CAMBRIDGE
International Education

Cambridge International AS & A Level

THINKING SKILLS **9694/03**

Paper 3 Problem Analysis and Solution **For examination from 2028**

MARK SCHEME

Maximum Mark: 50

Specimen

This document has **8** pages.

Generic Marking Principles

All examiners must apply these general marking principles when marking candidate responses. Examiners must apply them alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme must also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptions for the question
- the specific skills defined in the mark scheme or in the generic level descriptions for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptions.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptions in mind.

NOTES FOR MARKERS

Working

Where a final answer is underlined in the mark scheme, full marks are awarded for a correct answer, regardless of whether there is any supporting working, unless an exception is noted in the mark scheme.

Supporting working is **not** needed to gain full marks, unless otherwise stated in the mark scheme.

If working clearly shows, beyond any doubt, that a correct answer derives purely from incorrect reasoning, that answer may be invalidated, unless otherwise stated in the mark scheme.

For partial credit, the evidence needed to award the mark will usually be shown on its own line in the mark scheme, or else will be defined in italic text.

For explanations and verbal justifications, apply the principle of 'words to that effect'.

Units

Unless required by the question or mark scheme, units such as $ do not need to be seen to award the marks.

Incorrectly labelled work

If the candidate has labelled their work with the wrong Question/part number, highlight the label(s) and add a comment to flag it. This will help avoid confusion for anyone checking the script later on.

No response

If there is any attempt at a solution award 0 marks not NR. '–' or '?' constitute no attempt at a solution.

Abbreviations

The following abbreviations may be used in a mark scheme:

AG answer given (on question paper)
awrt answer which rounds to
dep mark depends on earlier, asterisked (*), mark
ft follow through (from earlier error)
oe or equivalent
SC special case
soi seen or implied

Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Where the answer is underlined in the mark scheme, and a candidate's correct final answer is both clear and clearly identified (encircled, underlined etc.), it is not necessary to annotate that item; nor is it necessary to annotate when there is No Response.

Where there is a response that scores 0, either SEEN should be used, or some other annotation(s) to indicate why no marks can be awarded (Caret, TE, NGE, Cross).

Partial credit should be indicated with a 1 (or, occasionally, a 2) at the point at which that mark has been earned.

The highlighter should be used anywhere it is helpful to clarify the marking.

Annotation	Meaning
	Correct item
	Incorrect item
	Individual mark of partial credit
	Double mark of partial credit
	Essential element of answer/working missing
	Judged to be not good enough to earn the relevant credit
	Benefit of doubt
	Correct follow through
	Transcription error
	Special case
	Working seen but no credit awarded; blank page checked
Highlighter	Use anywhere it is helpful to clarify the marking

There must be at least one annotation on each page of the answer booklet.

Question	Answer	Marks
1(a)	1017 × (1.60 – 1.50) + 975 × (2.20 – 1.50) + 1020 × (2.80 – 1.50) = $2110.20 *Award 1 mark for any two expressions*	**2**
1(b)	1.2 × 1020 × (2.80 – 2.00) **[1]** + 975 × (2.20 – 2.00) = $1174.20	**2**
1(c)	(1224 + 975) × (2.80 – 2.00) = 2199 × 0.8 = $1759.2 **ft** their **1(b)** + 975 × (2.80 – 2.20)	**1**

Question	Answer	Marks
2(a)	21 *1 mark for sight of 12 (black squares not already revealed at the start of the round) or 9 (crosses + ticks)* *SC 1 mark for answer of 57*	**2**
2(b)	117 *1 mark for sight of 90 (score at the end of round two) OR 27 (score so far in this round) OR 93 seen (forgets bonus points)*	**2**
2(c)	There are no crosses in squares next to either of these two T-shapes / there are crosses in squares next to each of the other (three) T-shapes.	**1**
2(d)	66 and 68 **[1]** 8, 9, 10 and 19 **[1]** 43, 52, 53 and 54 **[1]**	**3**
2(e)	117 points so far and will score a further 26 in round three = 143 points **[1]** so 131 needed **ft** *their 117 + 26 for 143* There are a total of 70 + 80 = 150 points available for the last two rounds so he can afford 19 crosses maximum. *Alternatively* Tom's maximum possible game score is 293 **ft** *their 117 + 176* A maximum of 26 crosses allows a score of 274 *1 mark for either* He has already revealed 7 so can afford 19 more. *SC 1 mark for answer of 20*	**2**

Question	Answer	Marks
3(a)(i)	Red: 17 (points) **[1]** Yellow: 11 (points) **[1]** *1 mark for either of the following:* *(Red) 34 AND (Yellow) 22* *11, 17 without teams being identified*	**2**
3(a)(ii)	Oscar	**1**
3(b)	Orla	**1**
3(c)	41 (points)	**1**
3(d)	The total number of (team) points (145) is not divisible by 3.	**1**
3(e)	49, 53 and 57 (points) *Award one mark for each correct total, max 2 if any incorrect* *Award up to 2 marks for correct descriptions without totals calculated* *Max 1 if 5 answers, 0 if more than 5* *If 0 scored, award 1 mark for answer of just 47*	**3**
3(f)	Beth and Charlie Felix and Ryan Max and Shanti *1 mark for one or two correct pairs with no more than 3 pairs given* *1 mark for fully correct answer with another set of 3 given*	**2**
3(g)	Only Felix, Shanti and Mia can achieve a winning score: • Li cannot match or surpass Felix's current score of 29 **[1]** • Mia and Sam are paired together, so Mia will finish (2 points) ahead of Sam **[1]** There will not be a tie for first place: • There is no way for two peoples' scores to differ by 6 points (so Felix cannot be tied with Mia or Shanti) **[1]** • Mia and Shanti are not paired, so must score different numbers of points (unless they both score 0, in which case Felix will have a higher score **[1]** *Award 1 mark for an answer which notes both features of the explanation, but does not score either mark for one of the parts*	**4**

Question	Answer	Marks
4(a)(i)	Saturday, Monday, and Wednesday	**1**
4(a)(ii)	Saturday **[1*]**, B **[1dep]**	**2**
4(b)	Saturday	**1**
4(c)	With Monday, Wednesday and Friday all the same, those arriving on Saturday **[1]** cannot eat at all three restaurants **[1] soi** *SC: 1 mark for Friday (A), Sunday (A) and Monday (B) arrivals now also have restrictions on when they can eat*	**2**
4(d)	14 is not a multiple of 3	**1**
4(e)	Monday and Wednesday **[1*]** would mean that all the staff working days were consecutive **[1dep]** and would avoid any restrictions on options / allow choice for the Thursday and Saturday arrivals **[1]**	**3**

Question	Answer	Marks
5(a)(i)	Hotels H , F , B , I (in any order) *1 mark for any three correct and no more than four given*	**2**
5(a)(ii)	$0.0 < x \leqslant 2.0$, $70 < y \leqslant 80$ – H $2.0 < x \leqslant 3.0$, $60 < y \leqslant 70$ – F $3.0 < x \leqslant 4.5$, $55 < y \leqslant 60$ – B $4.5. < x \leqslant 7.3$, $0 < y \leqslant 55$ – I *1 mark for any suitable x, y* *1 mark for second suitable x, y from a different range* *1 mark for both the matching hotels*	**3**
5(b)	B & F	**1**
5(c)(i)	*Award up to 2 marks for* Algebraic Inequality between any pair of hotels **[1]** The fixed charge is constant for all cases and can be ignored explicitly identified **[1]**. The (cheapest) nearest is always included, in this case Hotel H. **[1]** The steepest rate of change (is from there to Hotel F:) \$10 for 1 km **[1]** The critical combination is Hotel H and Hotel F. **[1]** There are two trips, so <u>\$5 per km</u>. *SC: 2 marks for \$10 (per km) final answer*	**3**
5(c)(ii)	Hotel F	**1**