

Paper 2 (Practicals): Scoring guide

General instructions to examiners

1. Award marks only for correct, relevant and sequential responses.
2. Award marks independently for each criterion.
3. Where alternatives are given, award marks for any correct response.
4. Observe the learner throughout the practical session and award marks according to performance.

Assessment notes for teacher

1. Assessment should be continuous throughout the planning and practical sessions, not a one-off event.
2. Use multiple assessment tools such as direct observation, learner explanations, photographs or videos, project journals and written or oral reflections.
3. Award marks strictly according to the indicators shown; part-marks may be given where an indicator is partially met.
4. Emphasise skill development, safety practices and proper care of tools, equipment and protective wear throughout every task.
5. Ensure learners work individually or in groups as specified in each sample paper's instructions.

Practical Assessment Score Sheet

Centre Name: **Centre No.:**

Assessment Number	Learner's Name	Sample Paper Used	Planning marks	Practical marks

Teacher's Name: TSC No.: Signature:

Head Teacher: TSC No.: Signature:

Official Rubber Stamp Date:

Sample paper I

Task 1: Separating mixtures

Expected time: 2 hours

Total marks: 30 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
Selection of separation methods	Correctly selects the most appropriate separation method for all five mixtures and shows clear understanding of the principles involved.	Correctly selects appropriate methods for at least four mixtures.	Correctly selects methods for two or three mixtures.	Correctly selects a method for one or none of the mixtures
Selection of apparatus or materials	Selects all appropriate apparatus/materials and matches them correctly to the separation process.	Selects most of the required apparatus/materials correctly.	Selects some appropriate apparatus/materials but requires guidance	Selects few or inappropriate apparatus/materials.
Practical session	20	16	11	5
Selection of separation methods	Selects a suitable mixture, method and apparatus and prepares the work area correctly. Carries out the separation accurately, safely and systematically and recovers the components effectively.	Selects a suitable mixture and method and prepares the work area with minimal guidance. Carries out the separation correctly with minor errors.	Requires some guidance to select the mixture, method or apparatus. Carries out some steps correctly but requires assistance or makes significant errors.	Is unable to select an appropriate method or prepare the activity without substantial assistance. Cannot carry out the separation correctly even with guidance.

Observation and recording	Clearly records the method, detailed observations and components recovered using appropriate scientific language.	Records the method, observations and recovered components accurately.	Records some observations or recovered components but with omissions or errors.	Provides little or no useful record of observations or recovered components
Grand Total	30	24	16	8

Task 2: Acids, bases and indicators – preparation of a natural acid-base indicator

Expected time: 2 hours

Total marks: 25 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Correctly identifies a suitable material for preparing the natural indicator. Correctly predicts the expected indicator response in acidic, alkaline and neutral substances.	Correctly identifies a suitable material. Correctly predicts most of the expected responses.	Identifies a potentially suitable material but requires guidance. Correctly predicts one response.	Gives an unsuitable material. Gives incorrect predictions.
	Selects all four appropriate materials/apparatus.	Selects at least three appropriate materials/apparatus.	Selects two appropriate materials/apparatus.	Selects one appropriate material/apparatus.
Practical session	15	12	8	5
	Prepares the indicator correctly, independently	Prepares a suitable indicator with minimal guidance.	Completes the preparation steps correctly	Prepare the indicator appropriately.

	and obtains a suitable extract. Correctly uses the indicator to test all provided substances and classifies them accurately. Records clear, accurate colour observations and classifications systematically. Consistently observes safety precautions and handles materials responsibly.	Correctly tests and classifies most substances. Records observations and classifications accurately. Observes appropriate safety practices.	but requires assistance. Tests some substances correctly but makes classification errors. Records some observations but with omissions or errors.	Records little information. Is unable to select an appropriate method or prepare the activity without assistance.
Grand Total	25	20	13	8

Sample paper 2

Task 1: Arrangement of cells and bulbs in simple electrical circuits

Expected time: 1½ hours

Total marks: 30 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Correctly identifies all four required apparatus/components. Draws a complete, accurate and correctly labelled	Correctly identifies at least three required components. Draws a correct and labelled series and parallel circuit with minor errors.	Correctly identifies at least two required components. Draws a correct and labelled series and parallel circuit	Attempts to identify at least two required components. Draws a correct and labelled series or parallel circuit with minor errors.

	series circuit using standard circuit symbols. Draws a complete, accurate and correctly labelled parallel circuit using standard circuit symbols. States two relevant electrical safety precautions.	States two appropriate precautions.	with minor errors. States two appropriate precautions.	States one appropriate precaution.
Practical session	20	16	11	5
	Correctly constructs both series and parallel circuits independently according to the diagrams. Accurately observes and explains the behaviour of bulbs in both arrangements. Correctly investigates both arrangements and records the effect on the remaining bulb. Handles electrical components appropriately.	Correctly constructs both series and parallel circuits with assistance according to the diagrams. Observes and explains the behaviour of bulbs in both arrangements. Correctly investigates both arrangements and records the effect on the remaining bulb. Handles electrical components safely.	Constructs both series and parallel circuits with assistance according to the diagrams. Makes relevant observations on the behaviour of bulbs in both arrangements. Correctly investigates both arrangements and records the effect on the remaining bulb. Handles electrical components safely.	Attempts to construct both series and parallel circuits with assistance according to the diagrams. Attempts to make relevant observations on the behaviour of bulbs in both arrangements. Investigates both arrangements and records the effect on the remaining bulb with guidance. Handles electrical components safely.
Grand Total	30	24	16	8

Task 2: Investigating magnetic properties**Expected time: 1½ hours****Total marks: 25 marks**

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Selects four appropriate materials representing different material types. Makes accurate predictions for all selected materials. Clearly describes a suitable and controlled test for determining whether a material is magnetic. States two relevant uses of magnets.	Selects three appropriate materials to be tested for magnetism. Makes accurate predictions for all selected materials. Describes a suitable test for determining whether a material is magnetic. States two relevant uses of magnets.	Selects two appropriate materials to be tested for magnetism. Makes accurate predictions for all selected materials. Describes a test for determining whether a material is magnetic. States two relevant uses of magnets.	Selects at least one or two appropriate materials to be tested for magnetism. Makes accurate predictions for the selected materials. Attempts to describe a test for determining whether a material is magnetic. States two relevant uses of magnets.
Practical session	15	12	8	5
	Tests all materials and follows a consistent procedure. Correctly classifies all materials as magnetic or non-magnetic based on observations. Tabulates results accurately based on observations made.	Tests all materials and follows a consistent procedure. Classifies all materials as magnetic or non-magnetic based on observations. Tabulates results based on observations made. Uses the magnet and materials	Tests all materials and follows procedure with guidance. Classifies most materials as magnetic or non-magnetic based on observations. Tabulates results based on observations made.	Attempts to test materials with guidance. Attempts to classify most materials as magnetic or non-magnetic based on observations. Tabulates results based on observations made. Returns all equipment appropriately.

	Uses the magnet and materials safely and returns all equipment appropriately.	safely and returns all equipment appropriately.	Returns all equipment appropriately.	
Grand Total	25	20	13	8

Sample paper 3

Task 1: Investigating the effect of impurities on boiling point

Expected time: 2 hours

Total marks: 25 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Correctly identifies the variables and gives two appropriate control variables. Selects appropriate apparatus and explains their use. Correctly predicts the salt solution will have a higher boiling point. Clearly explains how dissolved salt affects the boiling point.	Identifies the variables and gives two control variables. Selects appropriate apparatus and explains their use. Predicts the salt solution will have a higher boiling point. Explains how dissolved salt affects the boiling point.	Attempts to identify the variables and gives one control variable. Selects appropriate apparatus and explains their use with assistance. Attempts to predict the salt solution will have a higher boiling point and attempts to explain how dissolved salt affects the boiling point.	Attempts to identify the variables with assistance. Selects appropriate apparatus and explains their use with assistance. Attempts to predict the salt solution will have a higher boiling point and attempts to explain how dissolved salt affects the boiling point with assistance.
Practical session	15	12	8	5
	Sets up and conducts the investigation correctly while	Sets up and conducts the investigation correctly. Needs	Sets up with assistance. Needs reminder	Sets up with assistance. Needs reminder to

	controlling relevant variables. Accurately identifies and records the boiling points of both liquids using the thermometer correctly. Correctly compares the results and identifies the effect of the impurity using evidence from the investigation. Consistently observes heating safety procedures and handles equipment correctly.	reminder to control the variables. Identifies and records the boiling points of both liquids using the thermometer. Compares the results and identifies the effect of the impurity using evidence from the investigation. Observes heating safety procedures and handles equipment correctly.	to control the variables. Records the boiling points of both liquids using the thermometer. Identifies the effect of the impurity using evidence from the investigation. Observes safety procedures and handles equipment correctly.	control the variables. Records the boiling points of both liquids using the thermometer with assistance. Attempts to identify the effect of the impurity using evidence from the investigation. Observes safety procedures and handles equipment correctly.
Grand Total	25	20	13	8

Task 2: Observing plant and animal cells

Expected time: 2 hours

Total marks: 25 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Selects a suitable specimen for preparing a temporary plant-cell slide. Correctly identifies four required materials/apparatus.	Selects a suitable specimen for preparing a temporary plant-cell slide. Identifies three materials/apparatus. Gives scientific reason for using a permanent slide	Selects a suitable specimen for preparing a temporary plant-cell slide. Identifies two or three materials/apparatus.	Attempts to select a suitable specimen for preparing a temporary plant-cell slide. Identifies at least two materials/apparatus. Attempts to give scientific reason for using a permanent

	Gives accurate scientific reason for using a permanent slide to observe animal cells. Correctly states two distinguishing features of plant and animal cells and the correct total-magnification.	to observe animal cells. States one distinguishing feature of plant and animal cells and the correct total-magnification.	Gives scientific reason for using a permanent slide with assistance. Attempts to state one distinguishing feature of plant and animal cells.	slide with assistance. Attempts to state one distinguishing feature of plant and animal cells with assistance.
Practical session	15	12	8	5
	Prepares a temporary slide correctly and handles the specimen carefully. Correctly focuses and observes both specimens, using appropriate magnification. Produces clear, drawings with accurate labels. Accurately records observations, magnification and clear differences between the cells.	Prepares a temporary slide and handles the specimen carefully. Observes both specimens. Produces clear well-labelled drawings. Records observations, magnification and differences between the cells.	With assistance, prepares a temporary slide using correct procedure. Observes both specimens. Produces well-labelled drawings with assistance. Records observations, magnification and differences between the cells with assistance.	With assistance, prepares a temporary slide. Observes both specimens with assistance. Draws the observations. Records magnification and differences between the cells with assistance.
Grand Total	25	20	13	8

Sample paper 4

Task 1: Investigating osmosis

Expected time: 2 hours

Total marks: 25 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Describes accurate arrangement showing the sugar solution, Visking tubing and distilled water. Clearly explains that the tubing acts as a selectively permeable membrane. Identifies a relevant factor such as concentration difference or temperature and gives an explanation.	Describes the arrangement showing the sugar solution, Visking tubing and distilled water. Explains that the tubing acts as a selectively permeable membrane. Identifies at least one factor that affects rate of photosynthesis.	Attempts to describe the arrangement showing the sugar solution, Visking tubing and distilled water. Explains the purpose of the tubing. Identifies at least one factor that affects rate of photosynthesis with assistance.	With assistance, attempts to describe the arrangement showing the sugar solution, Visking tubing and distilled water. Attempts to explain the purpose of the tubing. Attempts to identify at least one factor that affects rate of photosynthesis with assistance.
Practical session	15	12	8	5
	Correctly prepares the tubing. Carries out both investigations correctly and maintains the required conditions. Makes accurate observations for both investigations and records them. Correctly relates the changes observed to movement of water by osmosis.	Prepares the tubing. Carries out both investigations and maintains the required conditions. Makes observations for both investigations and records them. Relates the changes observed to movement of water by osmosis. Leaves the work area clean and organised.	Prepares the tubing with assistance. Carries out both investigations. Makes observations for both investigations and records them. With assistance, relates the changes observed to movement of water by osmosis.	With assistance, prepares the tubing. Carries out both investigations with assistance. Makes observations for both investigations and records them. With assistance, relates the changes observed to movement of water by osmosis. Leaves the work area clean and organised.

	Leaves the work area clean and organised.		Leaves the work area clean and organised.	
Grand Total	25	20	13	8

Task 2: Investigating energy transformation

Expected time: 1½ hours

Total marks: 25 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Clearly describes a suitable arrangement showing how the raised ball will demonstrate energy transformation. Correctly identifies gravitational potential energy. Correctly identifies kinetic energy. Correctly identifies two relevant forms such as sound and thermal energy. Gives two relevant real-life applications and explains the energy transformations involved.	Describes a suitable arrangement showing how the raised ball will demonstrate energy transformation. Identifies gravitational potential energy. Identifies kinetic energy. Identifies two forms of energy that the kinetic energy is converted to. Gives one relevant real-life application and explains the energy transformation involved.	Describes an arrangement showing how the raised ball will demonstrate energy transformation. Identifies gravitational potential energy and kinetic energy. Attempts to identify two forms of energy that the kinetic energy is converted to with assistance. Gives one relevant real-life application and attempts to explain the energy transformation involved.	With assistance, describes an arrangement showing how the raised ball will demonstrate energy transformation. With assistance, identifies gravitational potential energy and kinetic energy. Attempts to identify two forms of energy that the kinetic energy is converted to with assistance. Gives one relevant real-life application.
Practical session	15	12	8	5

	Correctly sets up the ramp and positions the ball. Releases the ball from different heights without pushing it. Accurately records and compares observations for different starting heights. Correctly identifies and explains the sequence of energy transformations using observations.	Sets up the ramp and positions the ball. Releases the ball from different heights without pushing it. Records and compares observations for different starting heights. Explains the sequence of energy transformations using observations.	Sets up the ramp and positions the ball at different heights. Compares observations for different starting heights. Attempts to explain the sequence of energy transformations using observations.	Sets up the ramp and positions the ball at different heights. Compares observations for different starting heights.
Grand Total	25	20	13	8

Sample paper 5

Task 1: Investigating pressure in liquids

Expected time: 1½ hours

Total marks: 25 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Accurately explains the different liquid depths and how it affects pressure. Accurately describes a stable vertical position that allows all water jets to be compared fairly.	Explains the different liquid depths and how it affects pressure. Describes a position that allows all water jets to be compared fairly. States one accurate and	Attempts to explain the different liquid depths and how it affects pressure. Describes a position that allows all water jets to be compared fairly.	With assistance: Attempts to explain the different liquid depths and how it affects pressure. Describes a position that allows all water jets to be compared fairly.

	States accurate observations. Gives two relevant applications of liquid pressure.	relevant observation. Gives one relevant application of liquid pressure.		
Practical session	15	12	8	5
	Correctly fills and positions the bottle and prepares all holes for the investigation. Accurately observes and compares the three water jets. Produces a clear and accurate record of observations. Correctly states and explains the relationship between depth and liquid pressure.	Correctly fills and positions the bottle and prepares all holes for the investigation. Accurately observes and compares the three water jets. Produces a clear and accurate record of observations.	Fills and positions the bottle and prepares all holes for the investigation. Observes and compares the three water jets. Produces and records observations.	With assistance: Fills and positions the bottle and prepares all holes for the investigation. Observes and compares the three water jets. Produces and records observations.
Grand Total	25	20	13	8

Task 2: Investigating the conditions necessary for rusting

Expected time: 1½ hours for setting up

Observations after 3–7 days

Total marks: 30 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Accurately describes a complete	Describes some arrangement showing how	Describes conditions	With assistance: Describes some arrangement

	arrangement showing how nails will be exposed to water, air, boiled water/oil and dry conditions for comparison. States two or more appropriate methods of preventing rusting.	nails will be exposed to different conditions for comparison. States one or two appropriate methods of preventing rusting.	necessary for rusting. States one or two appropriate methods of preventing rusting.	showing how nails will be exposed to different conditions for comparison. States one or two appropriate methods of preventing rusting.
Practical session	20	16	8	5
	Accurately labels and prepares all test tubes and conditions. Accurately records the appearance and degree of rust on each nail after the investigation period. Correctly compares the amount of rust and makes the accurate conclusion.	Labels and prepares all test tubes and conditions following the correct procedure. Records the appearance and degree of rust on each nail after the investigation period. Compares the amount of rust and makes a conclusion.	Labels and prepares all test tubes and conditions following the correct procedure. Records the conditions that rust occurs in.	With assistance: Labels and prepares all test tubes and conditions following the correct procedure. Records the appearance of rust on each nail after the investigation period. Compares the amount of rust and makes a conclusion.
Grand Total	30	24	13	8

Sample paper 6

Task 1: Softening hard water by boiling

Expected time: 2 hours

Total marks: 25 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3

	Gives an accurate definition referring to dissolved calcium and magnesium compounds. Correctly describes how the soap test distinguishes hard from soft water. Correctly identifies temporary hardness. States three appropriate methods of softening hard water. Gives two relevant advantages.	Gives an accurate definition. Describes how the soap test distinguishes hard from soft water. Correctly identifies temporary hardness. States two appropriate methods of softening hard water. Gives one relevant advantage.	Attempts to give an accurate definition using correct terminology. Describes how the soap test distinguishes hard from soft water. Gives one relevant advantage.	With assistance: Gives the definition. Attempts to explain how the soap test distinguishes hard from soft water. States appropriate methods of softening hard water. Gives a relevant advantage.
Practical session	15	12	8	5
	Correctly measures equal amounts and labels the samples. Uses equal amounts of soap, shakes consistently and accurately observes lather formation. Safely boils the hard water and allows it to cool before carrying out the test again. Accurately compares results before and after boiling and	Uses equal amounts of soap and observes lather formation. Safely boils the hard water and allows it to cool before carrying out the test again. Compares results before and after boiling and explains the effect of boiling. Consistently observes heating and laboratory safety procedures.	Uses equal amounts of soap and observes lather formation. Safely boils the hard water and allows it to cool before carrying out the test again. Compares and records results before and after boiling.	With assistance: Uses equal amounts of soap and observes lather formation. Safely boils the hard water and allows it to cool before carrying out the test again. Compares and records results before and after boiling.

	correctly explains the effect of boiling. Consistently observes heating and laboratory safety procedures.			
Grand Total	25	20	13	8

Task 2: Investigating photosynthesis

Expected time: 1½ hours

Total marks: 30 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Correctly identifies starch and relates its presence to photosynthesis. Clearly describes a suitable arrangement with part of the leaf covered and the plant exposed to light. Correctly identifies all required materials and apparatus for the starch test.	Attempts to relate the presence of starch to photosynthesis. Describes a suitable arrangement with part of the leaf covered and the plant exposed to light. Identifies all required materials and apparatus for the starch test.	Describes a suitable arrangement with part of the leaf covered and the plant exposed to light. Identifies all required materials and apparatus for the starch test.	With assistance: Attempts to describe a suitable arrangement with part of the leaf covered and the plant exposed to light. Attempts to identify all required materials and apparatus for the starch test.
Practical session	20	16	13	5
	Follows procedure and correctly covers part of the leaf without damaging the plant.	Follows procedure and carries out the starch test. Records the colour changes in covered and	Attempts to follow the correct procedure. Records colour change and makes accurate	With assistance: Records colour change and makes accurate comparison of covered and

	Ensures the plant is exposed to suitable light for the required period. Correctly carries out the starch test and handles the required materials safely. Accurately records the colour changes in covered and uncovered areas of the leaf. Correctly concludes that light is necessary for photosynthesis and supports the conclusion with observations. Consistently observes safety procedures and handles laboratory materials appropriately	uncovered areas of the leaf. Correctly concludes that light is necessary for photosynthesis and supports the conclusion with observations. Observes safety procedures and handles laboratory materials appropriately	comparison of covered and uncovered areas of the leaf.	uncovered areas of the leaf.
Grand Total	30	20	18	8

Sample paper 7

Task 1: Comparing wind and insect-pollinated flowers

Expected time: 1½ hours

Total marks: 15 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	5	4	3	2

	Selects suitable wind- and insect-pollinated flowers and correctly identifies the pollination type. Identifies more than two relevant observable features for comparison.	Selects suitable wind- and insect-pollinated flowers. Identifies two relevant observable features for comparison.	Attempts to select suitable wind- and insect-pollinated flowers. Identifies one relevant observable feature for comparison.	With assistance: Attempts to select suitable wind- and insect-pollinated flowers. Identifies any observable feature for comparison.
Practical session	10	9	7	5
	Carefully examines both flowers using a hand lens. Carefully dissects the flowers and identifies the relevant structures. Accurately compares relevant features of the two flowers. Tabulates the observable features accurately.	Carefully examines both flowers using a hand lens and attempts to dissect the flowers for further observations. Accurately compares relevant features of the two flowers. Tabulates the observable features accurately.	Attempts to list the observable features and tabulates them. Need assistance in dissecting the flowers for further observations.	With assistance: Lists the comparable features of the flowers.
Grand Total	25	13	10	7

Task 2: Investigating images formed by curved mirrors

Expected time: 2 hours

Total marks: 25 marks

Criterion	Exceeding expectation	Meeting expectation	Approaching expectation	Below expectation
Planning session	10	8	5	3
	Clearly describes a complete arrangement for	Describes a complete arrangement for	Describes a complete arrangement for	With assistance: attempts to describe the

	investigating images using both mirrors and identifies the object positions. Correctly predicts that the image is formed at infinity/not obtained on a screen. Correctly states that the image is real, inverted and the same size as the object. Correctly predicts a real, inverted and enlarged image beyond C. Correctly states that the image is highly diminished/formed at the focus for rays arriving from infinity.	investigating images using both mirrors and identifies the object positions. Attempts to predict the images formed.	investigating images using both mirrors and identifies the object positions.	arrangement for investigating images using both mirrors and identifies the object positions.
Practical session	15	12	8	5
	Correctly positions all mirrors and object and carries out the investigation. Systematically investigates all positions and makes accurate observations. Accurately identifies image size, position and nature at the	Positions one mirror and object and carries out the investigation. Investigates the position and makes observations. Identifies image size, position and nature at the different positions. Records accurate results from the	Attempts to: Position one mirror and object and carry out the investigation. Observation the position of the image formed. Identify image size and nature. Records the results.	With assistance: Observes the images formed by the different mirrors. Attempt to explain the nature of the images.

	different positions. Tabulate accurate results from the observations. Consistently handles the mirrors and equipment carefully and safely.	observations of the one mirror. Handles the mirrors and equipment carefully and safely.		
Grand Total	25	20	13	8