Mapping grid

Question	Mark	Content	Outcome	Band
1	1	Project Work – designing solutions	H5.1, H7.1, H7.2	2–3
2	1	Project Work – understanding the problem	H1.1, H1.2, H4.1, H5.1, H5.2	3–4
3	1	Project Work – designing solutions	H5.1, H7.1, H7.2	2–3
4	1	Information Systems and Databases – information systems	H6.1, H6.2	5–6
5	1	Information Systems and Databases – information systems	H1.1, H2.1	5–6
6	1	Information Systems and Databases – information systems	H1.1, H2.1	5–6
7	1	Information Systems and Databases – information systems	H1.1, H2.1, H2.2	5–6
8	1	Communication Systems – transmitting/receiving	H2.1, H2.2	4–5
9	1	Information Systems and Databases – information systems	H2.1, H3.1, H3.2	5–6
10	1	Communication Systems – transmitting/receiving	H1.1, H2.1	4–5
11	1	Information Systems and Databases – organisation methods	H1.1, H2.1	4–5
12	1	Information Systems and Databases – organisation methods	H1.1, H2.1	4–5
13	1	Communication Systems – organising	H1.1	4–5
14	1	Communication Systems – examples of	H2.1, H1.2	5–6
15	1	Information Systems and Databases – information systems	H2.1	3–4
16	1	Project Work – designing solutions	H1.1, H6.1, H6.2	5–6
17	1	Information Systems and Databases – organisation methods	H1.1, H2.1	1–2
18	1	Communication Systems – transmitting/receiving	H1.1	3–4
19	1	Communication Systems – issues	H1.1, H1.2, H3.2, H5.2	4–5
20	1	Communication Systems – issues	H1.1, H1.2, H3.2, H5.2	4–5
21(a)	1	Information Systems and Databases – organisation methods	H1.1	2–3
21(b)	2	Information Systems and Databases – organisation methods	H1.1, H2.1	2–3
21(c)	3	Information Systems and Databases – organisation methods	H1.1, H2.1	4–5
21(d)	2	Information Systems and Databases – organisation methods	H1.1, H2.1	4–5

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Question	Mark	Content	Outcome	Band
21(e)	2	Information Systems and Databases – organisation methods	H1.1, H2.1	4–5
22(a)	3	Project work – designing solutions	H7.1, H7.2, H5.1	2–3
22(b)	3	Project work – designing solutions	H7.1, H7.2, H5.1	2–3
22(c)	2	Project work – designing solutions	H7.1, H7.2, H5.1	3–4
22(d)	2	Project work – designing solutions	H7.1, H7.2, H5.1	3–4
23(a)	2	Communication Systems – issues	H1.1, H1.2, H3.2, H5.2	3–4
23(b)	4	Communication Systems – issues	H1.1, H1.2, H3.2, H5.2	4–5
23(c)	4	Communication Systems – issues	H1.1, H1.2, H3.2, H5.2	4–5
24(a)	4	Project work – designing solutions	H7.1, H7.2, H5.1	2–3
24(b)	3	Project work – designing solutions	H7.1, H7.2, H5.1	2–3
24(c)	3	Project work – designing solutions	H7.1, H7.2, H5.1	3–4
25(a)	4	Transaction Processing Systems	H1.1, H1.2	2–3
25(b)	12	Transaction Processing Systems	H2.1, H2.2	3–4
25(c)	4	Transaction Processing Systems	H4.1, H6.1	5–6
26(a)	6	Decision Support Systems	H1.1, H1.2	2–3
26(b)	8	Decision Support Systems	H2.1, H2.2	3–4
26(c)	6	Decision Support Systems	H4.1, H6.1	5–6
27(a)	6	Automated Manufacturing Systems	H1.1, H1.2	2–3
27(b)	8	Automated Manufacturing Systems	H2.1, H2.2	3–4
27(c)	6	Automated Manufacturing Systems	H4.1, H6.1	5–6
28(a)	6	Multimedia Systems	H1.1, H1.2	2–3
28(b)	8	Multimedia Systems	H2.1, H2.2	3–4
28(c)	6	Multimedia Systems	H4.1, H6.1	5–6

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Marking guidelines

Section I

1 B
2 C
3 B
4 A
5 C
6 D
7 B
8 B
9 B
10 B
11 A
12 B
13 D
14 C
15 A
16 C
17 B
18 D
19 C
20 A

Question 21(a)
Suggested answers:
PARKS table, return_discount field

Marking guidelines

Criteria	Marks
• Correct field identified	1
• Other responses	0

Question 21(b)
Suggested answers:

- Dropdown/popup field validations for Park, Theme, Featured_ride, Type_ride
- Auto serial for ParkCode
- Disallow certain fields as empty

Marking guidelines

Criteria	Marks
• Student must name at least TWO fields and provide a description of the validation method used	2
• Student names ONE field with a description of the validation method used	1

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Question 21(c)
Suggested answers:

- No entries in the Address field are 'Gold Coast' with the first letter of both words capitalised.
- The street number and name should be specified in the address field.

SELECT	**Park**
FROM	**PARKS**
WHERE	**PARKS**.**Address** contains 'Gold'

Marking guidelines

Criteria	Marks
• Correct reason and SQL	2
• Reason only OR SQL only OR single error	1

Question 21(d)
Suggested answers:

- Type_ride and Featured_ride are poorly defined fields. The latter should state the name of the ride (such as Lethal Weapon) and in this case, rides should be identified uniquely as two rides may have the same name.
- Add a primary key to both tables which uniquely identifies each ride and use this to create a join on the tables, replacing the Featured_ride field.

Marking guidelines

Criteria	Marks
• Correct join AND identifies redundancy correctly	3
• Error in join AND identifies redundancy correctly	2
• Identifies redundancy only	1

Question 21(e)
Suggested answers:

- Physical security such as a lock on the computer
- Password for operation
- Regular backups

Marking guidelines

Criteria	Marks
• TWO methods correctly described	2
• Fails to address backups as part of data security OR names ONE method only	1

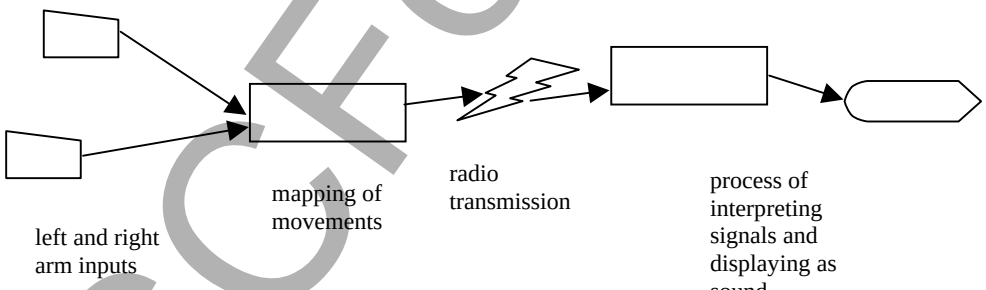
Question 22(a)
Suggested answers:

- Participants: software engineers, those programming the interface
- While Dr Helmer believed the market for the WIS could be enormous, the real and stated objective was to let the public appreciate the future of intelligent clothing being developed by the CSIRO.

Marking guidelines

Criteria	Marks
• Participants in system identified and the purpose of the system correctly described	3
• Describes purpose only OR partially describes or names musician/players as participants	2
• Incorrect purpose, no participants identified	1

Question 22(b)
Suggested answers:



Marking guidelines

Criteria	Marks
• Correct diagram	3
• Accurate diagram but no labelling	2
• Inaccurate diagram OR no labelling	1

Question 22(c)
Suggested answers:
Innovative performances, new skills to be learned, change in type of music, adapting to new playing techniques, change in physicality of performance, need for greater technical skill, expense of special clothing.

Marking guidelines

Criteria	Marks
• Thoroughly examines potential impact	2
• Less complete response	1

Question 22(d)
Suggested answers:
- Intelligent clothing could assist patients to learn to walk again after injuries.
- Specialist doctors in another city or country could examine patients without have to physically be present.
- Electronic clothing could be used to teach people to play golf or tennis.

Marking guidelines

Criteria	Marks
• TWO applications completely described	2
• ONE application only OR TWO applications poorly described	1

Question 23(a)
Suggested answers:
- Unusual or humorous clips with product placement on YouTube, as comment in popular podcasts, as blog entries or entered as chat group comment
- In the form of spam

Marking guidelines

Criteria	Marks
• TWO ways identified and described	2
• ONE technique only OR no description	1

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Question 23(b)
Suggested answers:

- Lack of clarity of source of comment leads to distrust of any public forums and devaluing of the open nature of the Internet and diminution of its use
- Increase in quantity of spam
- Annoyance in use of forums and blogs
- Advertising reaches target demographic efficiently and quickly
- Consumers made aware of products
- Brand awareness increased and profits rise

Marking guidelines

Criteria	Marks
• Thoroughly outlined critical analysis with at least FOUR points	3–4
• Fewer than FOUR points made OR FOUR inadequately described	1–2

Question 23(c)
Suggested answers:

Negative:

- Unwanted communications (spam)
- Ready availability of potentially damaging content (immature users: drugs, pornography, violent content)
- Potential for authors of negative websites to evade detection

Positive:

- Information previously difficult to find now readily available
- Ease of contact between like minded people
- Social networks established (clubs, interest groups, hobbies)
- Political networks established (protests, campaigns, etc.)
- Products and services located easily

Marking guidelines

Criteria	Marks
• TWO positive AND TWO negatives described	3–4
• Discussion of fewer aspects OR poorly developed discussion	1–2

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Question 24(a)
Suggested answers:

Manual	Computer	Comparison
Manual bookkeeping	spreadsheet	Save on accountant cost Greater awareness of financial situation Greater control of business Ease of record maintenance
Paper plans drawn	draw applications	Need for computer skills or help
Professional ads in newspapers, radio, TV	web design	Need for computer skills or help
Printing company and designer	DTP	Need for computer skills or help Ease of design changes
System cards	MYOB or Access	Basic knowledge of database needed Designed by another

Marking guidelines

Criteria	Marks
• FIVE tasks compared and contrasted	3–4
• TWO or more tasks not adequately treated	1–2

Question 24(b)
Suggested answers:

- Spreadsheet for finances (e.g. Excel)
- Draw applications for landscape plans (e.g. Freehand, Illustrator, AutoCAD, specialist landscape design applications)
- Web design applications for websites (e.g. Dreamweaver)
- DTP applications for pamphlets and posters (e.g. InDesign, FrontPage)
- Database or business accountancy applications for customer details (e.g. Access, FileMaker Pro or MYOB, Quicken)

Marking guidelines

Criteria	Marks
• FOUR or more items justified	3
• Failure to justify OR fewer than FOUR items treated	1–2

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Question 24(c)
Suggested answers:

Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
spreadsheet								
draw applications								
web design								
DTP								
MYOB or Access								

(Each column represents one month)

Response must justify the Gantt chart:

- (Above) staggered introduction recommended so adjustment possible to new system

OR

- Parallel introduction so old system is used as backup
- Easier skills adopted first

Marking guidelines

Criteria	Marks
• Complete strategy with suitable Gantt chart and thorough justification given	3
• Inadequate justification OR poor strategy	1–2

Question 25(a)(i)
Suggested answers:
Real-time as the system would be handling low volume and high urgency transactions

Marking guidelines

Criteria	Marks
• Correct response with justification	2
• No justification given	1

Question 25(a)(ii)
Suggested answers:
Batch processing as the system would be handling high volume and low urgency data

Marking guidelines

Criteria	Marks
• Correct response with justification	2
• No justification given	1

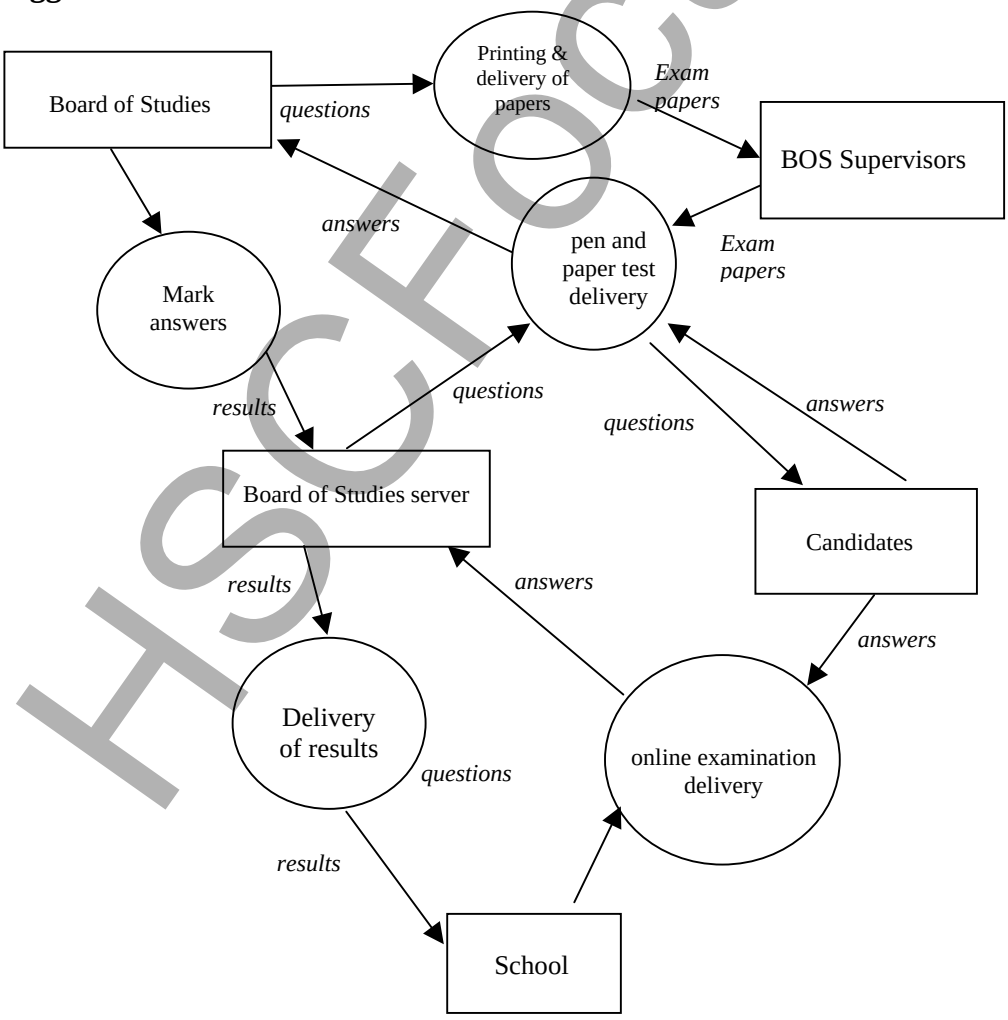
Question 25(b)(i)
Suggested answers:

- Participants: BOS officers, test application programmers, test authors, examiners, teachers and school IT staff
- Users: students

Marking guidelines

Criteria	Marks
• Both participants and users correctly identified	2
• Only ONE identified	1

Question 25(b)(ii)
Suggested answers:



Marking guidelines

Criteria	Marks
• Take one mark off for each error in flow line, data store, entity or process	4

Question 25(b)(iii)
Suggested answers:
The security of the test questions and answers is vital in this system. The boundary of the online test must be the desktop computer on which the candidate has securely logged in. The boundary must be strictly managed.

Marking guidelines

Criteria	Marks
• Correctly described with reason	3
• Insufficient explanation	1–2

Question 25(b)(iv)
Suggested answers:
- Online test is real-time processed: large volume, efficiency of bulk processing and marking, supervising outsourced to school, etc.
- Pen and paper test is batch processed: efficient marking at the same time by specialised application or human markers

Marking guidelines

Criteria	Marks
• Each test method examined	3
• ONE correct test method with correct explanation	2
• ONE correct test method with incorrect explanation	1

Question 25(c)
Suggested answers:
- Ethical security issues: second secondary storage, offsite storage, multiple levels of backup, hard copies retained, system reproduced in another geographic location, copyright of questions, security of questions, equity among candidates sitting test at different times, randomness of questions to prevent copying
- Social: workstation breakdowns, Internet breakdown, equity among schools with computer room availability and efficiencies, degree of familiarity/comfort of candidates with answering via computer
- Technical: school-based management issues, ability of school to set up local server, connect to Internet, speed of access

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Marking guidelines

Criteria	Marks
• Each aspect addressed	4
• Only TWO aspects discussed	3
• Only ONE aspect discussed	1–2

Question 26(a)
Suggested answers:

- In structured DSS the inputs are all known and outputs calculated exactly. Solution process can be automated. Example: Can I do this course if I also wish to choose a programming IT course?
- Semi-structured: some inputs are known and the solution process known. These use a DSS. Example: Should this student pass the course?
- Unstructured: not all inputs known, process unclear, human insight required. Example: Will I be able to improve my results by studying more?
- *20Q* best described as semi-structured.

Marking guidelines

Criteria	Marks
• Two marks for each DSS discussed with *20Q* correctly identified	6
• One mark off each of three cases if no example • One mark off each of three cases if poorly compared	1–5

Question 26(b)(i)
Suggested answers:
System 'learns' by delivering questions for which prior responses are known. Players do not always answer the same way but the system weights responses based on the statistical record of previous responses for each object. As millions of people have previously responded a certain way to these questions, the current player's responses to the 20 questions will isolate an egg from other possibilities for which the sum of all nodes is less. This is an example of an artificial neural network.

Marking guidelines

Criteria	Marks
• Thorough and accurate description of neural network with relation to this scenario	4
• Failure to relate to this scenario	3
• Inadequate or incomplete response	1–2

Question 26(b)(ii)
Suggested answers:
It generates random questions to gather responses to these for the egg.

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Marking guidelines

Criteria	Marks
• Correct description	4
• Failure to relate to this scenario	3
• Inadequate or incomplete response	1–2

Question 26(c)
Suggested answers:

- Ethical: legal implications in case of incorrect diagnosis and possibility that patients with unsatisfactory final outcomes will blame the lack of direct human intervention; slowness to diagnose compared to doctor using intuition and prior experience to circumvent chain of reasoning; incorrect conclusions or difficulty of interpretation of machine diagnosis; copyright on *20Q* game needs permission
- Social: patients' resistance to filling in forms; patients unwilling to trust a DSS; patients too willing to trust a DSS; doctors too ready to trust diagnosis by DSS
- Technical: breakdown of network, server, workstation; medicine too broad to facilitate application

Marking guidelines

Criteria	Marks
• THREE aspects described	6
• Failure to treat each of the three aspects above	3–5
• Inadequate or incomplete response	1–2

Question 27(a)(i)
Suggested answers:

- Actuator: mechanism which acts on the robot's/machine's environment
- Examples include solenoids and motors
- Sensor: mechanism which receives data from the robot's/machine's environment
- Examples include thermometer, ph tester

Marking guidelines

Criteria	Marks
• Correctly describes differences with examples	3
• No example/incorrect definition	1–2

Question 27(a)(ii)
Suggested answers:

- Light sensor to count manufactured objects on conveyor belt
- Temperature sensor to read heat of drill to avoid damage
- Depth sensor to determine correct length of blade cut

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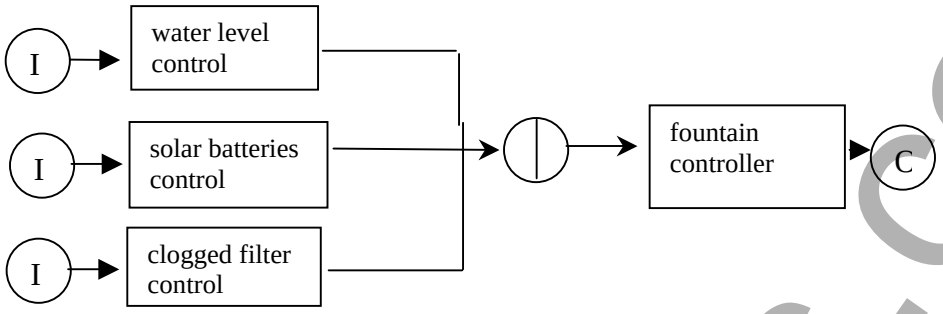
Marking guidelines

Criteria	Marks
• THREE types of sensors identified	3
• ONE or TWO examples or no example of use of each	1–2

Question 27(b)(i)
Suggested answers:



Marking guidelines

Criteria	Marks
• Diagram drawn correctly and logically	4
• One mark off for each inaccuracy	1–3

Question 27(b)(ii)
Suggested answers:
Damping is the process of adjusting the stability of an automated system through the appropriate use of feedback.

- Overdamping: reacts slowly to change such as clouds, clogging or water level and may allow these to continue to drop too low or too high
- Underdamping: unpredictable due to rapid fluctuations in the three controls of clouds, clogging or water level
- Most stable: critical damping achieves stability rapidly and the reaction of the systems is efficient

Marking guidelines

Criteria	Marks
• Student must have THREE correct diagrams	4
• Lack of accurate diagrams • Incorrect definitions	1–3

Question 27(c)
Suggested answers:

- Technical: volume of water required much greater, industrial scale pump will result in issues not considered for home pump: rubbish in pond? vandalism? repairs will be more costly if pump is large and so access must be considered.

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- Social: visibility of pump and aesthetics, nature of work changes for those tradespeople tending to new equipment: conditions? training? cost diverts funds from other projects.
- Ethical: OH&S?, local council noise statutes

Marking guidelines

Criteria	Marks
• All THREE aspects thoroughly discussed	6
• One mark off for naming issue only without discussion	1–5

Question 28(a)(i)
Suggested answers:
CRT: uses three focused electron beams, high power, low cost, strong illumination, analogue display, fast refresh, heavy, heat, more space
LCD: low power, high cost, can be used in laptop computers, little space, may be slow to refresh, digital display, viewing angle can be an issue

Marking guidelines

Criteria	Marks
• CRT and LCD compared physically as well as technically	3
• Fails to describe technical content	2
• Insufficient detail	1

Question 28(a)(ii)
Suggested answers:
Variety of fields of expertise required in the development of multimedia applications, including:
- content providers
- multimedia programmers
- system designers and project managers
- those skilled in the collection and editing of each of the media types
- those skilled in design and layout
- those with technical skills with the information technology being used

Marking guidelines

Criteria	Marks
• More than THREE fields described	3
• Fewer than FOUR fields mentioned	2
• Fails to provide detail	1

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Question 28(b)(i)
Suggested answers:

- Strengths: widely available, better known by group, eliminate need to learn another package, single application is packaged to run everything.
- Weaknesses: limited effects, limited media types can be included, linear presentation is dominant paradigm, difficult to make this look distinctly different from other PowerPoint shows, other specialised authoring software offers more interactivity, greater control, animation and 3D modules, greater control over sound, movies are subset of a slide and if played externally require other applications.

Marking guidelines

Criteria	Marks
• Lists at least THREE strengths and THREE weaknesses	5
• Fails to cover sufficient points from above	3–4
• Weak critical analysis	1–2

Question 28(b)(ii)
Suggested answers:

- Director: a stage play paradigm is used as actors/cast enter a stage controlled by a score, media is controlled with a built-in scripting language (Lingo)
- Flash: animation package with extensive programming features allows many media types to be included (built-in ActionScript).
- Both these authoring tools offer more flexibility and variety than tools in PowerPoint

Marking guidelines

Criteria	Marks
• TWO alternative approaches to authoring identified and described	3
• Fails to discuss or treats only ONE alternative approach	1–2

Question 28(c)
Suggested answers:

- Technical: knowledge of software; available hardware; speed of DVD/CD-ROM and CPU on which project is shown; audience interactivity is difficult; file formats; distribution and delivery of final product
- Social: impact on audience of what may be confronting content for some
- Ethical: care with content to avoid offence, copyright of clips/music, etc.

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Marking guidelines

Criteria	Marks
• All THREE areas discussed thoroughly	6
• TWO areas treated or treated in less detail or failure to provide sufficient depth of treatment	3–5
• Insufficient or poor response	1–2

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