



# T Level Technical Qualification in Healthcare Science

Occupational specialism assessment (OSA)

## Assisting with Healthcare Science

Assignment 3

Mark scheme

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## Introduction

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:

- criteria of the observed skills expected from a student
- information on how individual marks are to be awarded
- the allocated performance outcomes and total mark for each task

SAMPLE

## Marking guidelines

The mark scheme for the practical assignment comprises marking grids and indicative content.

The following marking grids should be used to assess students and award marks for their skills and underpinning knowledge. The indicative content included is for the practical assignment set for the specimen assessment series only.

To understand what is required to be awarded marks, students should have already been provided with a copy of the marking grids. The marking grids are published in the tutor guidance document that can be found on the NCFE website.

Assessors are reminded that they should complete an observation record form to record descriptive information and evidence of the student's skills and knowledge demonstrated during the practical assignment. The student observation record form can be found within this document for each task.

## General guidelines

You must apply the following marking guidelines to all marking undertaken throughout the observation. 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

The marking grids for each task include a number of themes or criteria that students are assessed against. Each assessment criterion contributes, with equal weighting, to an overall holistic judgement of their performance.

The assessment criteria are broken down into (up to) 5 bands with a corresponding descriptor for each criterion. The descriptor for the band indicates the quality of a student's performance in that band. The band is the mark that should be awarded across the criterion, for example, band 1 = 1 to 4 marks and band 4 = 13 to 16 marks. There is a total of 16 marks available for this part of the task.

When determining marks for a student's performance, assessors should only consider the quality of the student's performance that has been observed. When determining a band/mark, assessors' decisions should be based on the overall quality of the student's performance in relation to the descriptors from that part of the task. If the

student's performance covers different aspects of different bands, assessors should use a best-fit approach to award the most appropriate band/mark.

Standardisation materials can be used to help assessors with determining a band/mark if they are unsure.

Assessors should start at the lowest band of the marking grid and move up until there is a match between the band descriptor and the student's performance.

## **Indicative content**

Indicative content has been provided as a guide to help assessors understand what should be expected in a student's performance to allow for a marking judgement to be made. Assessors are reminded that indicative content is not an exhaustive list but aims to cover the main elements expected to be observed.

SAMPLE

## Practical skills assessment

This assessment requires students to complete the following tasks:

1. microscopy – Giemsa stain
2. specimen analysis – blood

### Task 1: microscopy – Giemsa stain

#### Brief

**Location:** haematology laboratory

You are supporting a biomedical scientist (BMS) with analysing a patient's whole blood sample that has arrived from one of the wards. You need to analyse the percentage, volume and number of blood cells from the sample and relay this information to the biomedical scientist.

#### Task

- 1(a) complete preparation to carry out a Giemsa stain method on blood (including the work area and self)
- 1(b) produce microscope slides with a blood film of the sample blood
- 1(c) complete a stain method on the blood slides using Giemsa stain and accurately record the percentage of cell types within the sample. A control slide of whole blood has been provided to you for you to refer to
- 1(d) dispose of materials and samples appropriately, and clean equipment and work area

(40 marks)

## Observation record form

Used to record descriptive information and evidence of students' skills during the practical assignment. Even though evidence of the quality of skills demonstrated should support decisions against the mark scheme, the notes should follow the flow of the tasks and how students are expected to complete them, rather than attempting to assign evidence against the criteria (at this stage).

### To be completed by the provider appointed assessor

<b>Area/objective</b>  The following areas/objectives can cover a broad range of skills or actions which should be considered when adding notes. The text below each area/objective is an example of what should be observed and is not exhaustive.	<b>Comments</b>  Identifying students' areas of strengths and weaknesses through the use of thorough and precise notes that differentiate between a range of students' practical skills is required. This will be used to support accurate and consistent allocation of marks once all evidence has been generated.
<b>Preparation</b>  For example, describe how the student collects and applies correct PPE and prepares work area to ensure it is safe, tidy and clean.	
<b>Quality control (QC) checking</b>  For example, describe how the student checks each step of the procedure and adjusts their working to suit any complications that arise from the procedure.	
<b>Slide preparation</b>  For example, describe how the student prepares the slides for examination.	
<b>Giemsa staining</b>  For example, describe how the student carries out the Giemsa staining process.	

<p><b>Microscope use</b></p> <p>For example, describe how the student uses a microscope to check the slide.</p>	
<p><b>Quality checks</b></p> <p>For example, describe how the student carries out the quality checking process.</p>	
<p><b>Reporting/recording results</b></p> <p>For example, describe how the student carries out the handover of the QC slides to the biomedical scientist.</p>	
<p><b>Clean down</b></p> <p>For example, describe how the student cleans down the workstation and disposes of waste and PPE.</p>	



## Task 1(a): complete preparation to carry out a Giemsa stain method on a blood sample (including the work area and self)

Band	Level descriptor
<b>Band 3</b> (7–9 marks)	<p>The student adheres to health and safety regulations when demonstrating hygiene techniques, selecting appropriate PPE to an <b>excellent</b> standard.</p> <p>The student demonstrates <b>excellent</b> understanding and practical application when preparing their work area for the control Giemsa stain slides, selecting all relevant equipment and reagents, and ensures excellent levels of cleanliness and organisation of the work area.</p> <p>The student demonstrates <b>excellent</b> knowledge and understanding when identifying equipment and quality check (QC) materials required for the control Giemsa stain slides.</p>
<b>Band 2</b> (4–6 marks)	<p>The student adheres to health and safety regulations when demonstrating hygiene techniques, selecting appropriate PPE to a <b>good</b> standard.</p> <p>The student demonstrates <b>good</b> understanding and practical application when preparing their work area for the control Giemsa stain slides, selecting mainly relevant equipment and reagents, and ensures good levels of cleanliness and organisation of the work area.</p> <p>The student demonstrates <b>good</b> knowledge and understanding when identifying equipment and QC materials required for the control Giemsa stain slides.</p>
<b>Band 1</b> (1–3 marks)	<p>The student adheres to health and safety regulations when demonstrating hygiene techniques, selecting appropriate PPE to a <b>reasonable</b> standard.</p> <p>The student demonstrates <b>basic</b> understanding and practical application when preparing their work area for the control Giemsa stain slides, selecting some limited relevant equipment and reagents, and ensures reasonable levels of cleanliness and organisation of the work area.</p> <p>The student demonstrates <b>basic</b> knowledge and understanding when identifying equipment and QC materials required for the control Giemsa stain slides and may require support/prompting.</p>
<b>0</b>	No evidence demonstrated or nothing worthy of credit.

## Indicative content

The student should:

(Health and safety: hygiene)

- demonstrate all of the 5 steps of hand hygiene
- use soap and water or sanitiser where appropriate
- wash hands for an effective amount of time

(Health and safety: select appropriate PPE)

- use disposable gloves
- wear a laboratory coat

(Health and safety: select and prepare area for work)

- work in an organised/cleared area
- clean work area with cleaning solution

(Scientific practice: select and prepare equipment, reagents and QC material)

- select equipment such as slide racks, glass slides, reagent trough (or other suitable containers), microscope, counter and timer
- select reagents such as methanol and stains
- perform quality checks of sample and solution to ensure all solutions and samples are suitable for use

## Task 1(b): produce microscope slides with a blood film of the sample blood

Band	Level descriptor
<b>Band 3</b> (7–9 marks)	<p>The student's preparation of the slides is <b>excellent</b>, covering all necessary steps in a <b>confident</b> manner and with attention to detail, including accurate labelling of slides.</p> <p>The student demonstrates <b>excellent</b> application of the QC material, applying the correct volume of sample and solutions to the slide.</p> <p>The student is precise when producing a blood film slide, which is completed to a <b>high</b> standard, the material firmly adheres to both slides.</p>
<b>Band 2</b> (4–6 marks)	<p>The student's preparation of the slides is <b>good</b>, covering all necessary steps and with <b>good</b> attention to detail, including accurate labelling of slides.</p> <p>The student demonstrates <b>good</b> application of the QC material, <b>mostly</b> applying the correct volume of sample and solutions to the slide.</p> <p>The student is <b>mostly precise</b> when producing a blood film slide, which is completed to a <b>good</b> standard, the material partially adheres to both slides.</p>
<b>Band 1</b> (1–3 marks)	<p>The student's preparation of the slides is basic and limited, covering <b>most</b> steps but with <b>limited</b> attention to detail and some inaccuracies in labelling.</p> <p>The student demonstrates <b>basic</b> application of the QC material and requires some support from the biomedical scientist to apply the correct volume of sample and solutions to the slide. The student is <b>partially accurate</b> when producing a blood film slide, which is completed to a <b>basic</b> standard, the material partially adheres to one slide.</p>
<b>0</b>	No evidence demonstrated or nothing worthy of credit.

### Indicative content

The student should:

(Scientific practice: label slides)

- carry out identification of slides with date and initials

(Scientific practice: blood film)

- use correct technique to produce a blood film
- dispose of contaminated materials, such as slides and pipettes appropriately
- leave the sample to dry accurately, for an appropriate length of time

(Scientific practice: application of QC material)

- chose the appropriate volume of sample to place on the slide

SAMPLE

### Task 1(c): complete a stain method on the blood slides using Giemsa stain and accurately record the percentage of blood cell types within the sample

Band	Level descriptor
<b>Band 4</b> (13–16 marks)	<p>The student demonstrates <b>excellent</b> techniques when completing the Giemsa stain, that are <b>sustained</b> throughout the SOP, using the appropriate volume of stain for the appropriate time and including correct use of slides.</p> <p>The student demonstrates <b>excellent</b> practical skills when using the microscope, that are <b>always</b> applied with accuracy and precision, accurately identifying the proportion of blood cell types within the sample.</p> <p>The student’s acquisition of data and/or information is <b>excellent</b> and is <b>fully accurate</b> when recording results.</p> <p>The student demonstrates <b>excellent</b> communication skills, ensuring the use of <b>highly appropriate</b> and fully accurate technical language when providing information to the biomedical scientist.</p>
<b>Band 3</b> (9–12 marks)	<p>The student demonstrates <b>very good</b> techniques when completing the Giemsa stain, that are <b>largely sustained</b> throughout the SOP, mostly using the appropriate volume of stain for the appropriate time and including correct use of slides.</p> <p>The student demonstrates <b>very good</b> practical skills when using the microscope, that are <b>mostly</b> applied with accuracy and precision when accurately identifying the proportion of blood cell types within the sample.</p> <p>The student’s acquisition of data and/or information is <b>very good</b> and is <b>generally</b> accurate when recording results.</p> <p>The student demonstrates <b>very good</b> communication skills, ensuring the use of <b>appropriate</b> and accurate technical language when providing information and reporting to the biomedical scientist.</p>

Band	Level descriptor
<p><b>Band 2</b> (5–8 marks)</p>	<p>The student demonstrates <b>good</b> techniques when completing the Giemsa stain, that are <b>sometimes applied</b> during the SOP, using stain in a reasonably good way and including the correct use of slides.</p> <p>The student demonstrates <b>good</b> practical skills when using the microscope, that are applied with some accuracy and precision when accurately identifying the proportion of blood cell types within the sample, but with some errors or inaccuracies.</p> <p>The student’s acquisition of data and/or information is <b>good</b> and is <b>partially accurate</b> when recording results.</p> <p>The student demonstrates <b>good</b> communication skills, with <b>some</b> use of appropriate technical language that is <b>partially accurate</b> when providing information and reporting to the biomedical scientist.</p>
<p><b>Band 1</b> (1–4 marks)</p>	<p>The student demonstrates <b>basic</b> techniques when completing the Giemsa stain, that are <b>inconsistently applied in a limited way</b> during the SOP, with some use of stain and including some use of slides.</p> <p>The student demonstrates <b>basic</b> practical skills when using the microscope, that are applied with basic or limited accuracy and precision, including some basic use of oil, objectives and focussing adjustment that may lack confidence and include errors. The student may require assistance when accurately identifying the proportion of blood cell types within the sample.</p> <p>The student’s acquisition of data and/or information is basic and limited, recording results with some, but <b>limited accuracy</b>.</p> <p>The student demonstrates <b>basic</b> communication skills, with <b>basic</b> use of appropriate technical language that is limited in accuracy, when providing information and reporting to the biomedical scientist. The student requires prompting when incomplete information has been provided.</p>
<p><b>0</b></p>	<p>No evidence demonstrated or nothing worthy of credit.</p>

## Indicative content

The student should:

(Scientific practice: application of QC material)

- use correct volume of QC material (as per their chosen volume/method)
- complete the method in an accurate and correct order
- utilise the control slide when comparing sample cell count to a normal/average cell count

(Scientific practice: use of microscope)

- use correct method of viewing a microscope, such as adjustment and focussing
- use the correct magnification to view the cells accurately

(Management of information and data: recording and documentation of results)

- produce accurate results in a suitable format (cell count by type (RBC and WB) in a table, such as a prepared written/electronic table for accurate recording of results)

(Communication skills: verbal communication of results to supervising BMS)

- use written/electronic methods to confirm the result
- use verbal methods to explain the procedure completed and the validity of results

## Task 1(d): dispose of materials and samples appropriately, and clean equipment and work area

Band	Level descriptor
<b>Band 3</b> (5–6 marks)	The student's adherence to health and safety regulations when disposing of <b>all</b> materials is <b>comprehensive</b> , including correct and confident disposal of biological materials and glassware. The student <b>consistently</b> monitors and maintains their working environment, demonstrating <b>highly effective</b> infection control procedure compliance.
<b>Band 2</b> (3–4 marks)	The student's adherence to health and safety regulations when disposing of <b>most</b> materials is <b>good</b> , including correct disposal of biological materials and glassware. The student <b>predominantly</b> monitors and maintains their working environment, demonstrating <b>reasonably effective</b> infection control procedure compliance.
<b>Band 1</b> (1–2 marks)	The student's adherence to health and safety regulations when disposing of <b>some</b> materials is <b>basic</b> , with some, but limited consideration of different materials and how they should be disposed of. The student demonstrates <b>some limited</b> monitoring and maintenance of their working environment, demonstrating <b>basic and limited</b> infection control procedure compliance.
<b>0</b>	No evidence demonstrated or nothing worthy of credit.

### Indicative content

The student should:

(Correct disposal of biological material and glassware)

- correctly dispose of biological material into appropriate waste container
- correctly dispose of glassware that is reusable and items that are not reusable



(Decontamination of work area and equipment)

- use cleaning fluid when decontaminating the work area

(Correct disposal of PPE)

- use clinical waste bin for gloves and laundry for laboratory coat

SAMPLE

## Task 2: specimen analysis – blood

### Brief

**Location:** haematology laboratory

You are given a patient's blood sample. The biomedical scientist asks you to analyse the patient's blood by performing a cell count on **only** the white blood cells (WBCs) in this sample.

### Task

The biomedical scientist has asked you to confirm the number of white blood cells in the sample.

2(a) prepare the work area and self for carrying out cell counting of WBCs

2(b) separate the blood sample into its components using centrifugation and aliquot a chosen volume of WBCs from the sample

2(c) using a haemocytometer, count the WBCs within a selected volume of blood:

- follow the standard operating procedure (SOP)
- confirm the specimen is ready for analysis
- discuss the process you went through with the biomedical scientist

2(d) carry out post-analysis activities, including:

- sample storage
- equipment cleaning
- waste disposal
- decontamination of work area

(54 marks)

## Observation record form

Used to record descriptive information and evidence of students' skills during the practical assignment. Even though evidence of the quality of skills demonstrated should support decisions against the mark scheme, the notes should follow the flow of the tasks and how students are expected to complete them, rather than attempting to assign evidence against the criteria (at this stage).

### To be completed by the provider appointed assessor

<p><b>Area/objective</b></p> <p>The following areas/objectives can cover a broad range of skills or actions which should be considered when adding notes. The text below each area/objective is an example of what should be observed and is not exhaustive.</p>	<p><b>Comments</b></p> <p>Identifying students' areas of strengths and weaknesses through the use of thorough and precise notes that differentiate between a range of students' practical skills is required. This will be used to support accurate and consistent allocation of marks once all evidence has been generated.</p>
<p><b>Preparation</b></p> <p>For example, describe how well the student collects and applies correct PPE and prepares the work area to ensure it is safe, tidy and clean.</p>	
<p><b>Checking sample</b></p> <p>For example, describe how well the student checks the sample before starting the processing procedure.</p>	
<p><b>Sample preparation</b></p> <p>For example, describe how well the student prepares and stores the sample for the next stage of processing.</p>	
<p><b>Centrifugation</b></p> <p>For example, describe how well the student prepares for and quality checks the centrifugation and how well they perform the blood fractionation.</p>	

<b>Pipette use</b> For example, describe how well the student uses a pipette throughout the process.	
<b>Cell count</b> For example, describe how well the student follows the procedure to set up the WBC sample onto the haemocytometer from the fractionation, and describe how well they perform the blood count and produce accurate and valid results.	
<b>Results reporting</b> For example, describe how well the student reports the cell counts.	
<b>Task completion</b> For example, describe how well the student finishes the task, such as storing, disposing sample and tidying work area.	

## Task 2(a): prepare the work area and self for carrying out cell counting of the white blood cells (WBCs)

Band	Level descriptor
<b>Band 3</b> (7–9 marks)	<p>The student adheres to health and safety regulations, demonstrates <b>excellent</b> hygiene techniques, including all aspects of hand hygiene and selects an appropriate range of PPE aligned to the task to a <b>very high</b> standard.</p> <p>The student demonstrates <b>excellent</b> understanding and practice when preparing their work area for the centrifugation and a blood count, including correct equipment collected and positioned and quality check (QC) of equipment, reagents and samples.</p> <p>The student demonstrates <b>excellent</b> knowledge and practice when identifying and preparing equipment and reagents with no prompting required.</p>
<b>Band 2</b> (4–6 marks)	<p>The student adheres to health and safety regulations, demonstrates <b>good</b> hygiene techniques, including hand hygiene and selects the appropriate PPE, mostly aligned to the task, to a <b>good</b> standard.</p> <p>The student demonstrates <b>good</b> understanding and practice when preparing their work area for centrifugation and a blood count, including correct equipment collected and positioned and QC of equipment, reagents and samples.</p> <p>The student demonstrates <b>good</b> knowledge and practice when identifying relevant equipment and reagents.</p>
<b>Band 1</b> (1–3 marks)	<p>The student shows <b>some</b> limited ability to follow health and safety regulations when demonstrating hygiene techniques and selecting appropriate PPE to a <b>reasonable</b> standard.</p> <p>The student demonstrates <b>some</b> understanding and practice when preparing their work area for centrifugation and a blood count, including mostly correct equipment collected and positioned and QC of equipment, reagents and samples.</p> <p>The student demonstrates <b>some</b> knowledge and practice when identifying relevant equipment and reagents.</p>
<b>0</b>	No evidence demonstrated or nothing worthy of credit.

## Indicative content

The student should:

(Health and safety: hygiene)

- use soap and water or sanitiser where appropriate
- demonstrate all of the 5 steps of hand hygiene
- wash hands for an effective amount of time

(Health and safety: select appropriate PPE)

- use a laboratory coat
- use gloves
- use goggles

(Health and safety: select and prepare area for work)

- work in an area that is cleared and organised
- clean work area with cleaning solutions

(Scientific practice: select and prepare equipment, reagents and QC material)

- use correct equipment such as centrifuge, pipettes, pipette tips and timer
- check all equipment appropriately for QC to ensure it is safe to use and will produce a valid result (using the correct handling techniques where applicable)

## Task 2(b): separate the blood sample into its components using centrifugation and aliquot a chosen volume of WBCs from the sample

Band	Level descriptor
<b>Band 4</b> (13–16 marks)	<p>The student demonstrates <b>very high levels of</b> accuracy when examining the sample suitability and identifies and manages the specimen error <b>highly effectively</b> in the context of the requirements of the task.</p> <p>The student demonstrates <b>excellent</b> use of the centrifuge equipment that demonstrates an <b>excellent</b> understanding of scientific knowledge of the technique when checking the quality of the equipment and the safe placement of it.</p> <p>The student's sample labelling is <b>consistently accurate</b> and correctly placed.</p> <p>The student demonstrates <b>excellent</b> use of the centrifuge and pipette, that is <b>consistently</b> applied with accuracy and precision, including operation of the centrifuge including bucket size, balance, speed and timing of centrifugation and excellent accuracy and dispensing when using the pipette.</p> <p>The student demonstrates an <b>excellent</b> knowledge of the entire process and <b>confidently</b> aliquots a volume of the 'buffy coat' to be used in the next steps.</p>
<b>Band 3</b> (9–12 marks)	<p>The student demonstrates <b>high levels of</b> accuracy when examining the sample suitability and identifies and manages the specimen error <b>effectively</b> in the context of the requirements of the task.</p> <p>The student demonstrates <b>very good</b> use of the centrifuge equipment that demonstrates <b>very good</b> understanding of scientific knowledge of the technique when checking the quality of the equipment and the safe placement of it.</p> <p>The student's sample labelling is <b>generally</b> accurate and correctly placed.</p> <p>The student demonstrates a <b>very good</b> use of the centrifuge and pipette, that is <b>mostly</b> applied with accuracy and precision, including very good operation of the centrifuge including bucket size, balance, speed and timing of centrifugation and accuracy and dispensing when using the pipette.</p> <p>The student demonstrates a <b>very good</b> knowledge of the entire process and aliquots a volume of the 'buffy coat' to be used in the next steps.</p>

Band	Level descriptor
<b>Band 2</b> (5–8 marks)	<p>The student demonstrates <b>good levels of</b> accuracy when examining the sample suitability and identifies and manages the specimen error <b>reasonably effectively</b> in the context of the requirements of the task.</p> <p>The student demonstrates <b>reasonable</b> use of the centrifuge equipment that demonstrates <b>reasonable</b> understanding of scientific knowledge of the technique when checking the quality of the equipment and the safe placement of it.</p> <p>The student's sample labelling is <b>partially</b> accurate and correctly placed.</p> <p>The student demonstrates <b>reasonable</b> use of the centrifuge and pipette, that is <b>sometimes</b> applied with accuracy and precision, including reasonable operation of the centrifuge including bucket size, balance, speed and timing of centrifugation and accuracy and dispensing when using the pipette.</p> <p>The student demonstrates <b>reasonable</b> knowledge of the entire process and <b>hesitantly</b> aliquots a volume of the 'buffy coat' to be used in the next steps.</p>
<b>Band 1</b> (1–4 marks)	<p>The student demonstrates <b>basic levels of</b> accuracy when examining the sample suitability and identifies and manages the specimen error with some <b>limited effectiveness</b> in the context of the requirements of the task.</p> <p>The student demonstrates <b>limited</b> use of the centrifuge equipment that demonstrates <b>limited</b> understanding of scientific knowledge of the technique when checking the quality of the equipment and the safe placement of it.</p> <p>The student's sample labelling is <b>at times</b> accurate and correctly placed.</p> <p>The student demonstrates <b>limited</b> use of the centrifuge and pipette, that is applied with <b>basic and limited</b> accuracy and precision and requires assistance, including some limited operation of the centrifuge including bucket size, balance, speed and timing of centrifugation and accuracy and dispensing when using the pipette.</p> <p>The student demonstrates <b>limited</b> knowledge of the entire process and <b>with assistance</b> aliquots a volume of the 'buffy coat' to be used in the next steps.</p>
<b>0</b>	No evidence demonstrated or nothing worthy of credit.



## Indicative content

The student should:

(Scientific practice: sample suitability)

- examine sample for suitability, such as correct volume, container and labelling
- identify unsuitable samples, such as incorrect/leaking container, missing information, incorrectly stored/processed
- dispose of unsuitable samples into clinical waste bin
- quality check equipment is suitable for use with no obvious faults
- inform the biomedical scientist of the faulty sample and reasons for disposal (recognise when to escalate concerns and technical difficulties with specimens)

(Management of information and data recording: data entry onto laboratory information management system (LIMS))

- process sample details, including hospital number, date of birth, full name and test requested, in line with hospital documentation
- generate a unique label for each sample

(Scientific practice: aliquot using pipette)

- apply an accurate pipetting technique for aliquoting correct blood sample
- use single-use pipette or pipette tip
- use sufficient volume to put into the centrifuge
- use correct labelling of aliquot container/tube
- use sufficient volume aliquot of WBC taken out of the fractionation to be used in the haemocytometer

(Scientific practice: centrifugation)

- use the centrifuge accurately and for the correct speed/revolutions per minute (rpm) and settings
- safely carry out the centrifuge, ensuring the table is flat, no other items are nearby and balancing the centrifuge

## Task 2(c): using a haemocytometer, count the WBCs within a selected volume of blood

Band	Level descriptor
<b>Band 5</b> (17–20 marks)	The student demonstrates <b>excellent</b> pipette skills, including selection, correct volume, single-use tips and no air bubbles, that are consistently applied with accuracy and precision. The student demonstrates <b>excellent</b> knowledge, understanding and skills when adjusting the microscope for focus and magnification. The student demonstrates <b>excellent</b> knowledge, understanding and skills when counting the cells and producing results/analysis of results. The student demonstrates <b>excellent</b> communication skills, with excellent use of technical language when providing information and reporting to the biomedical scientist, conveying all the key points required in a highly efficient and confident way.
<b>Band 4</b> (13–16 marks)	The student demonstrates <b>very good</b> pipette skills, including selection, correct volume, single-use tips and no air bubbles, that are applied with accuracy and precision. The student demonstrates <b>very good</b> knowledge, understanding and skills when adjusting the microscope for focus and magnification. The student demonstrates <b>very good</b> knowledge, understanding and skills when counting the cells and producing results/analysis of results. The student demonstrates <b>very good</b> communication skills, with a very good use of technical language when providing information and reporting to the biomedical scientist, conveying all the key points required.
<b>Band 3</b> (9–12 marks)	The student demonstrates <b>good</b> pipette skills, including selection, correct volume, single-use tips and no air bubbles, that are generally applied with accuracy and precision. The student demonstrates <b>good</b> knowledge, understanding and skills when adjusting the microscope for focus and magnification. The student demonstrates <b>good</b> knowledge, understanding and skills when counting the cells and producing results/analysis of results. The student demonstrates <b>good</b> communication skills, with a good use of technical language when providing information and reporting to the biomedical scientist, conveying most of the key points.

Band	Level descriptor
<b>Band 2</b> (5–8 marks)	<p>The student demonstrates <b>reasonable</b> pipette skills, including selection, correct volume, single-use tips and no air bubbles, that are inconsistently applied with accuracy and precision.</p> <p>The student demonstrates <b>reasonable</b> knowledge, understanding and skills when adjusting the microscope for focus and magnification.</p> <p>The student demonstrates <b>reasonable</b> knowledge, understanding and skills when counting the cells and producing results/analysis of results.</p> <p>The student demonstrates reasonable communication skills, with a moderate use of technical language when providing information and reporting to the biomedical scientist, conveying some of the key points.</p>
<b>Band 1</b> (1–4 marks)	<p>The student demonstrates <b>basic or limited</b> pipette skills, including selection, that are at times applied with accuracy and precision.</p> <p>The student demonstrates <b>basic or limited</b> knowledge, understanding and skills when adjusting the microscope for focus and magnification.</p> <p>The student demonstrates <b>basic or limited</b> knowledge, understanding and skills when counting the cells and producing results/analysis of results.</p> <p>The student demonstrates basic or limited communication skills, with a limited use of technical language when providing information and reporting to the biomedical scientist and with only basic or limited information conveyed.</p>
<b>0</b>	No evidence demonstrated or nothing worthy of credit.

## Indicative content

The student should:

(Scientific practice: correct use of SOP)

- follow instructions using the SOP

(Scientific practice: select and use correct pipette for reagent and sample preparation)

- select appropriate glassware, including safe usage (haemocytometer and cover slips)select appropriate pipettes for use of aliquots
- apply good pipette techniques, such as correct volume, single-use tips and no air bubbles
- dispose of pipettes/tips appropriately

(Scientific practice: WBC count and analysis)

- correctly place sample onto haemocytometer
- correctly use microscope, adjusting focus and magnification
- follow counting guidelines effectively to accurately count the cells in view
- produce results that are valid and repeatable
- use correct calculation of results (for example, to calculate an average cell count, cells within suspension cell/ml, cell viability)
- analyse results and feedback to the biomedical scientist

(Communication skills: verbal communication of completed preparation to biomedical scientist)

- communicate method used verbally

## Task 2(d): carry out post-analysis activities

Band	Level descriptor
<b>Band 3</b> (7–9 marks)	<p>The student's adherence to health and safety regulations when disposing of <b>all</b> materials, including disposables, is <b>excellent</b> and <b>comprehensive</b>, including confident use of correct clinical waste bins.</p> <p>The student's adherence to local laboratory regulations when storing samples is <b>excellent</b> and <b>comprehensive</b> and takes into account all relevant health and safety and local laboratory regulations.</p> <p>The student <b>consistently</b> monitors and maintains their working environment, demonstrating <b>highly effective</b> infection control procedure compliance.</p>
<b>Band 2</b> (4–6 marks)	<p>The student's adherence to health and safety regulations when disposing of <b>all</b> materials, including disposables, is <b>good</b> and meets most of the key requirements, including correct use of correct clinical waste bins.</p> <p>The student's adherence to local laboratory regulations when storing samples is <b>good</b> and meets most of the key requirements and takes into account most relevant health and safety and local laboratory regulations.</p> <p>The student <b>predominately</b> monitors and maintains their working environment, demonstrating <b>reasonably effective</b> infection control procedure compliance.</p>
<b>Band 1</b> (1–3 marks)	<p>The student's adherence to health and safety regulations when disposing of <b>all</b> materials, including disposables, is <b>basic</b>, with some limited understanding and use of correct clinical waste bins.</p> <p>The student's adherence to local laboratory regulations when storing samples is <b>limited</b> and takes into account some relevant health and safety and local laboratory regulations.</p> <p>The student demonstrates <b>some limited</b> monitoring and maintenance of their working environment, demonstrating <b>basic and limited</b> infection control procedure compliance.</p>
<b>0</b>	No evidence demonstrated or nothing worthy of credit.

## Indicative content

The student should:

(Health and safety: correct disposal of biological material)

- place biologically contaminated material into clinical waste bin

(Health and safety: correct disposal of materials such as disposal pipette tips and reagents)

- dispose of pipette/pipette tips and sample slides into clinical waste bin

(Health and safety: decontamination of work area and equipment)

- use correct cleaning solution for decontaminating the work area and equipment

(Health and safety: correct disposal of PPE)

- dispose of gloves into clinical waste bin

SAMPLE

## Breakdown of available marks

Task	Number of marks available
Task 1: microscopy – Giemsa stain	40
Task 2: specimen analysis – blood	54
<b>Total marks</b>	94

SAMPLE

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## Change History Record

Version	Description of change	Approval	Date of issue
v1.0	Additional sample material		01 September 2023
v1.1	Sample added as a watermark	November 2023	21 November 2023