T Level Technical Qualification in Healthcare Science

Core knowledge and understanding

Paper A

Mark scheme

V3.1 – Pre-stand
14th June 2023 P001957
603/7083/X

This mark scheme has been written by the assessment writer and refined, alongside the relevant questions, by a panel of subject experts through the external assessment writing process and at standardisation meetings.

The purpose of this mark scheme is to give you:

- examples and criteria of the types of response expected from a student
- information on how individual marks are to be awarded
- the allocated assessment objective(s) (AOs) and total mark for each question.

Marking guidelines

General guidelines

You must apply the following marking guidelines to all marking undertaken throughout the marking period. This is to ensure fairness to all students, who must receive the same treatment. You must mark the first student in exactly the same way as you mark the last.

- The mark scheme must be referred to throughout the marking period and applied consistently. Do not change your approach to marking once you have been standardised.
- Reward students positively giving credit for what they have shown, rather than what they might have omitted.
- Utilise the whole mark range and always award full marks when the response merits them.
- Be prepared to award zero marks if the student's response has no creditworthy material.
- Do not credit irrelevant material that does not answer the question, no matter how impressive the response might be.
- The marks awarded for each response should be clearly and legibly recorded in the grid on the front of the question paper.
- If you are in any doubt about the application of the mark scheme, you must consult with your team leader or the chief examiner.

Guidelines for using extended response marking grids

Extended response mark grids have been designed to assess students' work holistically. They consist of levels-based descriptors and indicative content.

Levels-based descriptors: Each level is made up of several descriptors for across the AO range - AO1 to AO3, which when combined provide the quality of response that a student needs to demonstrate. Each level-based descriptor is worth varying marks.

The grids are broken down into levels, with each level having an associated descriptor indicating the performance at that level. You should determine the level before determining the mark.

Indicative content reflects content-related points that a student may make but is not an exhaustive list; nor is it a model answer. Students may make all, some or none of the points included in the indicative content as its purpose is as a guide for the relevance and expectation of the responses. Students must be credited for any other appropriate response.

Application of extended response marking grids

When determining a level, you should use a bottom up approach. If the response meets all the descriptors in the lowest level, you should move to the next one, and so on, until the response matches the level descriptor. Remember to look at the overall quality of the response and reward students positively, rather than focussing on small omissions. If the response covers aspects at different levels, you should use a best-fit approach at this stage and use the available marks within the level to credit the response appropriately.

When determining a mark, your decision should be based on the quality of the response in relation to the descriptors. You must also consider the relative weightings of the assessment objectives, so as not to over / under credit a response. Standardisation materials, marked by the chief examiner, will help you with determining a mark. You will be able to use exemplar student responses to compare to live responses, to decide if it is the same, better, or worse.

Assessment objectives

This assessment requires students to:

AO1: Demonstrate knowledge and understanding of contexts, concepts, theories, and principles in healthcare science.
AO2: Apply knowledge and understanding of contexts, concepts, theories, and principles in healthcare science to different situations and contexts.
AO3: Analyse and evaluate information and issues related to contexts, concepts, theories, and principles in healthcare science to make informed judgements, draw conclusions and address individual needs.

The weightings of each assessment objective can be found in the qualification specification.

Section A: The roles and responsibilities within healthcare science

This section is worth 34 marks, plus 3 marks for QWC and use of specialist terminology.

1(a) **Identify** two **items that should be included in employment contracts.**

[2 marks]

AO1 = 2 marks

Award **one** mark per item, up to a maximum of **two** marks:

- employment conditions (1)
- rights (1)
- responsibilities (1)
- duties (1).

Accept any other suitable response.

1(b) **Raj works at the hospital as a healthcare science assistant. The manager of the department decided that Raj did not need to have a performance review this year as their performance had been satisfactory and the manager had no further comments to make.**

Explain two **reasons why it is important for Raj to receive a full performance review, as opposed to the approach above.**

[4 marks]

AO2 = 4 marks

Award **one** mark per explanation point up to a maximum of **four** marks:

- Raj's performance is not compared against healthcare science standards or expectations so there is limited meaning in the term 'satisfactory' (1) which means the Raj will not know how well they are doing in their job (1)
- there is no review of progress in achieving goals set at the previous review (1) so there is no meaningful assessment of Raj's progress (1)
- there is an absence of feedback which Raj could use to improve (1) and help them meet objectives / Key Performance Indicators (1)
- there are no recommendations for Raj's Continuing Professional Development (CPD) (1) meaning that Raj may not know what further training / development is required / available to them (1)
- no goals set for the next review cycle as a result of the manager's decisions (1), which means Raj is not aware of expectations for the next review cycle (1).

Accept any other suitable response.

2 **The manager of the research team within a pharmaceutical company is delivering CPD on their organisation's professional codes of conduct.**

(a) Identify two **items which should be outlined in professional codes of conduct.**
[2 marks]

(b) Explain two **ways codes of conduct promote the confidence of stakeholders in the pharmaceutical company.**
[4 marks]

AO1 = 2 marks
AO2 = 4 marks

(a) Award **one** mark for **each** item outlined in a professional code of conduct up to a maximum of **two** marks (AO1):

- mission (1)
- values (1)
- principles that everyone must adhere to (1)
- standards that everyone must adhere to (1)
- expected professional behaviours and attitudes (1)
- rules and responsibilities within the individual organisation (1).

(b) Award **two** mark for **each** explanation point on how this promotes confidence (AO2) up to a maximum of **four** marks:

- clearly lays out the expectations for employees so behaviours / attitudes can be compared against relevant standards (1) which ensures guidance is clear regarding how the pharmaceutical staff should professionally conduct themselves, giving them confidence to carry out their role in line with clear expectations (1)
- having a clearly defined mission, means all pharmacy employees work towards the same goals whilst ensuring values, principles and standards are upheld (1) this ensures consistency is maintained within the organisation and promotes confidence of employees (1)
- groups (for example by patients, members of the public, managers etc.) are aware of where to find expectations (1) which gives them confidence in the development and safety of the pharmaceutical products (1).

Accept any other suitable response.

3 **A new, private reconstructive prosthetics company has established itself in the repair and maintenance of artificial eyes. The company is considering expanding its services.**

(a) Identify two **further purposes of prosthetic services.**

[2 marks]

(b) Discuss the impact of a prosthetic service meeting one **of these purposes.**

Your answer must include informed judgements.

[3 marks]

AO1 = 2 marks
AO3 = 3 marks

(a) Award **one** mark for each purpose identified, up to a maximum of **two** marks:

- design and manufacture custom-made devices (1)
- fit custom-made devices (1)
- prosthetic and orthotic use and wellbeing advice (1).

(b) Award **one** mark for each discussion point of how the service could be improved to meet purposes outlined in part a up to a maximum of **three** marks:

- design and manufacture / fitting of custom-made devices would mean the company would be able to provide new prosthetics to customers when they can no longer repair / maintain them (1) this will increase the amount of revenue the company can make as they will be able to charge to design and fit the new custom made prosthetic (1). Overall, it is likely to result in a more personalised finish promoting satisfaction / wellbeing from customers meaning they are likely to keep using the service (1)
- provision of the wellbeing advice associated with their use would be useful to ensure that customers are comfortable with using their prosthetic (1) this might require more expertise than the current workforce has so may require further employees (1). However, the more holistic service may provide a better package of care to the patient which will increase satisfaction from customers (1).

Accept any other suitable response.

4	**Seb has recently got a job as an optical assistant. Seb is required to complete a Disclosure and Barring Service (DBS) check before the employer can give a start date.** **Explain** one **reason why Seb must receive the DBS check prior to starting the position as an optical assistant.** [2 marks]

AO2 = 2 marks

Award **one** mark per explanation point up to a maximum of **two** marks (AO2):

- Seb must get the DBS result back to employers to demonstrate that they are suitable to work with children and vulnerable adults (1) as the job will involve Seb working with a variety of people who require optical care (1)
- the check will allow the optical employers to know if Seb has any previous convictions which may relate to their role (1). It will help protect employers against liability if accusations are made by a patient (1).

Accept any other suitable response.

5	**A job advert states:** **"Applicants must have at least 10 years' postgraduate experience in a relevant field. Any breaks in experience must be for no longer than 6 months at any one time."** **With reference to discrimination, assess whether this job advert meets the requirements of the Equality Act 2010.** **Your response should include reasoned judgements.** [6 marks]

AO3 = 6 marks

Award **one** mark for each justification of the judgement in reference to the Equality Act 2010, up to a maximum of **six** marks:

- this advert does not meet the requirements of the Equality Act 2010 as this is direct discrimination as the requirement for 10 years postgraduate experience effectively puts a minimum age on the applicant / excludes younger applicants (1) length of experience does not capture the nature of the experience that an individual has had (1)
- this advert does not meet the requirements of the Equality Act 2010 as this is direct discrimination as the requirement for no 6-month breaks excludes those who have taken statutory maternity leave (1) however, these individuals may have taken the opportunity to maintain experience through CPD / keeping in touch (KIT) days (1)

- this advert does not meet the requirements of the Equality Act 2010 as this is direct discrimination as the requirement for no 6 months breaks excludes those who have taken time off due to one illness / disability (1) but, this does not capture those individuals who have repeated shorter periods of absence which are significant in total period of time (1)
- this advert does not meet the requirements of the Equality Act 2010 as this is indirect discrimination as the job advert is not directly precluding / stopping groups with protected characteristics from applying (1) it could, however, discourage some applicants from applying based on approved time away from work, for example, caring for a sick relative (1).

Accept any other suitable response.

6	**Li is a patient who was deemed to have capacity and was on the hospital waiting list for an operation. Li gave consent to a clinician 6 months prior to the medical procedure taking place.** **After the procedure was completed, the clinician gave Li an information leaflet listing the potential side effects. There was no specific discussion of side effects prior to Li undergoing the operation.** **After the procedure, Li developed unpleasant side effects and stated that they would rather not have undergone the procedure had they been informed it was possible to refuse it.** **Assess to what extent the principles of consent were conformed to in this scenario and any possible consequences of the actions taken.** [9 marks, plus 3 marks for QWC]

AO1 = 3 marks
AO2 = 3 marks
AO3 = 3 marks

Band	Mark	Descriptor
3	7-9	**AO3**: Evaluation of the gaining of consent and consequences of failing to do so in this context is **comprehensive, effective and relevant**, showing **detailed understanding** and **logical and coherent** chains of reasoning throughout. Informed conclusions that are fully supported with **rational and balanced**, reasoned judgements are evident. **AO2:** Applied **all** relevant knowledge of gaining of consent and consequences of failing to do so to the given context and shows a **detailed, functional understanding** of the requirements / consequences.

		AO1: A **wide** range of relevant knowledge and understanding of the gaining of consent and consequences of failing to do so which is **accurate and detailed**. The answer demonstrates comprehensive breadth and / or depth of understanding
2	4-6	**AO3:** Evaluation of the gaining of consent and consequences of failing to do so in this context is in **most parts effective** and **mostly relevant**, showing **mostly logical** and **coherent** chains of reasoning. Conclusions supported by reasoned judgements that consider **most** of the relevant arguments are evident. **AO2:** Applied **mostly** relevant knowledge of the gaining of consent and consequences of failing to do so to the context, showing **some functional understanding** of how this can be applied in this scenario. **AO1:** Knowledge and understanding of the gaining of consent and consequences of failing to do so is in most parts **clear** and **mostly accurate**, although on occasion may lose focus. The answer demonstrates reasonable breadth and / or depth of understanding, with occasional inaccuracies and / or omissions
1	1-3	**AO3:** Evaluation of the importance of the gaining of consent and consequences of failing to do so in this context is in **some parts effective** and of **some relevance**, with some understanding and reasoning taking the form of **generic** statements with **some** development. **Brief** conclusions supported by reasoned judgements that consider only **basic arguments** and show **little** relevance to the question aims are evident. **AO2:** Applied limited knowledge of the gaining of consent and consequences of failing to do so to the context and may show a **lack of functional understanding** of these. **AO1:** Knowledge and understanding of the gaining of consent and consequences of failing to do so shows some, but **limited accuracy**, focus and relevance. The answer is basic and shows limited breadth and / or depth of understanding, with inaccuracies and omissions
	0	No creditworthy material.

Indicative content

Examiners are reminded that the indicative content reflects content-related points that a student may make but is not an exhaustive list, nor is it a model answer. Students may make all, some or none of the points included in the indicative content, as its purpose is as a guide for the

relevance and expectation of the responses. Students must be credited for any other appropriate response.

AO1 - Knowledge of gaining consent and consequences of failing to do so that may include:

- gaining consent for medical procedures is a legal and ethical requirement
- characteristics of valid consent are:
  - Informed
  - Freely given
  - Given by an individual with capacity to consent
  - Recently given.

AO2 – Application of knowledge and understanding of gaining consent and the consequences of failing to do so in this scenario that may include:

- as Li's consent was not recent, it was not valid as it was taken 6 months prior with no updated consent given
- as Li was not informed of the possible side effects, they were not able to make an informed decision and therefore their consent was not valid
- as Li was deemed capable of giving consent the hospital had ensured they followed correct consent policy
- if the consent gained was not valid, then the procedure may have been illegal and unethical
- Li was not informed of the potential side effects prior to the procedure and may not have given consent had they been informed meaning valid consent was not gained
- pursuing the consequences of undertaking a procedure without consent is a possibility for Li as it can be considered invalid as they were not properly informed of the side effects.

AO3 – Evaluation to include reasoned judgments and conclusions of the gaining of consent and consequences of failing to do so that may include:

- the clinician failed to meet the characteristics of valid consent as Li was not fully informed of the side effects and Li did not give consent recently (6 months cannot be considered recent) meaning Li has the right to pursue legal action
- furthermore, the information that was withheld was regarding potential side effects, of which Li developed, further strengthening their right to legal action
- the clinician's actions resulted in an invalid consent, which may not have been given had they provided the information before taking consent. As the clinician has not met the ethical and legal requirement to gain valid consent for a medical procedure, they can expect professional consequences for failing to acquire valid consent
- the organisation should expect the legal consequences of failing to gain valid consent and the clinician should expect some of the professional consequences of failing to acquire valid consent.
- the hospital did not follow the principles for choices and consent appropriately and therefore invalidated Li's consent, this has resulted in them undergoing a procedure without the correct information and could result in legal ramifications. This could cause further issues for the hospital and possibly lead to reputational damage.
- the hospital did consider Li's capacity to consent which is positive as it meant they had the ability to understand information being given about the procedure and communicate decisions .

Accept any other suitable response.

Quality of written communication (QWC)

Mark	Descriptor
3	The answer is **clearly expressed** and **well structured**. The rules of grammar are used with **effective control** of meaning overall. A **wide range** of appropriate technical terms is used effectively.
2	The answer is generally **clearly expressed** and **sufficiently structured**. The rules of grammar are used with **general control** of meaning overall. A **good range** of appropriate technical terms is used effectively.
1	The answer **lacks some clarity** and is generally **poorly structured**. The rules of grammar are used with **some control** of meaning and any errors do **not** significantly hinder the overall meaning. A **limited range** of appropriate technical terms is used effectively.
0	There is **no answer** written or none of the material presented is creditworthy. **or** The answer does **not** reach the threshold performance level. The answer is **fragmented and unstructured** , with **inappropriate use of technical terms**. The errors in grammar severely hinder the overall meaning.

Section B: Personal and patient safety

This section is worth 34 marks, plus 3 marks for QWC and use of specialist terminology.

7 (a) **Outline** step 5 **of the Health and Safety Executive's 5 steps to risk assessment.** [1 mark]

AO1 = 1 marks

Award **one** mark for an outline of step 5 of the Health and Safety Executive's 5 steps to risk assessment up to a maximum of **one** mark:

- step 5: reviewing your assessment and updating if necessary (1).

Accept any other suitable response.

7 (b) Table 1 **is a clinical department's completed annual risk assessment of a piece of medical equipment. It has been completed early due to concerns over increased breakages and subsequent injuries.**

Explain how one **potential control measure shown in** Table 1's **risk assessment will benefit the clinical department.**

Table 1:

Types of hazards:	**Mechanical, electrical, misdiagnosis**
Control measures implemented:	• **The equipment can only be accessed and used by trained staff** • **The equipment is subject to annual mechanical and electrical safety tests** • **The equipment is subject to annual calibration and quality control tests.**

[2 marks]

AO2 = 2 marks

Award **one** mark per explanation of how the potential control measure will benefit the clinical department, up to a maximum of **two** marks:

- as equipment can only be accessed and used by trained staff this ensures it is not being used by untrained or the incorrect staff (1). This will result in competency using the equipment which will reduce breakages / injuries (1)
- as equipment is subject to annual mechanical and electrical safety tests it ensures that any breakage can be identified earlier on (1) and this will reduce the injuries caused by unsafe equipment (1)

- as equipment is subject to annual calibration and quality control tests it ensures that any breakage / malfunction can be identified early on (1) and reduce the injuries / incorrect output caused which could affect staff / patients (1).

Accept any other suitable response.

7 (c) Considering steps 1 and 2 of the Health and Safety Executive's 5 steps to risk assessment and the information given in Table 1**, discuss the adequacy of this risk assessment.**

[6 marks]

AO3 = 6 marks

Award **one** mark per discussion point on the adequacy of the risk assessment (AO3) up to a maximum of **six** marks:

- step 1: identifying the hazards has not been carried out sufficiently as there is not enough detail on the specific hazard and associated risk (1) which increases the risks to staff / patients exposed to the equipment as insufficient control measures may have been put in place (1). This could put the department as a whole at risk from misuse and injury but also from legal repercussion if any staff are injured as a result of lack of training and risk assessment (1)
- step 2: deciding who might be harmed and how has not been carried out for each hazard or is not featured on the risk assessment (1) which increases the risks to staff / patients exposed to the equipment as not all risks may have been fully considered / quantified (1). This could put the department as a whole at risk from misuse and injury but also from legal repercussion if any staff are injured as a result of lack of training and risk assessment (1)
- steps 1 and 2 of the risk assessment would not be deemed acceptable by the Health & Safety Executive (HSE) (1) and could therefore put the department in breach of regulation (1) Failure to complete an adequate risk assessment could have legal consequences should a HSE inspection be carried out (1).

Accept any other suitable response.

8	**Outline the purpose of the Health and Safety (Display Screen Equipment) Regulations 1992.** [2 marks]

AO1 = 2 marks

Award **one** mark for each relevant purpose of the Health and Safety (Display Screen Equipment) Regulations 1992, up to **two** marks total:

- Defines the employers' responsibilities in carrying out risks assessments of workstations used by employees (e.g., equipment, furniture and work conditions) (1)
- Requires employers to control the risks associated with using digital screen equipment (eg providing eye tests for employees) (1)
- Requires risk assessment of all display screen equipment including laptops / monitors / touch screens / smartphones / CCTV) (1)
- For employers to consider changes in activities for employees so that they are not in front of a computer all day (1)
- For employers to provide training and information for employees on the safe use of DSE and how to arrange their workstation safely (1)

Accept any other suitable response.

9	**A hospital ward caring for clinically vulnerable patients is reviewing its techniques for infection control.** **The 'nothing below the elbow' technique and use of appropriate PPE are both techniques used by staff working on the ward.** **Evaluate the effectiveness of these techniques for the prevention and control of infection in the hospital ward.** [3 marks]

AO3 = 3 marks

Award **one** mark for each evaluation up to a maximum of **three** marks (AO3):

- both the 'nothing below the elbow' technique and use of appropriate PPE are both effective techniques in this scenario as staff will be working in a clinical setting (1) 'nothing below the elbow' will ensure that staff can adequately wash their hands and arms, preventing any clothes / jewellery from being contaminated by pathogens (1) However, PPE should be used when directly dealing with clinically vulnerable patients to act as a barrier and prevent any direct transmission of pathogens (1)
- both 'nothing below the elbow technique' and 'use of appropriate PPE' are both effective techniques in this scenario as staff will be working in a clinical setting (1) it would be better if staff were given one set of guidance to ensure consistency in the department (1). 'Nothing

below the elbow' could be considered most effective as it prevents the spread of infection to other areas away from the patients (e.g. staff area) (1)

- PPE could be considered more effective as it might cover the clinical staff more fully which would prevent splashes of fluids / physical contact spread onto the remaining clothing (1) PPE is likely to more fully protect staff especially if there are any chemicals used on the ward (1) However, for it to be the most effective measure it is important protocols for replacing PPE / methodology of using PPE is followed adequately by staff (1).

Accept any other suitable response.

10a	**Identify the** three **requirements of the Health and Safety (First Aid) Regulations 1981 for a business to ensure that employees receive immediate attention if they are injured or taken ill at work.** [3 marks]

AO1 = 3 marks

Award **one** mark for each requirement of the regulations identified, up to a maximum of **three** marks:

- provide adequate personnel (1)
- provide adequate equipment (1)
- provide adequate facilities (1)

Accept any other suitable response.

10b	**For** two **of the requirements you have identified above, explain how** each **would help ensure the organisation complies with the requirements of the Health and Safety (First Aid) Regulations 1981.** [4 marks]

AO2 = 4 marks

Award up to **one** mark for each explanation point up to a maximum of **four** marks:

- additional first aiders will reduce the risk that one is not in the vicinity if a first aider is required (1), ensuring employees receive immediate attention if they are injured or taken ill (1)
- additional first aiders will reduce the time required to find a first aider if one is needed (1), ensuring that attention is delivered more rapidly (1)
- Additional first aiders will increase support if multiple staff members are injured (1), ensuing that medical attention is available more rapidly (1)
- adequate equipment reduces the risk of a first aider not being able to reach equipment needed in an emergency (1) this allows first aiders to provide immediate attention to injured employees and adhere to the regulations (1).

- adequate facilities, such as a dedicated first aid room, increases the privacy given to injured employees (1) this also ensures all equipment is within easy reach and always accessible to employees (1)

Accept any other suitable response.

11 **Undetected spillages can pose a number of risks.**

Explain two **risks posed by an undetected blood sample spillage on the floor of a hospital corridor.**

[4 marks]

AO2 = 4 marks

Award **two** marks per explanation of the risk up to a maximum of **four** marks:

- the spillage could be a hazard causing someone to slip (1) this could cause injury to hospital staff, patients or visitors as they would not know it was there and therefore would not avoid it (1)
- the spillage could be a source of pathogens / infections present in the individual the sample was taken from (1) this would therefore increase the risk of infection to others within the hospital (1)
- the spillage could be trodden on by passer-by in the corridor this could risk spreading the blood over a wider area (1) and risk further contamination to the wider public / outside of the hospital (1)
- the primary infection could lead to a secondary infection (1) in patients who are particularly clinically vulnerable (1).

Accept any other suitable response.

12 **In a hospital, a clinical laboratory that analyses various fluid samples for the presence of pathogens, is reviewing the types of products it uses.**

A healthcare science associate suggests replacing single-use aprons with multiple-use aprons as the sterilisation techniques used in the laboratory could be applied to the multiple-use aprons.

Evaluate the suggestion. Ensure you consider:

- **the advantages and disadvantages of single-use and multiple-use products**
- **the principles of a range of sterilisation techniques.**

[9 marks, plus 3 marks for QWC]

AO1 = 3 marks

AO2 = 3 marks
AO3 = 3 marks

Band	Mark	Descriptor
3	7-9	**AO3:** Evaluation of single- / multiple-use products and sterilisation techniques in this context is **comprehensive, effective, and relevant**, showing **detailed understanding** and **logical and coherent** chains of reasoning throughout. Informed conclusions that are fully supported with **rational and balanced**, reasoned judgements are evident. **AO2:** Applied **all** relevant knowledge of single- and multiple-use products to the given context and shows a **detailed, functional understanding** of the requirements / consequences. **AO1:** A **wide** range of relevant knowledge and understanding of single- / multiple-use products and sterilisation techniques which is **accurate and detailed**. The answer demonstrates **comprehensive** breadth and / or depth of understanding
2	4-6	**AO3:** Evaluation of single- / multiple-use products and sterilisation techniques in this context is in **most parts effective** and **mostly relevant**, showing **mostly logical** and **coherent** chains of reasoning. Conclusions supported by reasoned judgements that consider **most** of the relevant arguments are evident. **AO2:** Applied **mostly** relevant knowledge of single- / multiple-use products and sterilisation techniques to the context, showing **some functional understanding** of how this can be applied in this discussion. **AO1:** Knowledge and understanding of single- / multiple-use products and sterilisation techniques is in most parts **clear** and **mostly accurate**, although on occasion may lose focus. The answer demonstrates **reasonable** breadth and / or depth of understanding, with occasional inaccuracies and / or omissions
1	1-3	**AO3:** Evaluation of single- / multiple-use products and sterilisation techniques in this context is in **some parts effective** and of **some relevance**, with some understanding and reasoning taking the form of **generic** statements with **some** development. **Brief** conclusions supported by reasoned judgements that consider only **basic arguments** and show **little** relevance to the question aims are evident. **AO2:** Applied limited knowledge of single- / multiple-use products and sterilisation techniques to the context and may show a **lack of functional understanding** of these.

		AO1: Knowledge and understanding of single- / multiple-use products and sterilisation techniques shows some, but **limited accuracy**, focus and relevance. The answer is basic and shows **limited** breadth and / or depth of understanding, with inaccuracies and omissions
	0	No creditworthy material.

Indicative content

Examiners are reminded that the indicative content reflects content-related points that a student may make but is not an exhaustive list, nor is it a model answer. Students may make all, some or none of the points included in the indicative content, as its purpose is as a guide for the relevance and expectation of the responses. Students must be credited for any other appropriate response.

AO1 – Demonstration of knowledge of single- / multiple-use products and sterilisation techniques:

- single-use products are discarded after use
- multiple-use aprons can be used more than once
- multiple-use products require cleaning, sterilisation, or disinfection depending on the product
- single-use products improve safety by reducing the risk of infection and cross contamination
- single-use products are more convenient as they do not require any cleaning or sterilising
- range of sterilisation techniques used within the laboratory would include:
    - autoclaving wet / dry methods: use of highly pressurised steam to sterilise heat-resistant equipment
    - chemical sterilisation: use of a solvent diluted with water for quick sterilisation of surfaces and equipment
    - radiation sterilisation: use of ionising radiation to sterilise single-use medical equipment such as PPE.

AO2 – Application of knowledge of single- / multiple-use products and sterilisation techniques that may include:

- single-use aprons bring advantages in that they:
    - reduce the risk of infection and cross-contamination of pathogens between fluid samples
    - do not require cleaning / sterilising between uses

- multiple-use aprons bring advantages in that they:
    - reduce waste
    - if a multiple-use product is in use members of staff will be familiar with how to use it / how to use that particular brand.

- sterilisation techniques and how they apply to multiple-use apron:
    - Autoclaving will be used to sterilise heat resistant equipment such as glassware and therefore will not be appropriate for multiple-use aprons. Multiple-use aprons would have to be heat resistant

- Chemical sterilisation could be appropriate for multiple-use aprons, however new chemicals may need to be ordered to properly wash and sterilise the aprons
- Radiation sterilisation would not be appropriate for the multiple-use apron as it is used to sterilise single-use products.

AO3 – Judgements around the use of single- / multiple-use products and sterilisation techniques that may include:

- the suggestion is not justified as single-use aprons reduce the risk of cross-contamination which is vital when analysing fluid samples containing pathogens. They are also more convenient, meaning there will be no delay to the analysis of samples whilst waiting for the multiple-use aprons to be cleaned and sterilised.
- in terms of sterilisation, it is unlikely that the current sterilisation techniques can be applied to the multiple-use aprons. Radiation sterilisation is used on single-use aprons before disposal to protect waste handlers and the wider environment. Autoclaving will be dedicated to other pieces of equipment such as glassware so would not be appropriate for the sterilisation of the multiple-use apron, even if they were heat resistant.
- chemical sterilisation could be applied to the multiple-use aprons, but it is unlikely that they will have the correct chemicals to wash and sterilise the apron. Therefore, the chemicals would have to be bought and the washed with the aprons in dedicated machines, adding extra cost to the laboratory.

Conclusion may include:

- single-use aprons are likely to be the better option in terms of infection control and logistics
- multiple-use aprons will likely reduce the environmental impact of the hospital as less will be disposed of but will negatively impact infection control. Also, sterilisation techniques used within the laboratory are unlikely to be applied to multiple-use aprons without adaptation.

Accept any other suitable responses.

Quality of written communication (QWC)

Mark	Descriptor
3	The answer is **clearly expressed** and **well structured**. The rules of grammar are used with **effective control** of meaning overall. A **wide range** of appropriate technical terms is used effectively.
2	The answer is generally **clearly expressed** and **sufficiently structured**. The rules of grammar are used with **general control** of meaning overall. A **good range** of appropriate technical terms is used effectively.
1	The answer **lacks some clarity** and is generally **poorly structured**. The rules of grammar are used with **some control** of meaning and any errors do **not** significantly hinder the overall meaning. A **limited range** of appropriate technical terms is used effectively.
0	There is **no answer** written or none of the material presented is creditworthy. **or**

	The answer does **not** reach the threshold performance level. The answer is **fragmented and unstructured** , with **inappropriate use of technical terms**. The errors in grammar severely hinder the overall meaning.

Section C: Data handling and confidentiality

This section is worth 21 marks, plus 3 marks for QWC and use of specialist terminology.

13 (a) Identify the regulation that provides a set of principles with which any individual or organisation processing sensitive data must comply.

[1 mark]

AO1 = 1 mark

Award **one** mark for:

- the General Data Protection Regulation (GDPR) 2018 (do not accept unless correct date is included, however GDPR as an acronym is acceptable) (1).

(b) A transport-service representative wishing to start a pharmaceutical delivery service asks the central pharmacy for a list of patient names and contact details who have received repeat prescriptions. The representative wishes to advertise delivery services to relevant patients and states that it is in the interests of the patients to supply this data.

Explain one **way the Data Protection Act 2018 would apply in the situation mentioned above.**

[2 marks]

AO2 = 2 marks

Award **one** mark per explanation point, up to a maximum of **two** marks:

- The Data Protection Act 2018 would be used to protect individuals' private data (1) which would prevent unauthorised representatives from obtaining the personal information requested (1)
- The Data Protection Act 2018 would control who the pharmacy data could be used by (1) and ensure the patient data could only be used as intended by the pharmacy (1).

Accept any other suitable response.

14	**Safia is completing a patient data management audit in the local Ophthalmic department. She checks that all draws containing sensitive information are kept locked when not in use.** **Explain** two **other aspects of the audit Safia should examine to ensure compliance with legislation and regulations.** [4 marks]

AO2 = 4 marks

Award **one** mark for each part of an explanation, up to a maximum of **four** marks:

- Safia should check that any patient data that is stored electronically is secure and can only be accessed by authorised personnel (1) to ensure that the data is not freely available to anyone working in the ophthalmic department (1)
- Safia should check that patient-data which is not needed is not kept for longer than the required retention period (1) to make sure that the department is compliant with GDPR 2018 recommendations (1)
- Safia should assess if / how patient data is being sent to other departments (1) to ensure it is being done through a secure connection to keep the data safe (1)
- Safia should audit local ways of working / organisational policies (1) to ensure that the data is being managed in the recommended way to encourage compliance across the department (1).

Accept any other suitable response.

15	**A biomedical scientist has completed a research project. They are delivering a presentation to share the research findings and some learned good-practice recommendations with their team. They have chosen to deliver their presentation in-person to their colleagues.** **Justify the biomedical scientist's choice of using a presentation to deliver the data gathered and if it was the most appropriate choice.** **[3 marks]**

AO3 = 3 marks

Award **one** mark per justification point up to a maximum of **three** marks:

- as they have been asked to deliver the information in person a presentation is the right format, as other forms such as leaflets and web pages would not be a useful when delivering the training in-person (1). By using a presentation, they can walk through all the findings and data with the appropriate detail whilst also allowing time for any appropriate question as / when they arise (1). This allows the biomedical scientist to be confident that

the staff have taken on findings from the research as well as being able to ensure they understand the reasoning behind the shared good practice (1)

- the presentation would allow information to be passed on to a large group of people easily (1). It could include a discussion to maintain the group's interest and would be key in engagement of the research findings (1). The biomedical scientist could use a mixture of other ways of presenting information such as use of an interactive workshop to reinforce the practical applications of the research (1).

Accept any other suitable response.

16 **A patient is receiving treatment for a physical condition. A healthcare professional believes that a nutritional supplement may aid their recovery.**

However, following a discussion with the healthcare professional, the patient refuses the supplement. The healthcare professional considers informing the next of kin of the situation, to seek their approval to covertly administer the medication.

Explain how the limits of confidentiality apply to the healthcare professional approaching the next of kin.

[2 marks]

AO2 = 2 marks

Award **one** mark for each part of an explanation up to a maximum of **two** marks.

- limits of confidentiality do not apply here as the supplement 'may aid' the patient's recovery suggesting they will not be harmed if they do not take it (1), meaning the healthcare professional has no right to inform the next of kin and suggest covert administration (1)
- limits of confidentiality do not apply here as the patient has not consented to the supplement and has the capacity to refuse (1) therefore the healthcare professional has no right to seek consent for covert administration (1).

Accept any other suitable response.

17 **A radiology department regularly performs diagnostic tests on patients.**

The following process is followed for each patient:

- **a paper referral form is completed which documents their identification details, requested diagnostic test and reasons for referral**
- **the forms are kept in an office until the patient arrives**
- **a practitioner checks the details of the referral form with the patient prior to performing the test, to ensure the correct diagnostic test is carried out**
- **at the end of the appointment, the referral form is returned to the office.**

The departmental manager is preparing to replace this process with an IT-based database solution.

Discuss the advantages and risks of an IT-based system and the security measures that would have to be implemented in order to protect the above data.

Your response should include reasoned judgements.

[9 marks, plus 3 marks for QWC]

AO1 = 3 marks
AO2 = 3 marks
AO3 = 3 marks

Band	Mark	Descriptor
3	7-9	**AO3:** Discussion of the advantages / risks of IT systems and relevant security measures in this context is **comprehensive, effective, and relevant**, showing **detailed understanding** and **logical and coherent** chains of reasoning throughout. **AO2:** Applied **all** relevant knowledge advantages / risks of IT systems and relevant security measures to the given context and shows a **detailed, functional understanding** of the requirements / consequences. **AO1:** A **wide** range of relevant knowledge and understanding of advantages / risks of IT systems and relevant security measures which is **accurate and detailed**. The answer demonstrates **comprehensive** breadth and / or depth of understanding
2	4-6	**AO3:** Discussion of the advantages and risks of IT systems in this context is in **most parts effective** and **mostly relevant**, showing **mostly logical** and **coherent** chains of reasoning. **AO2:** Applied **mostly** relevant knowledge of advantages / risks of IT systems and relevant security measures to the

		context, showing **some functional understanding** of how this can be applied in this discussion. **AO1:** Knowledge and understanding of the advantages / risks of IT systems and relevant security measures is in most parts **clear** and **mostly accurate**, although on occasion may lose focus. The answer demonstrates **reasonable** breadth and / or depth of understanding, with occasional inaccuracies and / or omissions
1	1-3	**AO3**: Discussion of the advantages / risks of IT systems and relevant security measures in this context is in **some parts effective** and of **some relevance**, with some understanding and reasoning taking the form of **generic** statements with **some** development. **AO2:** Applied limited knowledge of the advantages / risks of IT systems and relevant security measures to this context and may show a **lack of functional understanding** of such. **AO1**: Knowledge and understanding of advantages / risks of IT systems and relevant security measures shows some, but **limited accuracy**, focus and relevance. The answer is **basic** and shows limited breadth and / or depth of understanding, with inaccuracies and omissions
	0	No creditworthy material.

Indicative content

Examiners are reminded that the indicative content reflects content-related points that a student may make but is not an exhaustive list, nor is it a model answer. Students may make all, some or none of the points included in the indicative content, as its purpose is as a guide for the relevance and expectation of the responses. Students must be credited for any other appropriate response.

AO1 – Demonstration of knowledge of the advantages / risks of IT systems and relevant security measures may include:

- there are advantages of moving to an IT system, for example:
    - ease of access
    - ease of sharing and transferring information
    - speed of data analysis
    - security
    - standardisation of data
    - enables continuous and / or real-time monitoring of data
    - cost
    - space saving
    - enables integrated working and supports safeguarding practices.

- there are risks of moving to an IT system, for example:
    - security breaches (accidental and malicious)
    - potential for corruption of data
    - system failure causing loss of access.
- examples of security measures that protect data:
    - controlling access to information (for example, levels of authorised logins and passwords)
    - allowing only authorised staff into specific work areas
    - requiring regular and up-to-date staff training in complying with data security
    - making regular back-ups of files
    - using up-to-date cyber security strategies to protect against unintended or unauthorised access
    - ensuring that back-up data is stored externally (for example, cloud-based or separate servers).

AO2 – Application of advantages / risks of IT systems and relevant security measures may include:

- the paper-based system is well understood by staff but has numerous scenarios which could lead to loss of data or inefficient access to it
- there are also storage issues with large quantities of paper
- an IT-based system could resolve these issues but also has its own risks (as detailed above)
- risks of IT systems could include information breaches making patient data available to others, corruption / loss of data compromising patient care etc
- security measures would have to be introduced, including controlling access to the forms to key members of staff (for example, office staff and radiologist)
- other security measures such as training staff in the new system and regular CPD on cyber-security would need to be carried out
- patient data relevant to the referral would need to be backed up externally.

AO3 – Discussion of the advantages / risks of IT systems and relevant security measures may include:

- staff can easily login and find information on a patient's entire medical history ensuring a more efficient visit to the radiology department and a quicker patient turnaround. It will also allow the staff member to be confident in checking anything they are not sure of in relation to each patient, reducing potential patient care errors
- data can be stored in more than one location, for example cloud software, so that in the event of any loss of data there is another copy / a backup ensuring that running of the department is efficient and any mislaid paperwork does not lead to appointments being rescheduled / missed
- data can be shared with other service providers through summary care records, ensuring continuity of care for the patient and promoting safeguarding
- test results can easily be shared between teams ensuring all available data is available to the whole team whenever needed. This makes for a better patient experience and less chance of missed information
- request from a patient for a copy of their medical records is easily actioned allowing the patient full control of their records

- hospitals can search their data bases to identify the extent of certain health conditions that might warrant health promotion campaigns leading to a more efficient service being offered to patients / a service that provides the public with what they are more likely to find useful.

Reasoned judgements may include:

- ensuring terminals are available in clinic rooms to allow staff to access any records during appointments which may lead to increased initial costs to the department and delays whilst this is being actioned
- responsibility and timing of data back-up to ensure no records / data are lost and the department is abiding by government guidelines / regulations which may mean further staff training is needed
- back-up plan for operations during system outage needs to be in place and regularly reviewed which may take further staff training / take up space for storage / may not be adequate unless checked regularly
- password policy needs to be created and shared with all staff which could put pressure on IT department / will need a procedure in place in case of forgotten passwords, etc.
- data security policies need to be created and shared with all staff which would require further staff training / put extra pressure on the IT department
- positioning of terminals away from patients / onlookers to ensure privacy which may mean that reorganisation of work areas is needed / may cause upset amongst colleagues that may need to approach tasks in a different way than usual
- staff training will be required on new systems, which will have an associated time commitment and cost
- cleaning terminals in between use may need new procedures to be introduced and enforced.

Accept any other suitable responses.

Quality of written communication (QWC)

Mark	Descriptor
3	The answer is **clearly expressed** and **well structured**. The rules of grammar are used with **effective control** of meaning overall. A **wide range** of appropriate technical terms is used effectively.
2	The answer is generally **clearly expressed** and **sufficiently structured**. The rules of grammar are used with **general control** of meaning overall. A **good range** of appropriate technical terms is used effectively.
1	The answer **lacks some clarity** and is generally **poorly structured**. The rules of grammar are used with **some control** of meaning and any errors do **not** significantly hinder the overall meaning. A **limited range** of appropriate technical terms is used effectively.
0	There is **no answer** written or none of the material presented is creditworthy. **or** The answer does **not** reach the threshold performance level. The answer is **fragmented and unstructured** , with **inappropriate use of technical terms**. The errors in grammar severely hinder the overall meaning.

Section D: Regulatory and professional frameworks

This section is worth 21 marks, plus 3 marks for QWC and use of specialist terminology.

18	**Identify** one **of the domains of good scientific practice (GSP).** [1 mark]

AO1 = 1 mark

Award **one** mark for a domain identified up to a maximum of **one** mark:

- professional practice (1)
- scientific practice (1)
- clinical practice (1)
- research, development and innovation (accept any equivalent variation) (1)
- (clinical) leadership (1).

19(a)	**New staff in a clinical laboratory working with tissue samples are given inductions on the standard operating procedures (SOPs).** **Explain** one **way in which staff induction plays a role in implementation of SOPs.** [2 marks]

AO2 = 2 marks

Award **two** marks for an explanation, up to a maximum of two marks:

- staff induction is the opportunity to gain practical access to SOPs for the first time (1) this can allow them to become familiar in their own time and ask any necessary questions to understand the SOPs which is important when handling and storing tissue samples. (1)
- staff induction takes place early for new starters, meaning information is given before they begin their now role (1) this can reduce possible errors and risk in the laboratory when handling and storing the tissue samples (1)
- staff induction should be a formal requirement and attendance (or giving of relevant information) recorded (1) this ensures all staff are aware of and understand the SOPs clearly and can follow them preventing any risk of incorrect handling / storage of tissue samples (1).

Accept any other suitable response.

19(b)	**The clinical laboratory stores its standard operating procedures (SOPs) electronically, but a staff member has printed copies to keep in their desk drawer for ease of access.**

Explain one **way in which this presents a risk to the implementation of relevant SOPs.**

[2 marks]

AO2 = 2 marks

Award **two** marks for an explanation, up to a maximum of two marks:

- as the staff member may not be using the most up-to-date versions of the SOPs (1) this creates a risk that improved / changed / updated practices would not be carried out by this staff member (1) poor practice may perpetuate as the staff member passes errors on to others they train (1) this could see good practice and SOPs not being adhered to across the laboratory, and risk the validity of the work being carried out (1).

Accept any other suitable response.

20(a) **State** one **action that would escalate concerns if equipment is not correctly calibrated or is unsuitable for intended use.**

[1 mark]

AO1= 1 mark

Award **one** mark for stating the action:

- label the equipment as unsafe to use (1)
- take the equipment out of action (1)
- report concerns to the relevant person (1)
- report concerns in accordance with organisational policies and procedures

Accept any other suitable response.

20(b) **Mia is carrying out an inventory of the medical equipment in a hospital storeroom. In doing so, they notice some minor damage to an automatic blood pressure monitor. On closer inspection, they see some loose wiring which makes the device electrically unsafe.**

Mia makes a note of the device's serial number. They then leave to go home for the day. Mia plans to inform the manager of their finding and complete an error report tomorrow morning.

Evaluate to what extent Mia escalated their concerns about the medical device appropriately and the possible impact of their actions.

[6 marks]

AO3 = 6 marks

Award **one** mark per evaluation point up to a maximum of **six** marks:

- as Mia delayed in reporting the error and it being actioned it may not have been taken out of use promptly (1). This could mean that the machine is used on a patient for monitoring and give faulty or incorrect results (1) resulting in incorrect treatment paths / medical judgments / medication being commenced as a result (1)
- this will impact Mia's professional registration / standing with her employer (1) leading to sanctions from the professional body / her employer (1). This could then result in the reputation of Mia / her department being damaged (1)
- Mia has considered the response and will complete the appropriate actions (1). Though this is positive, the equipment remains in the storeroom so it may be used, and this could pose danger to the staff member/patient (1). This suggests that, although the response planned is appropriate, it was not enacted in a timely manner which could cause harm to others (1).

Accept any other suitable response.

21	**A healthcare science department provides equipment calibration and quality testing services. The department has many experienced and well-trained staff who communicate updates and new procedures through informal meetings and group emails.** **A new member of staff proposes that:** • **there should be more formal documentation of calibration methods through standard operating procedures (SOPs)** • **there should be implementation of quality management processes that formalise updates to these standard operating procedures.** **Justify the implementation of the new staff member's proposal.** [9 marks, plus 3 for QWC]

AO1 = 3 marks
AO2 = 3 marks
AO3 = 3 marks

Band	Mark	Descriptor
3	7-9	**AO3:** Justification for the implementation of the proposal is **comprehensive, effective and relevant**, showing **detailed understanding** and **logical and coherent** chains of reasoning throughout. Informed conclusions that are fully supported with **rational and balanced**, reasoned judgements are evident. **AO2:** Applied **all** relevant knowledge of quality management processes and procedures to the given context and shows a **detailed, functional understanding** of the requirements / consequences. **AO1:** A **wide** range of relevant knowledge and understanding of quality management policies, procedures and SOPS which is **accurate and detailed**. The answer demonstrates **comprehensive** breadth and / or depth of understanding
2	4-6	**AO3:** Justification for the implementation of the proposal is in **most parts effective** and **mostly relevant**, showing **mostly logical** and **coherent** chains of reasoning. Conclusions supported by reasoned judgements that consider **most** of the relevant arguments are evident. **AO2:** Applied **mostly** relevant knowledge of quality management processes and procedures to the context, showing **some functional understanding** of how this can be applied in this discussion. **AO1:** Knowledge and understanding of quality management policies, procedures and SOPS is in most parts **clear** and **mostly accurate**, although on occasion may lose focus.

		The answer demonstrates **reasonable** breadth and / or depth of understanding, with occasional inaccuracies and / or omissions
1	1-3	**AO3:** Justification for the implementation of the proposal is in **some parts effective** and of **some relevance**, with some understanding and reasoning, taking the form of **generic** statements with **some** development. **Brief** conclusions supported by reasoned judgements that consider only **basic arguments** and show **little** relevance to the question aims are evident. **AO2:** Applied limited knowledge of quality management processes and procedures to this context and may show a **lack of functional understanding** of these. **AO1:** Knowledge and understanding of a quality management policies, procedures and SOPS shows some, but **limited accuracy**, focus and relevance. The answer is basic and shows **limited** breadth and / or depth of understanding, with inaccuracies and omissions.
	0	No creditworthy material.

Indicative content

Examiners are reminded that the indicative content reflects content-related points that a student may make but is not an exhaustive list, nor is it a model answer. Students may make all, some or none of the points included in the indicative content, as its purpose is as a guide for the relevance and expectation of the responses. Students must be credited for any other appropriate response.

AO1 – Demonstration of knowledge of quality management policies / processes:

- implementation of Standard Operating Procedures (SOPs)
  - allows planning and monitoring of service provision
  - requires regular service quality improvement meetings
  - requires a system for evaluating, identifying, and implementing improvements.

The importance of adhering to quality management processes within the health and science sector:

- ensuring consistency
- maintaining health and safety
- monitoring processes and procedures
- facilitating continuous improvement
- facilitating objective, independent review.

AO2 – Application of quality management policies and procedures that may include:

- SOPs / procedures would document the processes for calibration and testing
- implementation of quality management policies and procedures would provide a structured approach to:
  - service provision
  - implementing changes
  - monitoring SOPs / procedures and facilitating their continuous improvement
  - monitoring SOPs / procedures and facilitating their objective and independent review as opposed to being carried out by the members of staff who have been carrying them out for a long time
  - ensures SOPs / procedures are carried out consistently.

AO3 – Justification of implementing the proposal that may include:

- the current system may be functional, but is not robust
- implementation of SOPs / procedures would allow:
  - ensuring standardised practice
  - greater efficiency of training new staff
- formalised meetings would allow:
  - service quality to be monitored
  - potential improvements to be implemented in a structured way
- this would allow the service to be more:
  - robust
  - responsive to any required changes

implementation of quality management policies and procedures would allow:

- SOPs / procedures to undergo continuous, objective improvement
- SOPs / procedures that are fit for purpose would be consistently applied.

Accept any other suitable responses.
Quality of written communication (QWC)

Mark	Descriptor
3	The answer is **clearly expressed** and **well structured**. The rules of grammar are used with **effective control** of meaning overall. A **wide range** of appropriate technical terms is used effectively.
2	The answer is generally **clearly expressed** and **sufficiently structured**. The rules of grammar are used with **general control** of meaning overall. A **good range** of appropriate technical terms is used effectively.
1	The answer **lacks some clarity** and is generally **poorly structured**. The rules of grammar are used with **some control** of meaning and any errors do **not** significantly hinder the overall meaning. A **limited range** of appropriate technical terms is used effectively.
0	There is **no answer** written or none of the material presented is creditworthy. **or** The answer does **not** reach the threshold performance level. The answer is **fragmented and unstructured** , with **inappropriate use of technical terms**. The errors in grammar severely hinder the overall meaning.

Assessment Objective Grid

Section A

Question Number	AO1	AO2	AO3	Maths	QWC	Total
1a	2					2
1b		4				4
2a	2					2
2b		4				4
3a	2					2
3b			3			3
4		2				2
5			6			6
6	3	3	3		3	12
Total	9	13	12		3	37
Totals required	7−9 marks	13–15 marks	11–13 marks			
Kil	**2**					

Section B

Question Number	AO1	AO2	AO3	Maths	QWC	Total
7a	1					1
7b		2				2
7c			6			6
8	2					2
9			3			3
10a	3					3
10b		4				4
11		4				4
12	3	3	3		3	12
Total	9	13	12		3	37
Totals required	7–9 marks	11–14 marks	10–12 marks			
Kil	**2**					

Section C

Question Number	AO1	AO2	AO3	Maths	QWC	Total
13 (a)	1					1
13 (b)		2				2
14		4				4
15			3			3
16		2				2
17	3	3	3		3	12
Total	4	11	6		3	24
Totals required	3–6 marks	9–13 marks	4–8 marks			
Kil	1					

Section D

Question Number	AO1	AO2	AO3	Maths	QWC	Total
18	1					1
19a		2				2
19b		2				2
20a	1					1
20b			6			6
21	3	3	3		3	12
Total	5	7	9		3	24
Totals required	4–7 marks	7–10 marks	7–10 marks			
Totals required paper	**25–29**	**40–48**	**36-39**			
Kil	**2**					
Whole Paper Totals	27	44	39		**12**	**122**
Kil Paper Total	6					

Document information