<table>
<tr><td>4(a)</td><td>Using the data in Table 1.4, calculate the four period centred moving average for Quarter 1 2025.

Responses may include:
4 period moving average = 8 period moving total / 8 (1 mark if no relevant calculation)
Calculation of one or two relevant 4 period totals (1)
7 + 5.5 + 4.2 + 6.4 = 23.1
AND/OR
5.5 + 4.2 + 6.4 + 7.6 = 23.7
Calculation of relevant 4 period totals and relevant 8 period total OR calculation of relevant 8 period total (2 marks)
8 period total = 23.1 + 23.7 = 46.8 (2)
Centred quarterly moving average = 46.8 / 8 (3)
= 5.85 or $5.85m (4)
Other common answers:
23.1 / 4 = 5.775 OR 23.7 / 4 = 5.925 (2)
Not using the correct sales volume figures.
4 consecutive quarterly sales volumes added together and divided by 4 = 1 mark
e.g. (6 + 7 + 5.5 + 4.2) / 4 = 22.7 / 4 = 5.675 (1)</td></tr>
<tr><td>4(b)</td><td>Evaluate the usefulness of time series analysis to KTJ in making business decisions.

<table>
<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>
<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>
</table></td></tr>
</table>

4(b)

Responses may include:
AO1 Knowledge and understanding
Limited knowledge K *will be demonstrated through knowledge of TSA.*
Developed knowledge K + K *will be demonstrated through knowledge of TSA and its usefulness.*

Examiner note: *Do not reward comments that TSA is time consuming or calculations are complex or that workers require training.*

- Sales forecasting involves making a prediction of future sales.
- Time series analysis is a method of forecasting based on extrapolation from past data. (maximum of 1 mark for definition of TSA / sales forecasting)
- Benefits include:
  - Contribution to workforce planning.
  - Planning purchase of resources.
  - Greater accuracy in cash flow forecasting.
  - Aids operational decisions such as need to increase capacity.
  - Aids decisions about pricing.
  - Improves forecasting accuracy
  - Identifies both trend and seasonal variation.
- Limitations
  - Based on historical data
  - Does not account for external changes

AO2 Application
Limited application, APP *applies knowledge to KTJ once. Developed application,* APP APP *applies knowledge to KTJ twice.*
Application is making use of relevant case information not just repeating it.

- Q3 is peak month for sales.
- Juice is not produced in the US but is imported.
- Helps plan fruit imports.
- The US market is very competitive.
- Fluctuations in country B's exchange rate.

4(b)

AO3 Analysis
Limited analysis AN *– candidate shows one link in the chain of analysis.*
Developed analysis L2 AN *– candidate shows two or more links in the chain of analysis.*

- Helps ensure efficient use of labour and machinery helping to control costs of production AN and therefore profit.
- L2 AN
- Contributes to creating cash flow forecast which will help ensure that KTJ has sufficient finance in place to deal with future needs. AN
- Identifying the trend in sales growth will help set realistic marketing objectives in the marketing plan thus ensuring that resources are not wasted AN

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.*

- 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.
- 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.
- TSA relies on future events behaving as in the past so may not be reliable as markets are dynamic
- May be advisable to introduce an element of probability to the forecasts – what if analysis
- Usefulness depends on stability of seasonal trends over time
- Forecasts may be less reliable if market conditions change unexpectedly
- Most effective when combined with other forecasting methods
- More suitable for short-term operational planning than for long-term strategic decisions
- Practical value depends on KTJ's capacity to adjust production and procurement in response to forecasts

Accept all valid responses.