

Year 1 - Practical Notes

Pharmacognosy

37 complete practical and activity notes. The page counts below exclude the promotion page. Use the PDF bookmarks to move between practicals. All ten drug-evaluation choices are covered; perform the five assigned by your teacher.

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Pharmacognosy

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Morphological Identification of Ispaghula

Experiment 1 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify ispaghula using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Plantago ovata
Family / source group	Plantaginaceae
Part used	Dried seeds / separated husk
Appearance	Small oval boat-shaped seeds; translucent husk material when separated.
Diagnostic morphology	Seed surface and a distinct hilum; husk hydrates to mucilage.
Constituent group	Mucilage polysaccharides
Pharmacognosy context	Bulk-forming laxative ingredient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried seeds / separated husk.

2. What supports identification?

Seed surface and a distinct hilum; husk hydrates to mucilage.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Senna

Experiment 2 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify senna using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Senna alexandrina (older names include Cassia angustifolia)
Family / source group	Fabaceae
Part used	Dried leaflets / pods
Appearance	Thin lanceolate leaflets, generally yellow-green.
Diagnostic morphology	Asymmetric leaflet base, acute apex and a largely entire margin.
Constituent group	Sennosides
Pharmacognosy context	Stimulant laxative ingredient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried leaflets / pods.

2. What supports identification?

Asymmetric leaflet base, acute apex and a largely entire margin.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Coriander

Experiment 3 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify coriander using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Coriandrum sativum
Family / source group	Apiaceae
Part used	Dried ripe fruits
Appearance	Nearly spherical yellow-brown cremocarps.
Diagnostic morphology	Two joined mericarps; faint primary and prominent secondary ridges.
Constituent group	Volatile oil, including linalool
Pharmacognosy context	Aromatic / carminative ingredient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried ripe fruits.

2. What supports identification?

Two joined mericarps; faint primary and prominent secondary ridges.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Fennel

Experiment 4 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify fennel using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Foeniculum vulgare
Family / source group	Apiaceae
Part used	Dried ripe fruits
Appearance	Elongated greenish to yellow-brown fruits.
Diagnostic morphology	Five conspicuous ridges on each mericarp; aromatic character.
Constituent group	Volatile oil, including anethole
Pharmacognosy context	Aromatic / carminative ingredient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried ripe fruits.

2. What supports identification?

Five conspicuous ridges on each mericarp; aromatic character.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Cardamom

Experiment 5 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify cardamom using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Elettaria cardamomum
Family / source group	Zingiberaceae
Part used	Dried fruits and seeds
Appearance	Ovoid capsules with longitudinal markings and dark angular seeds.
Diagnostic morphology	Three-locular capsule with clusters of seeds; strong aromatic character.
Constituent group	Volatile oil
Pharmacognosy context	Flavouring / aromatic ingredient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried fruits and seeds.

2. What supports identification?

Three-locular capsule with clusters of seeds; strong aromatic character.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Ginger

Experiment 6 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify ginger using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Zingiber officinale
Family / source group	Zingiberaceae
Part used	Dried rhizome
Appearance	Branched flattened rhizome pieces with longitudinal striations.
Diagnostic morphology	Nodes, scars and a fibrous fracture; cream-to-buff cut surface.
Constituent group	Gingerols and volatile oil
Pharmacognosy context	Aromatic ingredient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried rhizome.

2. What supports identification?

Nodes, scars and a fibrous fracture; cream-to-buff cut surface.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Nutmeg

Experiment 7 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify nutmeg using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Myristica fragrans
Family / source group	Myristicaceae
Part used	Dried seed kernel
Appearance	Oval brown kernel with wrinkled external surface.
Diagnostic morphology	Cut surface has characteristic marbled or ruminant tissue.
Constituent group	Volatile and fixed oils
Pharmacognosy context	Aromatic ingredient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried seed kernel.

2. What supports identification?

Cut surface has characteristic marbled or ruminant tissue.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Black Pepper

Experiment 8 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify black pepper using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Piper nigrum
Family / source group	Piperaceae
Part used	Dried unripe fruits
Appearance	Small globular black-brown wrinkled fruits.
Diagnostic morphology	Reticulately wrinkled pericarp and a pale inner seed region.
Constituent group	Piperine and volatile oil
Pharmacognosy context	Aromatic ingredient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried unripe fruits.

2. What supports identification?

Reticulately wrinkled pericarp and a pale inner seed region.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Cinnamon

Experiment 9 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify cinnamon using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Cinnamomum verum
Family / source group	Lauraceae
Part used	Dried inner bark
Appearance	Thin pale-brown quills, often compound quills.
Diagnostic morphology	Longitudinal striations and a short fibrous fracture; aromatic odour.
Constituent group	Cinnamaldehyde-rich volatile oil
Pharmacognosy context	Aromatic / flavouring ingredient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried inner bark.

2. What supports identification?

Longitudinal striations and a short fibrous fracture; aromatic odour.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Clove

Experiment 10 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify clove using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Syzygium aromaticum
Family / source group	Myrtaceae
Part used	Dried unopened flower buds
Appearance	Dark-brown nail-shaped buds.
Diagnostic morphology	Stalk-like hypanthium with four sepals and a rounded unopened head.
Constituent group	Eugenol-rich volatile oil
Pharmacognosy context	Aromatic ingredient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried unopened flower buds.

2. What supports identification?

Stalk-like hypanthium with four sepals and a rounded unopened head.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Ephedra

Experiment 11 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify ephedra using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Assigned Ephedra species, commonly <i>E. gerardiana</i> in teaching collections
Family / source group	Ephedraceae
Part used	Dried young stems
Appearance	Slender greenish stems divided by conspicuous nodes.
Diagnostic morphology	Longitudinal ridges, jointed internodes and small scale leaves.
Constituent group	Ephedrine-type alkaloids
Pharmacognosy context	Historical sympathomimetic drug source

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried young stems.

2. What supports identification?

Longitudinal ridges, jointed internodes and small scale leaves.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Rauwolfia

Experiment 12 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify rauwolfia using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Rauwolfia serpentina
Family / source group	Apocynaceae
Part used	Dried roots
Appearance	Cylindrical or tapering tortuous root pieces, grey-brown externally.
Diagnostic morphology	Longitudinal wrinkles; pale interior and relatively hard fracture.
Constituent group	Indole alkaloids, including reserpine
Pharmacognosy context	Historical antihypertensive alkaloid source

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried roots.

2. What supports identification?

Longitudinal wrinkles; pale interior and relatively hard fracture.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Gokhru

Experiment 13 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify gokhru using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Tribulus terrestris
Family / source group	Zygophyllaceae
Part used	Dried fruits
Appearance	Hard spiny fruit units.
Diagnostic morphology	Schizocarp separates into mericarps bearing conspicuous spines.
Constituent group	Steroidal saponins
Pharmacognosy context	Traditional crude-drug identification specimen

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried fruits.

2. What supports identification?

Schizocarp separates into mericarps bearing conspicuous spines.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Punarnava

Experiment 14 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify punarnava using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Boerhavia diffusa
Family / source group	Nyctaginaceae
Part used	Dried roots / assigned whole-plant material
Appearance	Tapering brown roots with longitudinal markings.
Diagnostic morphology	Root scars and irregular fracture; record the supplied part before identifying it.
Constituent group	Boeravinones and other constituents
Pharmacognosy context	Traditional crude-drug identification specimen

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried roots / assigned whole-plant material.

2. What supports identification?

Root scars and irregular fracture; record the supplied part before identifying it.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Cinchona

Experiment 15 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify cinchona using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Assigned Cinchona species such as <i>C. calisaya</i> or <i>C. pubescens</i>
Family / source group	Rubiaceae
Part used	Dried bark
Appearance	Quilled or curved grey-brown to reddish-brown bark.
Diagnostic morphology	Outer fissures or wrinkles; fibrous inner surface and fracture.
Constituent group	Quinine-type alkaloids
Pharmacognosy context	Quinine alkaloid source

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried bark.

2. What supports identification?

Outer fissures or wrinkles; fibrous inner surface and fracture.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Morphological Identification of Agar

Experiment 16 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify agar using the supplied crude-drug specimen and diagnostic morphology.

Principle

Macroscopic identification combines the correct botanical source and plant part with shape, surface, colour, fracture and other diagnostic features. A single visual resemblance is insufficient.

Drug Profile

Field	Teaching profile
Botanical source	Gelidium / Gracilaria species
Family / source group	Red algae; family depends on the assigned source
Part used	Dried processed phycocolloid
Appearance	Translucent pale strips, flakes or powder.
Diagnostic morphology	Little odour; dissolves in hot water and forms a gel on cooling under the assigned test.
Constituent group	Agarose and agarpectin
Pharmacognosy context	Gelling pharmaceutical excipient

Requirements

- Authenticated comparison material and the coded teaching specimen
- Hand lens, ruler, clean tray and observation sheet

Procedure

1. Inspect the whole specimen

Record the supplied part, overall shape, colour and approximate size before breaking it.

2. Examine surface

Use a hand lens to locate the diagnostic ridges, scars, margins or other features listed below.

3. Observe fracture or cut face

Only where permitted, examine the internal surface or fracture and describe its texture.

Pharmacognosy

4. Compare

Compare the coded specimen with authenticated material; record similarities and differences.

5. Conclude

State the proposed identity, supporting features and any need for microscopy or other confirmation.

Observations and Record

Character	Actual observation
Plant part / shape	_____
Colour / dimensions	_____
Surface features	_____
Cut face / fracture	_____
Diagnostic feature / comparison	_____

Result

The supplied specimen was identified as _____ based on _____, _____ and _____. Any conflicting feature: _____.

Precautions

- Do not taste crude drugs; toxic specimens such as ephedra and rauwolfia require controlled handling.
- Do not inhale powders or break valuable museum material without permission.
- Morphology does not establish chemical potency or clinical safety.

Viva Questions and Answers**1. Which part is examined?**

Dried processed phycocolloid.

2. What supports identification?

Little odour; dissolves in hot water and forms a gel on cooling under the assigned test.

3. Can appearance establish assay content?

No; chemical content requires an appropriate validated test.

Transverse Section Microscopy of Ajwain

Experiment 17 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned ajwain fruit and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. A mericarp section shows outer pericarp, ridges with vascular tissue, oil ducts (vittae), seed coat and endosperm.

Identity and Drawing Guide

Field	Guide
Botanical source	Trachyspermum ammi
Family	Apiaceae
Part	Fruit
Labels to include	Label ridges, vascular bundles, vittae, endosperm and the commissural region.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Oil ducts and mericarp architecture support identification.

Pharmacognosy

5. Draw and label

Label ridges, vascular bundles, vittae, endosperm and the commissural region.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- Volatile-oil ducts are secretory structures, not xylem vessels.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Oil ducts and mericarp architecture support identification.

Transverse Section Microscopy of Datura

Experiment 18 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned datura leaf and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. A dorsiventral leaf has epidermis, palisade and spongy mesophyll, with vascular tissue in the midrib. Surface views may show glandular and covering hairs and characteristic stomata.

Identity and Drawing Guide

Field	Guide
Botanical source	Datura species assigned by the institution
Family	Solanaceae
Part	Leaf
Labels to include	Label epidermis, palisade, spongy mesophyll, midrib xylem/phloem and observed hairs or crystals.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Compare trichomes, stomatal arrangement and calcium-oxalate features with the assigned species atlas.

Pharmacognosy

5. Draw and label

Label epidermis, palisade, spongy mesophyll, midrib xylem/phloem and observed hairs or crystals.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- Use a prepared slide; datura is toxic and species differences matter.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Compare trichomes, stomatal arrangement and calcium-oxalate features with the assigned species atlas.

Transverse Section Microscopy of Cinnamon

Experiment 19 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned cinnamon bark and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. Inner bark shows phloem, fibres, sclereids, rays and oil or mucilage cells. Commercially scraped true-cinnamon bark may have little or no cork.

Identity and Drawing Guide

Field	Guide
Botanical source	Cinnamomum verum
Family	Lauraceae
Part	Bark
Labels to include	Label the outer remaining region, fibres, sclereids, phloem, rays and secretory cells.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Thin inner-bark architecture and secretory elements are useful in combination.

Pharmacognosy

5. Draw and label

Label the outer remaining region, fibres, sclereids, phloem, rays and secretory cells.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- Cork abundance differs with species and bark preparation.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Thin inner-bark architecture and secretory elements are useful in combination.

Transverse Section Microscopy of Cinchona

Experiment 20 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned cinchona bark and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. Bark shows outer cork where retained, secondary phloem, rays and characteristic thick-walled phloem fibres.

Identity and Drawing Guide

Field	Guide
Botanical source	Assigned Cinchona species
Family	Rubiaceae
Part	Bark
Labels to include	Label cork, phloem, rays, fibres and any observed crystal-containing cells.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Strongly lignified phloem fibres are a useful teaching character.

Pharmacognosy

5. Draw and label

Label cork, phloem, rays, fibres and any observed crystal-containing cells.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- Bark fibre characters support identity but do not measure quinine content.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Strongly lignified phloem fibres are a useful teaching character.

Transverse Section Microscopy of Coriander

Experiment 21 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned coriander fruit and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. A cremocarp section shows two mericarps with pericarp, vascular tissue, endosperm and secretory ducts in their assigned positions.

Identity and Drawing Guide

Field	Guide
Botanical source	Coriandrum sativum
Family	Apiaceae
Part	Fruit
Labels to include	Label epicarp, mesocarp, lignified inner pericarp, endosperm, vascular region and commissural face.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. The joined mericarp form and pericarp pattern distinguish it from elongated fennel fruits.

Pharmacognosy

5. Draw and label

Label epicarp, mesocarp, lignified inner pericarp, endosperm, vascular region and commissural face.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- Observe secretory features against the authenticated slide; do not assume every empty space is a duct.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers**1. What is a transverse section?**

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

The joined mericarp form and pericarp pattern distinguish it from elongated fennel fruits.

Transverse Section Microscopy of Ashwagandha

Experiment 22 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned ashwagandha root and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. A mature root shows cork, secondary phloem, a cambial region, secondary xylem and broad parenchymatous rays. Starch is prominent in storage tissue.

Identity and Drawing Guide

Field	Guide
Botanical source	Withania somnifera
Family	Solanaceae
Part	Root
Labels to include	Label cork, phloem, cambial region, vessels, xylem parenchyma, rays and starch grains.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Starch-rich storage tissue with the assigned root anatomy supports identification.

Pharmacognosy

5. Draw and label

Label cork, phloem, cambial region, vessels, xylem parenchyma, rays and starch grains.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- Root age changes the extent of secondary growth.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Starch-rich storage tissue with the assigned root anatomy supports identification.

Transverse Section Microscopy of Liquorice

Experiment 23 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned liquorice root or stolon and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. Secondary vascular tissue contains vessels, fibres, rays and starch-bearing parenchyma; crystal-bearing cells can accompany fibre groups.

Identity and Drawing Guide

Field	Guide
Botanical source	Glycyrrhiza glabra / assigned pharmacopoeial Glycyrrhiza species
Family	Fabaceae
Part	Root or stolon
Labels to include	Label cork if retained, phloem, cambium, xylem vessels, fibres, rays and observed crystals.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Vessel, fibre, starch and crystal features are assessed together.

Pharmacognosy

5. Draw and label

Label cork if retained, phloem, cambium, xylem vessels, fibres, rays and observed crystals.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- Roots and stolons may differ, including the presence of a pith in stolons.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Vessel, fibre, starch and crystal features are assessed together.

Transverse Section Microscopy of Clove

Experiment 24 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned clove flower bud and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. A section through the hypanthium shows epidermis, internal parenchyma, conspicuous oil glands and vascular tissue. The head contains folded floral parts.

Identity and Drawing Guide

Field	Guide
Botanical source	Syzygium aromaticum
Family	Myrtaceae
Part	Flower bud
Labels to include	Label epidermis, oil glands, parenchyma, vascular bundles and the sectioned floral region.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Large secretory glands and flower-bud architecture support clove identity.

Pharmacognosy

5. Draw and label

Label epidermis, oil glands, parenchyma, vascular bundles and the sectioned floral region.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- State which level of the bud was sectioned; different levels show different structures.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Large secretory glands and flower-bud architecture support clove identity.

Transverse Section Microscopy of Curcuma

Experiment 25 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned curcuma rhizome and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. A rhizome section contains outer protective tissue, parenchyma, numerous starch grains, secretory cells and scattered vascular bundles.

Identity and Drawing Guide

Field	Guide
Botanical source	Curcuma longa
Family	Zingiberaceae
Part	Rhizome
Labels to include	Label outer tissue, ground parenchyma, vascular bundles, starch and coloured secretory contents.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Starch-rich rhizome tissue and characteristic coloured contents are useful together.

Pharmacognosy

5. Draw and label

Label outer tissue, ground parenchyma, vascular bundles, starch and coloured secretory contents.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- Commercial curing affects starch appearance; record specimen treatment.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Starch-rich rhizome tissue and characteristic coloured contents are useful together.

Transverse Section Microscopy of Nux Vomica

Experiment 26 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned nux vomica seed and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. The seed coat bears characteristic thick-walled hairs; the endosperm has thick-walled storage cells with pore-like connections and protein/oil reserves.

Identity and Drawing Guide

Field	Guide
Botanical source	Strychnos nux-vomica
Family	Loganiaceae
Part	Seed
Labels to include	Label seed coat, lignified hairs, endosperm walls, storage contents and embryo if visible.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Radially arranged surface hairs and characteristic endosperm are diagnostic teaching features.

Pharmacognosy

5. Draw and label

Label seed coat, lignified hairs, endosperm walls, storage contents and embryo if visible.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- Use a prepared slide only; this is a toxic strychnine-containing seed.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Radially arranged surface hairs and characteristic endosperm are diagnostic teaching features.

Transverse Section Microscopy of Vasaka

Experiment 27 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To study a transverse section of the assigned vasaka leaf and record diagnostic tissues.

Principle

A thin transverse section reveals how protective, conducting, supporting, storage and secretory tissues are arranged. A dorsiventral leaf shows epidermis, palisade and spongy mesophyll, a midrib vascular region, hairs and characteristic cystolith-containing cells.

Identity and Drawing Guide

Field	Guide
Botanical source	Justicia adhatoda (synonym Adhatoda vasica)
Family	Acanthaceae
Part	Leaf
Labels to include	Label epidermis, palisade, spongy tissue, midrib vessels, hairs and cystoliths.

Requirements

- Authenticated prepared section or teacher-assigned sectioning material
- Compound microscope, slides, coverslips and approved mountant/stains
- Pencil and labelled drawing sheet

Procedure

1. Verify material

Record botanical source, part, specimen treatment and section level.

2. Prepare or select slide

Use the assigned thin section or prepared slide; select an intact representative region.

3. Survey at low power

Identify the tissue outline and major regions before increasing magnification.

4. Examine diagnostic details

Locate supporting and secretory features. Cystolith-bearing cells and the assigned leaf anatomy support identification.

Pharmacognosy

5. Draw and label

Label epidermis, palisade, spongy tissue, midrib vessels, hairs and cystoliths.

6. Compare

Compare with authenticated material and write which observed features support identity.

Observations and Record

Feature	Actual observation / drawing label
Outer protective region	_____
Ground / storage tissue	_____
Vascular arrangement	_____
Diagnostic structure	_____
Magnification / scale	_____

Result

Diagnostic tissues observed: _____. The section _____ supports the assigned identity because _____.

Precautions

- A cystolith is a mineral deposit in a specialised cell, not a starch grain.
- Use prepared slides for toxic material and avoid direct exposure to powders.
- Do not mistake folds, air bubbles or stain deposits for diagnostic structures.
- Start with low power and record magnification.

Viva Questions and Answers

1. What is a transverse section?

A section cut across the long axis or specified plane of the material.

2. Why is tissue arrangement important?

The pattern helps distinguish plant parts and authentic materials.

3. Which feature is especially useful here?

Cystolith-bearing cells and the assigned leaf anatomy support identification.

Evaluation of Asafoetida

Experiment 28 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate the assigned asafoetida specimen using organoleptic, physical and characteristic tests.

Principle

Evaluation assesses identity and quality using a combination of source, physical behaviour and prescribed tests. Oleo-gum-resin from assigned *Ferula* species.

Specimen Features

- Irregular resinous tears or masses; strong characteristic sulphurous odour without deliberate inhalation.
- Use the assigned official tests for resin, volatile fraction and extraneous matter; odour alone does not establish purity.

Requirements

- Authenticated material and coded teaching specimen
- Assigned monograph, balance, glassware and prescribed reagents
- Controlled heating equipment where the method requires it

Procedure

1. Profile

Record the source, supplied form and visible features. Irregular resinous tears or masses; strong characteristic sulphurous odour without deliberate inhalation.

2. Physical behaviour

Carry out the assigned dispersion, dissolution, swelling or gel test using matched conditions.

3. Characteristic test

Observe the prescribed water dispersion, which may form a milky emulsion; identify gum and resin behaviour.

4. Quantitative test

Where assigned, perform the official moisture, ash, viscosity, acid-value or other selected quality test.

5. Assess

Compare actual results with the named method and limit. Use the assigned official tests for resin, volatile fraction and extraneous matter; odour alone does not establish purity.

6. Report

State identity support, quality findings and any test that was not performed.

Observations and Record

Check	Actual observation
Source / appearance	_____
Physical behaviour	_____
Characteristic test	_____
Quantitative result / units	_____
Assigned limit / conclusion	_____

Result

The specimen was _____. Tests performed: _____. Observed quality findings and applicable limits: _____.

Precautions

- Do not taste the specimen or deliberately inhale fumes.
- Match quantities, temperature and observation time when comparing materials.
- Use the laboratory's approved solvent and reagent controls.

Viva Questions and Answers

1. Why combine tests?

Appearance or one colour reaction may be shared by adulterants or related materials.

2. What is the distinguishing context?

Use the assigned official tests for resin, volatile fraction and extraneous matter; odour alone does not establish purity.

3. Can a worked number be entered as an observation?

No; the student records actual measured or demonstrated data.

Evaluation of Benzoin

Experiment 29 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate the assigned benzoin specimen using organoleptic, physical and characteristic tests.

Principle

Evaluation assesses identity and quality using a combination of source, physical behaviour and prescribed tests. Balsamic resin from assigned *Styrax* species.

Specimen Features

- Brownish brittle tears or masses; the cut surface varies with the source type.
- Distinguish source-specific monographs; do not assume all commercial benzoin has identical appearance.

Requirements

- Authenticated material and coded teaching specimen
- Assigned monograph, balance, glassware and prescribed reagents
- Controlled heating equipment where the method requires it

Procedure

1. Profile

Record the source, supplied form and visible features. Brownish brittle tears or masses; the cut surface varies with the source type.

2. Physical behaviour

Carry out the assigned dispersion, dissolution, swelling or gel test using matched conditions.

3. Characteristic test

Observe dissolution in the assigned alcohol and precipitation of resin on controlled water addition.

4. Quantitative test

Where assigned, perform the official moisture, ash, viscosity, acid-value or other selected quality test.

5. Assess

Compare actual results with the named method and limit. Distinguish source-specific monographs; do not assume all commercial benzoin has identical appearance.

6. Report

State identity support, quality findings and any test that was not performed.

Observations and Record

Check	Actual observation
Source / appearance	_____
Physical behaviour	_____
Characteristic test	_____
Quantitative result / units	_____
Assigned limit / conclusion	_____

Result

The specimen was _____. Tests performed: _____. Observed quality findings and applicable limits: _____.

Precautions

- Do not taste the specimen or deliberately inhale fumes.
- Match quantities, temperature and observation time when comparing materials.
- Use the laboratory's approved solvent and reagent controls.

Viva Questions and Answers

1. Why combine tests?

Appearance or one colour reaction may be shared by adulterants or related materials.

2. What is the distinguishing context?

Distinguish source-specific monographs; do not assume all commercial benzoin has identical appearance.

3. Can a worked number be entered as an observation?

No; the student records actual measured or demonstrated data.

Evaluation of Pale Catechu

Experiment 30 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate the assigned pale catechu specimen using organoleptic, physical and characteristic tests.

Principle

Evaluation assesses identity and quality using a combination of source, physical behaviour and prescribed tests. Dried aqueous extract associated with *Uncaria gambir*.

Specimen Features

- Pale-brown porous cubes or irregular pieces.
- Record source, colour, structure and required tannin-related tests together.

Requirements

- Authenticated material and coded teaching specimen
- Assigned monograph, balance, glassware and prescribed reagents
- Controlled heating equipment where the method requires it

Procedure

1. Profile

Record the source, supplied form and visible features. Pale-brown porous cubes or irregular pieces.

2. Physical behaviour

Carry out the assigned dispersion, dissolution, swelling or gel test using matched conditions.

3. Characteristic test

Observe the assigned tannin colour reactions and compare solution behaviour with authenticated material.

4. Quantitative test

Where assigned, perform the official moisture, ash, viscosity, acid-value or other selected quality test.

5. Assess

Compare actual results with the named method and limit. Record source, colour, structure and required tannin-related tests together.

6. Report

State identity support, quality findings and any test that was not performed.

Observations and Record

Check	Actual observation
Source / appearance	_____
Physical behaviour	_____
Characteristic test	_____
Quantitative result / units	_____
Assigned limit / conclusion	_____

Result

The specimen was _____. Tests performed: _____. Observed quality findings and applicable limits: _____.

Precautions

- Do not taste the specimen or deliberately inhale fumes.
- Match quantities, temperature and observation time when comparing materials.
- Use the laboratory's approved solvent and reagent controls.

Viva Questions and Answers

1. Why combine tests?

Appearance or one colour reaction may be shared by adulterants or related materials.

2. What is the distinguishing context?

Record source, colour, structure and required tannin-related tests together.

3. Can a worked number be entered as an observation?

No; the student records actual measured or demonstrated data.

Evaluation of Black Catechu

Experiment 31 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate the assigned black catechu specimen using organoleptic, physical and characteristic tests.

Principle

Evaluation assesses identity and quality using a combination of source, physical behaviour and prescribed tests. Dried heartwood extract of *Senegalia catechu* (older *Acacia catechu*).

Specimen Features

- Dark-brown to black brittle pieces with a generally glossy fracture.
- Do not confuse dark appearance with proof of tannin content or authenticity.

Requirements

- Authenticated material and coded teaching specimen
- Assigned monograph, balance, glassware and prescribed reagents
- Controlled heating equipment where the method requires it

Procedure

1. Profile

Record the source, supplied form and visible features. Dark-brown to black brittle pieces with a generally glossy fracture.

2. Physical behaviour

Carry out the assigned dispersion, dissolution, swelling or gel test using matched conditions.

3. Characteristic test

Prepare the assigned test solution and observe instructor-specified tannin tests.

4. Quantitative test

Where assigned, perform the official moisture, ash, viscosity, acid-value or other selected quality test.

5. Assess

Compare actual results with the named method and limit. Do not confuse dark appearance with proof of tannin content or authenticity.

6. Report

State identity support, quality findings and any test that was not performed.

Observations and Record

Check	Actual observation
Source / appearance	_____
Physical behaviour	_____
Characteristic test	_____
Quantitative result / units	_____
Assigned limit / conclusion	_____

Result

The specimen was _____. Tests performed: _____. Observed quality findings and applicable limits: _____.

Precautions

- Do not taste the specimen or deliberately inhale fumes.
- Match quantities, temperature and observation time when comparing materials.
- Use the laboratory's approved solvent and reagent controls.

Viva Questions and Answers

1. Why combine tests?

Appearance or one colour reaction may be shared by adulterants or related materials.

2. What is the distinguishing context?

Do not confuse dark appearance with proof of tannin content or authenticity.

3. Can a worked number be entered as an observation?

No; the student records actual measured or demonstrated data.

Evaluation of Castor Oil

Experiment 32 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate the assigned castor oil specimen using organoleptic, physical and characteristic tests.

Principle

Evaluation assesses identity and quality using a combination of source, physical behaviour and prescribed tests. Fixed oil from *Ricinus communis* seeds.

Specimen Features

- Clear viscous pale-yellow fixed oil.
- Use authenticated oil; no seed processing or ricin-related work is included.

Requirements

- Authenticated material and coded teaching specimen
- Assigned monograph, balance, glassware and prescribed reagents
- Controlled heating equipment where the method requires it

Procedure

1. Profile

Record the source, supplied form and visible features. Clear viscous pale-yellow fixed oil.

2. Physical behaviour

Carry out the assigned dispersion, dissolution, swelling or gel test using matched conditions.

3. Characteristic test

Record viscosity comparison and the prescribed physical/chemical checks; assess acid value if assigned.

4. Quantitative test

Where assigned, perform the official moisture, ash, viscosity, acid-value or other selected quality test.

5. Assess

Compare actual results with the named method and limit. Use authenticated oil; no seed processing or ricin-related work is included.

6. Report

State identity support, quality findings and any test that was not performed.

Observations and Record

Check	Actual observation
Source / appearance	_____
Physical behaviour	_____
Characteristic test	_____
Quantitative result / units	_____
Assigned limit / conclusion	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- Acid value (mg KOH/g) = blank-corrected titre (mL) × titrant normality × 56.1 / oil mass (g).
- Illustrative data: 0.40 mL of 0.100 N titrant for 2.00 g oil gives 1.122 mg KOH/g; compare with the assigned specification.

Result

The specimen was _____. Tests performed: _____. Observed quality findings and applicable limits: _____.

Precautions

- Do not taste the specimen or deliberately inhale fumes.
- Match quantities, temperature and observation time when comparing materials.
- Use the laboratory's approved solvent and reagent controls.

Viva Questions and Answers

1. Why combine tests?

Appearance or one colour reaction may be shared by adulterants or related materials.

2. What is the distinguishing context?

Use authenticated oil; no seed processing or ricin-related work is included.

3. Can a worked number be entered as an observation?

No; the student records actual measured or demonstrated data.

Evaluation of Acacia

Experiment 33 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate the assigned acacia specimen using organoleptic, physical and characteristic tests.

Principle

Evaluation assesses identity and quality using a combination of source, physical behaviour and prescribed tests. Dried gum exudate from assigned acacia source.

Specimen Features

- Pale irregular or rounded gum tears.
- Hydration behaviour and official identity/purity tests are separate evidence.

Requirements

- Authenticated material and coded teaching specimen
- Assigned monograph, balance, glassware and prescribed reagents
- Controlled heating equipment where the method requires it

Procedure

1. Profile

Record the source, supplied form and visible features. Pale irregular or rounded gum tears.

2. Physical behaviour

Carry out the assigned dispersion, dissolution, swelling or gel test using matched conditions.

3. Characteristic test

Observe hydration and the assigned colloidal water-solution test; compare with tragacanth.

4. Quantitative test

Where assigned, perform the official moisture, ash, viscosity, acid-value or other selected quality test.

5. Assess

Compare actual results with the named method and limit. Hydration behaviour and official identity/purity tests are separate evidence.

6. Report

State identity support, quality findings and any test that was not performed.

Observations and Record

Check	Actual observation
Source / appearance	_____
Physical behaviour	_____
Characteristic test	_____
Quantitative result / units	_____
Assigned limit / conclusion	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- For a teacher-assigned swelling-index record: index = volume occupied after the defined hydration period (mL) / dry mass (g).
- Illustrative data: 1.00 g occupies 8.0 mL; index = 8.0 mL/g. The method conditions and applicable limit must be stated.

Result

The specimen was _____. Tests performed: _____. Observed quality findings and applicable limits: _____.

Precautions

- Do not taste the specimen or deliberately inhale fumes.
- Match quantities, temperature and observation time when comparing materials.
- Use the laboratory's approved solvent and reagent controls.

Viva Questions and Answers

1. Why combine tests?

Appearance or one colour reaction may be shared by adulterants or related materials.

2. What is the distinguishing context?

Hydration behaviour and official identity/purity tests are separate evidence.

3. Can a worked number be entered as an observation?

No; the student records actual measured or demonstrated data.

Evaluation of Tragacanth

Experiment 34 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate the assigned tragacanth specimen using organoleptic, physical and characteristic tests.

Principle

Evaluation assesses identity and quality using a combination of source, physical behaviour and prescribed tests. Gum exudate from assigned Astragalus species.

Specimen Features

- Pale flakes or ribbons with characteristic layered markings.
- Do not classify a swollen dispersion as a completely molecular solution.

Requirements

- Authenticated material and coded teaching specimen
- Assigned monograph, balance, glassware and prescribed reagents
- Controlled heating equipment where the method requires it

Procedure

1. Profile

Record the source, supplied form and visible features. Pale flakes or ribbons with characteristic layered markings.

2. Physical behaviour

Carry out the assigned dispersion, dissolution, swelling or gel test using matched conditions.

3. Characteristic test

Observe swelling and viscous dispersion; the gum includes fractions with different water behaviour.

4. Quantitative test

Where assigned, perform the official moisture, ash, viscosity, acid-value or other selected quality test.

5. Assess

Compare actual results with the named method and limit. Do not classify a swollen dispersion as a completely molecular solution.

6. Report

State identity support, quality findings and any test that was not performed.

Observations and Record

Check	Actual observation
Source / appearance	_____
Physical behaviour	_____
Characteristic test	_____
Quantitative result / units	_____
Assigned limit / conclusion	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- For a teacher-assigned swelling-index record: index = volume occupied after the defined hydration period (mL) / dry mass (g).
- Illustrative data: 1.00 g occupies 8.0 mL; index = 8.0 mL/g. The method conditions and applicable limit must be stated.

Result

The specimen was _____. Tests performed: _____. Observed quality findings and applicable limits: _____.

Precautions

- Do not taste the specimen or deliberately inhale fumes.
- Match quantities, temperature and observation time when comparing materials.
- Use the laboratory's approved solvent and reagent controls.

Viva Questions and Answers

1. Why combine tests?

Appearance or one colour reaction may be shared by adulterants or related materials.

2. What is the distinguishing context?

Do not classify a swollen dispersion as a completely molecular solution.

3. Can a worked number be entered as an observation?

No; the student records actual measured or demonstrated data.

Evaluation of Agar

Experiment 35 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate the assigned agar specimen using organoleptic, physical and characteristic tests.

Principle

Evaluation assesses identity and quality using a combination of source, physical behaviour and prescribed tests. Processed red-algal polysaccharide.

Specimen Features

- Pale translucent strips, flakes or powder.
- Gel quality depends on concentration and preparation; use the same conditions for comparison.

Requirements

- Authenticated material and coded teaching specimen
- Assigned monograph, balance, glassware and prescribed reagents
- Controlled heating equipment where the method requires it

Procedure

1. Profile

Record the source, supplied form and visible features. Pale translucent strips, flakes or powder.

2. Physical behaviour

Carry out the assigned dispersion, dissolution, swelling or gel test using matched conditions.

3. Characteristic test

Observe prescribed hot-water dissolution and cooling-gel behaviour.

4. Quantitative test

Where assigned, perform the official moisture, ash, viscosity, acid-value or other selected quality test.

5. Assess

Compare actual results with the named method and limit. Gel quality depends on concentration and preparation; use the same conditions for comparison.

6. Report

State identity support, quality findings and any test that was not performed.

Observations and Record

Check	Actual observation
Source / appearance	_____
Physical behaviour	_____
Characteristic test	_____
Quantitative result / units	_____
Assigned limit / conclusion	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- For a teacher-assigned swelling-index record: index = volume occupied after the defined hydration period (mL) / dry mass (g).
- Illustrative data: 1.00 g occupies 8.0 mL; index = 8.0 mL/g. The method conditions and applicable limit must be stated.

Result

The specimen was _____. Tests performed: _____. Observed quality findings and applicable limits: _____.

Precautions

- Do not taste the specimen or deliberately inhale fumes.
- Match quantities, temperature and observation time when comparing materials.
- Use the laboratory's approved solvent and reagent controls.

Viva Questions and Answers

1. Why combine tests?

Appearance or one colour reaction may be shared by adulterants or related materials.

2. What is the distinguishing context?

Gel quality depends on concentration and preparation; use the same conditions for comparison.

3. Can a worked number be entered as an observation?

No; the student records actual measured or demonstrated data.

Evaluation of Guar Gum

Experiment 36 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate the assigned guar gum specimen using organoleptic, physical and characteristic tests.

Principle

Evaluation assesses identity and quality using a combination of source, physical behaviour and prescribed tests. Endosperm polysaccharide from *Cyamopsis tetragonoloba*.

Specimen Features

- Pale powder from a seed-endosperm source.
- Record dispersion method; lumping is a preparation artefact rather than necessarily an impurity.

Requirements

- Authenticated material and coded teaching specimen
- Assigned monograph, balance, glassware and prescribed reagents
- Controlled heating equipment where the method requires it

Procedure

1. Profile

Record the source, supplied form and visible features. Pale powder from a seed-endosperm source.

2. Physical behaviour

Carry out the assigned dispersion, dissolution, swelling or gel test using matched conditions.

3. Characteristic test

Disperse gradually in water and observe hydration and viscosity without dry-cored lumps.

4. Quantitative test

Where assigned, perform the official moisture, ash, viscosity, acid-value or other selected quality test.

5. Assess

Compare actual results with the named method and limit. Record dispersion method; lumping is a preparation artefact rather than necessarily an impurity.

6. Report

State identity support, quality findings and any test that was not performed.

Observations and Record

Check	Actual observation
Source / appearance	_____
Physical behaviour	_____
Characteristic test	_____
Quantitative result / units	_____
Assigned limit / conclusion	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- For a teacher-assigned swelling-index record: index = volume occupied after the defined hydration period (mL) / dry mass (g).
- Illustrative data: 1.00 g occupies 8.0 mL; index = 8.0 mL/g. The method conditions and applicable limit must be stated.

Result

The specimen was _____. Tests performed: _____. Observed quality findings and applicable limits: _____.

Precautions

- Do not taste the specimen or deliberately inhale fumes.
- Match quantities, temperature and observation time when comparing materials.
- Use the laboratory's approved solvent and reagent controls.

Viva Questions and Answers

1. Why combine tests?

Appearance or one colour reaction may be shared by adulterants or related materials.

2. What is the distinguishing context?

Record dispersion method; lumping is a preparation artefact rather than necessarily an impurity.

3. Can a worked number be entered as an observation?

No; the student records actual measured or demonstrated data.

Evaluation of Gelatine

Experiment 37 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate the assigned gelatine specimen using organoleptic, physical and characteristic tests.

Principle

Evaluation assesses identity and quality using a combination of source, physical behaviour and prescribed tests. Collagen-derived protein material.

Specimen Features

- Pale sheets, granules or powder.
- Gelatine is protein-based, whereas agar and gums are primarily polysaccharide-based.

Requirements

- Authenticated material and coded teaching specimen
- Assigned monograph, balance, glassware and prescribed reagents
- Controlled heating equipment where the method requires it

Procedure

1. Profile

Record the source, supplied form and visible features. Pale sheets, granules or powder.

2. Physical behaviour

Carry out the assigned dispersion, dissolution, swelling or gel test using matched conditions.

3. Characteristic test

Observe the assigned warm-water solution/cooling test and a teacher-provided protein reaction.

4. Quantitative test

Where assigned, perform the official moisture, ash, viscosity, acid-value or other selected quality test.

5. Assess

Compare actual results with the named method and limit. Gelatine is protein-based, whereas agar and gums are primarily polysaccharide-based.

6. Report

State identity support, quality findings and any test that was not performed.

Observations and Record

Check	Actual observation
Source / appearance	_____
Physical behaviour	_____
Characteristic test	_____
Quantitative result / units	_____
Assigned limit / conclusion	_____

Result

The specimen was _____. Tests performed: _____. Observed quality findings and applicable limits: _____.

Precautions

- Do not taste the specimen or deliberately inhale fumes.
- Match quantities, temperature and observation time when comparing materials.
- Use the laboratory's approved solvent and reagent controls.

Viva Questions and Answers

1. Why combine tests?

Appearance or one colour reaction may be shared by adulterants or related materials.

2. What is the distinguishing context?

Gelatine is protein-based, whereas agar and gums are primarily polysaccharide-based.

3. Can a worked number be entered as an observation?

No; the student records actual measured or demonstrated data.

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