste <b>AN</b></li> </ul> <p><b>AO4 Evaluation</b><br/> <i>Limited evaluation <b>IVAL</b> – limited supported judgement and/or a weak attempt at evaluative comment. Developed evaluation <b>L2IVAL</b> – supported judgement and/or reasonable evaluative comment.</i><br/> <i>Developed evaluation in context <b>L3IVAL</b> – supported judgement in context and/or reasonable evaluative comment in context.</i></p> <ul style="list-style-type: none"> <li>Using 4 period moving average fits the data well as there are clear seasonal variations ensuring that the technique is more likely to give reliable results.</li> <li>Unexpected changes in the external environment such as entry of a new competitor will result in the predictions being incorrect and therefore less useful in making the best decisions.</li> <li>TSA relies on future events behaving as in the past so may not be reliable as markets are dynamic</li> <li>May be advisable to introduce an element of probability to the forecasts – what if analysis</li> <li>Usefulness depends on stability of seasonal trends over time</li> <li>Forecasts may be less reliable if market conditions change unexpectedly</li> <li>Most effective when combined with other forecasting methods</li> <li>More suitable for short-term operational planning than for long-term strategic decisions</li> <li>Practical value depends on KTJ's capacity to adjust production and procurement in response to forecasts</li> </ul> <p>Accept all valid responses.</p> |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|