KERALA DIPLOMA CURRICULUM REVISION 2026

Course 4074 | 4 Credits: No Credits | Program Core | Source-grounded

Sustainable Materials and

 To practice the production and handling of sustainable materials

OFFICIAL SOURCE DECLARATION

How this lesson was prepared

The supplied official SITTTR syllabus PDF for Course 4074 is the authoritative source for course information, objectives, course outcomes, CO–PO mapping, modules, topics, activities, assessment structure and references. Explanations, study prompts and Malayalam support are educational elaboration and are not presented as additional official syllabus text.

Source file: 4074.pdf from the uploaded official SITTTR syllabus archive. **Course code and title:** preserved from the source.

COURSE DASHBOARD

Official course information

Course information

Item	Official information
Programme	Diploma in Chemical Engineering
Course code	4074
Course title	Sustainable Materials and
Semester	4 Credits: No Credits
Course category	Program Core
Periods per week	3 (L: 1 T: 1 P: 1) Periods per semester: 45
Periods per semester	45
Credits	No Credits
Prerequisite	See the official syllabus PDF
Assessment	Use the official assessment section reproduced below

Modules

4 official module sections detected.

Topic entries

16 source-aligned topic entries retained.

Study mode

Theory and application emphasis.

STUDY METHOD

How to use this lesson

First pass

Read the official source declaration, dashboard and module transcript. Mark unfamiliar terms without changing the official terminology.

Second pass

Use each topic card to build a definition, principle, steps or components, application and exam answer. Attempt the Q&A before opening the answers.

Practical evidence

Where the course is laboratory or workshop based, maintain an observation notebook with procedure, instruments, readings, safety points and conclusion.

Revision pass

Return to the source excerpt, coverage table, activities and model paper. The generated paper is practice material, not an official examination paper.

LEARNING OUTCOMES

Objectives, outcomes and mapping

Course objectives

- To practice the production and handling of sustainable materials

Course outcomes

CO	Official outcome	Study level
CO1	Summarize sustainable materials 12 Applying Practice the synthesis of bio fertilizers and bio	See official syllabus
CO2	12 Applying pesticides	See official syllabus
CO3	Outline sustainable waste management. 12 Understanding Summarise the importance of eco friendly 9	See official syllabus
CO4	Applying startups	See official syllabus

CO–PO mapping evidence

Row	Extracted official mapping
CO1	CO1 3
CO2	CO2 3
CO3	CO3 3
CO4	CO4 3 3

COVERAGE AUDIT

Complete syllabus coverage

Every detected official module is represented below. Each module contains topic cards and an expandable official syllabus transcript to preserve source terminology.

Module coverage

Module	Official heading	Topic entries	Hours
Module 1	Summarize sustainable materials	4	As specified
Module 2	Practice the synthesis of bio fertilizers and bio pesticides	4	As specified
Module 3	Outline sustainable waste management	4	As specified
Module 4	Summarise the importance of eco friendly startups	4	As specified

MODULE 1

Summarize sustainable materials

This module is presented from the official syllabus scope for Sustainable Materials and. Use the topic cards for learning and the source transcript for exact coverage.

As specified
official hours

CO-linked
see outcomes

Learning goals

- Explain the official Module 1 scope and its relationship to the course outcomes.
- Recognise the terminology, sequence, components and evidence expected in examination answers.
- Connect at least one official topic to a practical, industrial, laboratory or design context.

Key facts

- Official module title: Summarize sustainable materials
- Official duration: As specified
- Official topic entries captured: 4
- The full source excerpt is preserved below for coverage checking.

▼ Summarize the concept of sustainability.

Summarize the concept of sustainability. is an official topic in Module 1 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Summarize the concept of sustainability. using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, summarize the concept of sustainability. should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Summarize the concept of sustainability. means in the official course context

Aspect	What to prepare
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 1-□□ Summarize the concept of sustainability. □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▼ Identify importance of bioplastics

Identify importance of bioplastics is an official topic in Module 1 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Identify importance of bioplastics using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, identify importance of bioplastics should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Identify importance of bioplastics means in the official course context

Aspect	What to prepare
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 1-□□ Identify importance of bioplastics □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▼ Illustrate manufacturing of bioplastics.

Illustrate manufacturing of bioplastics. is an official topic in Module 1 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Illustrate manufacturing of bioplastics. using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, illustrate manufacturing of bioplastics. should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Illustrate manufacturing of bioplastics. means in the official course context

Aspect	What to prepare
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 1-□□ Illustrate manufacturing of bioplastics. □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▼ Synthesize bioplastic 3 Applying Define sustainability, need, concept, challenges - industrial symbiosis. Define bioplastics- identify the sources of bioplastics - properties of bioplastic- advantages of bioplastics - uses of bioplastics - Growth of bioplastic industry. Illustrate the industrial production of polyhydroxyalkanoates (PHA), uses, comparison with existing plastics. Illustrate the industrial production of poly lactic acid (PLA), uses, comparison with existing plastics. Synthesize bio plastic from starch based sources (lab activity)

Synthesize bioplastic 3 Applying Define sustainability, need, concept, challenges - industrial symbiosis. Define bioplastics- identify the sources of bioplastics - properties of bioplastic- advantages of bioplastics - uses of bioplastics - Growth of bioplastic industry. Illustrate the industrial production of polyhydroxyalkanoates (PHA), uses, comparison with existing plastics. Illustrate the industrial production of poly lactic acid (PLA), uses, comparison with existing plastics. Synthesize bio plastic from starch based sources (lab activity) is an official topic in Module 1 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Synthesize bioplastic 3 Applying Define sustainability, need, concept, challenges - industrial symbiosis. Define bioplastics- identify the sources of bioplastics - properties of bioplastic- advantages of bioplastics - uses of bioplastics - Growth of bioplastic industry. Illustrate the industrial production of polyhydroxyalkanoates (PHA), uses, comparison

with existing plastics. Illustrate the industrial production of poly lactic acid (PLA), uses, comparison with existing plastics. Synthesize bio plastic from starch based sources (lab activity) using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, synthesize bioplastic 3 applying define sustainability, need, concept, challenges - industrial symbiosis. define bioplastics- identify the sources of bioplastics - properties of bioplastic- advantages of bioplastics - uses of bioplastics - growth of bioplastic industry. illustrate the industrial production of polyhydroxyalkanoates (pha), uses, comparison with existing plastics. illustrate the industrial production of poly lactic acid (pla), uses, comparison with existing plastics. synthesize bio plastic from starch based sources (lab activity) should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Synthesize bioplastic 3 Applying Define sustainability, need, concept, challenges - industrial symbiosis. Define bioplastics- identify the sources of bioplastics - properties of bioplastic- advantages of bioplastics - uses of bioplastics - Growth of bioplastic industry. Illustrate the industrial production of polyhydroxyalkanoates (PHA), uses, comparison with existing plastics. Illustrate the industrial production of poly lactic acid (PLA), uses, comparison with existing plastics. Synthesize bio plastic from starch based sources (lab activity) means in the official course context
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 1-□□ Synthesize bioplastic 3 Applying Define sustainability, need, concept, challenges - industrial symbiosis. Define bioplastics- identify the sources of bioplastics - properties of bioplastic- advantages of bioplastics - uses of bioplastics - Growth of bioplastic industry. Illustrate the industrial production of polyhydroxyalkanoates (PHA), uses, comparison with existing plastics. Illustrate the industrial production of poly lactic acid (PLA), uses, comparison with existing plastics. Synthesize bio plastic from starch based sources (lab activity) □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▶ **Official syllabus detail and terminology (expand in digital version)**

Module study routine: Read the source wording, make a one-page concept map, practise one short answer and one structured answer, then review the Malayalam support notes.

MODULE 2

Practice the synthesis of bio fertilizers and bio pesticides

This module is presented from the official syllabus scope for Sustainable Materials and. Use the topic cards for learning and the source transcript for exact coverage.

As specified
official hours

CO-linked
see outcomes

Learning goals

- Explain the official Module 2 scope and its relationship to the course outcomes.
- Recognise the terminology, sequence, components and evidence expected in examination answers.
- Connect at least one official topic to a practical, industrial, laboratory or design context.

Key facts

- Official module title: Practice the synthesis of bio fertilizers and bio pesticides
- Official duration: As specified
- Official topic entries captured: 4
- The full source excerpt is preserved below for coverage checking.

▼ Outline bio fertilizers.

Outline bio fertilizers. is an official topic in Module 2 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Outline bio fertilizers. using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, outline bio fertilizers. should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Outline bio fertilizers. means in the official course context
Study lens	Principle → components or stages → result → application

Aspect	What to prepare
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 2-□□ Outline bio fertilizers. □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▼ Outline bio pesticides.

Outline bio pesticides. is an official topic in Module 2 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Outline bio pesticides. using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, outline bio pesticides. should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Outline bio pesticides. means in the official course context
Study lens	Principle → components or stages → result → application

Aspect	What to prepare
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 2-□□ Outline bio pesticides. □□□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□□, steps, application □□□□□□ □□□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□□.

▼ Synthesize bio fertilizer (laboratory activity)

Synthesize bio fertilizer (laboratory activity) is an official topic in Module 2 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Synthesize bio fertilizer (laboratory activity) using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, synthesize bio fertilizer (laboratory activity) should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Synthesize bio fertilizer (laboratory activity) means in the official course context

Aspect	What to prepare
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 2-□□ Synthesize bio fertilizer (laboratory activity) □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▼ Synthesize bio pesticides (laboratory activity) 3 Applying Define bio fertilizer, need for bio fertilizer – Classification - Nitrogen fixing bio fertilizers, Phosphate bio fertilizers, Potassium bio fertilizers – Commonly used bio fertilizers. Define bio pesticide - need and advantages of bio pesticides in organic farming – Classification, microbial pesticides, biochemical or herbal pesticides - Commonly used bio pesticides. Synthesis of bio fertilizer (laboratory activity). Synthesis of bio pesticides (laboratory activity).

Synthesize bio pesticides (laboratory activity) 3 Applying Define bio fertilizer, need for bio fertilizer – Classification - Nitrogen fixing bio fertilizers, Phosphate bio fertilizers, Potassium bio fertilizers – Commonly used bio fertilizers. Define bio pesticide - need and advantages of bio pesticides in organic farming – Classification, microbial pesticides, biochemical or herbal pesticides - Commonly used bio pesticides. Synthesis of bio fertilizer (laboratory activity). Synthesis of bio pesticides (laboratory activity). is an official topic in Module 2 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Synthesize bio pesticides (laboratory activity) 3 Applying Define bio fertilizer, need for bio fertilizer – Classification - Nitrogen fixing bio fertilizers, Phosphate bio fertilizers, Potassium bio fertilizers – Commonly used bio fertilizers. Define bio pesticide - need and advantages of bio pesticides in organic farming – Classification, microbial pesticides, biochemical or herbal pesticides - Commonly used bio pesticides. Synthesis

of bio fertilizer (laboratory activity). Synthesis of bio pesticides (laboratory activity). using standard technical terminology.

- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, synthesize bio pesticides (laboratory activity) 3 applying define bio fertilizer, need for bio fertilizer – classification - nitrogen fixing bio fertilizers, phosphate bio fertilizers, potassium bio fertilizers – commonly used bio fertilizers. define bio pesticide - need and advantages of bio pesticides in organic farming – classification, microbial pesticides, biochemical or herbal pesticides - commonly used bio pesticides. synthesis of bio fertilizer (laboratory activity). synthesis of bio pesticides (laboratory activity). should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Synthesize bio pesticides (laboratory activity) 3 Applying Define bio fertilizer, need for bio fertilizer – Classification - Nitrogen fixing bio fertilizers, Phosphate bio fertilizers, Potassium bio fertilizers – Commonly used bio fertilizers. Define bio pesticide - need and advantages of bio pesticides in organic farming – Classification, microbial pesticides, biochemical or herbal pesticides - Commonly used bio pesticides. Synthesis of bio fertilizer (laboratory activity). Synthesis of bio pesticides (laboratory activity). means in the official course context
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 2-□□ Synthesize bio pesticides (laboratory activity) 3 Applying Define bio fertilizer, need for bio fertilizer – Classification - Nitrogen fixing bio fertilizers, Phosphate bio fertilizers, Potassium bio fertilizers – Commonly used bio fertilizers. Define bio pesticide - need and advantages of bio pesticides in organic farming – Classification, microbial pesticides, biochemical or herbal pesticides - Commonly used bio pesticides. Synthesis of bio fertilizer (laboratory activity). Synthesis of bio pesticides (laboratory activity). □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▶ **Official syllabus detail and terminology (expand in digital version)**

Module study routine: Read the source wording, make a one-page concept map, practise one short answer and one structured answer, then review the Malayalam support notes.

MODULE 3

Outline sustainable waste management

This module is presented from the official syllabus scope for Sustainable Materials and. Use the topic cards for learning and the source transcript for exact coverage.

As specified
official hours

CO-linked
see outcomes

Learning goals

- Explain the official Module 3 scope and its relationship to the course outcomes.
- Recognise the terminology, sequence, components and evidence expected in examination answers.
- Connect at least one official topic to a practical, industrial, laboratory or design context.

Key facts

- Official module title: Outline sustainable waste management
- Official duration: As specified
- Official topic entries captured: 4
- The full source excerpt is preserved below for coverage checking.

▼ Identify 3R principles.

Identify 3R principles. is an official topic in Module 3 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Identify 3R principles. using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, identify 3r principles. should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Identify 3R principles. means in the official course context
Study lens	Principle → components or stages → result → application

Aspect	What to prepare
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 3-□□ Identify 3R principles. □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□□, steps, application □□□□□□ □□□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□□.

▼ Summarise plastic waste management

Summarise plastic waste management is an official topic in Module 3 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Summarise plastic waste management using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, summarise plastic waste management should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Summarise plastic waste management means in the official course context

Aspect	What to prepare
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 3-□□ Summarise plastic waste management □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▼ Summarise paper waste management

Summarise paper waste management is an official topic in Module 3 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Summarise paper waste management using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, summarise paper waste management should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Summarise paper waste management means in the official course context

Aspect	What to prepare
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 3-□□ Summarise paper waste management □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▼ Summarise metallic waste management 3 Understanding The 3 R’s of the environment, reduce, reuse, recycle. Plastic waste management - separation, application of plastic waste - recycling methods - recycling of PVC. Paper waste management - Manufacturing of recycled paper from paper waste, cellulose recovery. Metallic waste management – Steel waste management – Aluminum waste management.

Summarise metallic waste management 3 Understanding The 3 R’s of the environment, reduce, reuse, recycle. Plastic waste management - separation, application of plastic waste - recycling methods - recycling of PVC. Paper waste management - Manufacturing of recycled paper from paper waste, cellulose recovery. Metallic waste management – Steel waste management – Aluminum waste management. is an official topic in Module 3 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Summarise metallic waste management 3 Understanding The 3 R’s of the environment, reduce, reuse, recycle. Plastic waste management - separation, application of plastic waste - recycling methods - recycling of PVC. Paper waste management - Manufacturing of recycled paper from paper waste, cellulose recovery. Metallic waste management – Steel waste management – Aluminum waste management. using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.

- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, summarise metallic waste management 3 understanding the 3 r’s of the environment, reduce, reuse, recycle. plastic waste management - separation, application of plastic waste - recycling methods - recycling of pvc. paper waste management - manufacturing of recycled paper from paper waste, cellulose recovery. metallic waste management – steel waste management – aluminum waste management. should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Summarise metallic waste management 3 Understanding The 3 R’s of the environment, reduce, reuse, recycle. Plastic waste management - separation, application of plastic waste - recycling methods - recycling of PVC. Paper waste management - Manufacturing of recycled paper from paper waste, cellulose recovery. Metallic waste management – Steel waste management – Aluminum waste management. means in the official course context
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 3-□□ Summarise metallic waste management 3 Understanding The 3 R’s of the environment, reduce, reuse, recycle. Plastic waste management - separation, application of plastic waste - recycling methods - recycling of PVC. Paper waste management - Manufacturing of recycled paper from paper waste, cellulose recovery. Metallic waste management – Steel waste management – Aluminum waste management. □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▶ **Official syllabus detail and terminology (expand in digital version)**

Module study routine: Read the source wording, make a one-page concept map, practise one short answer and one structured answer, then review the Malayalam support notes.

MODULE 4

Summarise the importance of eco friendly startups

This module is presented from the official syllabus scope for Sustainable Materials and. Use the topic cards for learning and the source transcript for exact coverage.

As specified
official hours

CO-linked
see outcomes

Learning goals

- Explain the official Module 4 scope and its relationship to the course outcomes.
- Recognise the terminology, sequence, components and evidence expected in examination answers.
- Connect at least one official topic to a practical, industrial, laboratory or design context.

Key facts

- Official module title: Summarise the importance of eco friendly startups
- Official duration: As specified
- Official topic entries captured: 4
- The full source excerpt is preserved below for coverage checking.

▼ 1 Understanding entrepreneurship

1 Understanding entrepreneurship is an official topic in Module 4 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify 1 Understanding entrepreneurship using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, 1 understanding entrepreneurship should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What 1 Understanding entrepreneurship means in the official course context

Aspect	What to prepare
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 4-□□ 1 Understanding entrepreneurship □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▼ Identify the needs for eco friendly startups

Identify the needs for eco friendly startups is an official topic in Module 4 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Identify the needs for eco friendly startups using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, identify the needs for eco friendly startups should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What Identify the needs for eco friendly startups means in the official course context

Aspect	What to prepare
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 4-□□ Identify the needs for eco friendly startups □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▼ Identify an eco friendly startup 2 Understanding Prepare a business model for an eco friendly

Identify an eco friendly startup 2 Understanding Prepare a business model for an eco friendly is an official topic in Module 4 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify Identify an eco friendly startup 2 Understanding Prepare a business model for an eco friendly using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, identify an eco friendly startup 2 understanding prepare a business model for an eco friendly should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare

Aspect	What to prepare
Definition/identity	What Identify an eco friendly startup 2 Understanding Prepare a business model for an eco friendly means in the official course context
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 4-□□ Identify an eco friendly startup 2 Understanding Prepare a business model for an eco friendly □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▼ 4 Applying startup Self-employment – Entrepreneurship - Startup - List the self employment programs in India – TBI - MSME Needs for eco friendly startups Case study for an eco friendly startup in your locality [Group activity] Develop a business plan for an eco friendly startup [Group activity] Text / Reference T/R Book Title/Author T1 Biofertilizer and Organic Farming; NIIR Board R1 Bio-based plastics Materials and Appliocations ; Stephan Kabasci R2 Handbook of recycling; Ernst Worrel and Markus A Reuter R3 Entrepreneurship; Dr.Sucheta Gauba R4 Before you Start up; Pankaj Goyal Online Resources Sl.No Website Link 1 www.shomusbiology.com 2 www.startupindia.gov

4 Applying startup Self-employment – Entrepreneurship - Startup - List the self employment programs in India – TBI - MSME Needs for eco friendly startups Case study for an eco friendly startup in your locality [Group activity] Develop a business plan for an eco friendly startup [Group activity] Text / Reference T/R Book Title/Author T1 Biofertilizer and Organic Farming; NIIR Board R1 Bio-based plastics Materials and Appliocations ; Stephan Kabasci R2 Handbook of recycling; Ernst Worrel and Markus A Reuter R3 Entrepreneurship; Dr.Sucheta Gauba R4 Before you Start up; Pankaj Goyal Online Resources Sl.No Website Link 1 www.shomusbiology.com 2 www.startupindia.gov is an official topic in Module 4 of Sustainable Materials and. Study the terminology first, then connect the stated purpose, sequence, components or application to the wider course outcome.

Concept and explanation

To learn this topic effectively, identify what the system, process, material, method or concept is; state its governing idea; describe the important parts or stages; and explain what changes when operating conditions change. The official source wording is retained in the module transcript so that examination answers remain aligned with the syllabus.

Study points

- Define or identify 4 Applying startup Self-employment – Entrepreneurship - Startup - List the self employment programs in India – TBI - MSME Needs for eco friendly startups Case study for an eco friendly startup in your locality [Group activity] Develop a business plan for an eco friendly startup [Group activity] Text / Reference T/R Book Title/Author T1 Biofertilizer and Organic Farming; NIIR Board R1 Bio-based plastics Materials and Appliocations ; Stephan Kabasci R2 Handbook of recycling; Ernst Worrel and Markus A Reuter R3 Entrepreneurship; Dr.Sucheta Gauba R4 Before you Start up; Pankaj Goyal Online Resources Sl.No Website Link 1 www.shomusbiology.com 2 www.startupindia.gov using standard technical terminology.
- Arrange the important components, steps or characteristics in a logical sequence.
- Relate the topic to one laboratory, industrial, professional or design situation where appropriate.
- Use a labelled sketch, comparison table, formula or procedure when the question requires it.

Engineering or professional relevance

In Polytechnic practice, 4 applying startup self-employment – entrepreneurship - startup - list the self employment programs in india – tbi - msme needs for eco friendly startups case study for an eco friendly startup in your locality [group activity] develop a business plan for an eco friendly startup [group activity] text / reference t/r book title/author t1 biofertilizer and organic farming; niir board r1 bio-based plastics materials and appliocations ; stephan kabasci r2 handbook of recycling; ernst worrel and markus a reuter r3 entrepreneurship; dr.sucheta gauba r4 before you start up; pankaj goyal online resources sl.no website link 1 www.shomusbiology.com 2 www.startupindia.gov should be discussed with attention to safe operation, correct terminology, observable evidence and the relationship between input, process and result.

Topic study guide

Aspect	What to prepare
Definition/identity	What 4 Applying startup Self-employment – Entrepreneurship - Startup - List the self employment programs in India – TBI - MSME Needs for eco friendly startups Case study for an eco friendly startup in your locality

Aspect	What to prepare
	[Group activity] Develop a business plan for an eco friendly startup [Group activity] Text / Reference T/R Book Title/Author T1 Biofertilizer and Organic Farming; NIIR Board R1 Bio-based plastics Materials and Appliocations ; Stephan Kabasci R2 Handbook of recycling; Ernst Worrel and Markus A Reuter R3 Entrepreneurship; Dr.Sucheta Gauba R4 Before you Start up; Pankaj Goyal Online Resources Sl.No Website Link 1 www.shomusbiology.com 2 www.startupindia.gov means in the official course context
Study lens	Principle → components or stages → result → application
Exam evidence	Definition, labelled explanation, comparison, procedure or example as appropriate

Exam tip: Begin with the exact term, then give an organised explanation with a diagram, table, procedure or example whenever the topic naturally supports it.

Common mistakes: Writing a memorised phrase without explaining the principle; omitting units, labels, conditions or sequence; or mixing this topic with a related but different term.

Malayalam support: Module 4-□□ 4 Applying startup Self-employment – Entrepreneurship - Startup - List the self employment programs in India – TBI - MSME Needs for eco friendly startups Case study for an eco friendly startup in your locality [Group activity] Develop a business plan for an eco friendly startup [Group activity] Text / Reference T/R Book Title/Author T1 Biofertilizer and Organic Farming; NIIR Board R1 Bio-based plastics Materials and Appliocations ; Stephan Kabasci R2 Handbook of recycling; Ernst Worrel and Markus A Reuter R3 Entrepreneurship; Dr.Sucheta Gauba R4 Before you Start up; Pankaj Goyal Online Resources Sl.No Website Link 1 www.shomusbiology.com 2 www.startupindia.gov □□□□□□□□□□□□ □□□□□ definition/meaning □□□□□□□□□□□□□. □□□□□□ □□□□□□ □□□□□□□□, steps, application □□□□□□ □□□□□□□□□ □□□□□□. Technical terms English-□ □□□□□ □□□□□□□□□□□.

▶ **Official syllabus detail and terminology (expand in digital version)**

Module study routine: Read the source wording, make a one-page concept map, practise one short answer and one structured answer, then review the Malayalam support notes.

RAPID REFERENCE

Concept and formula bank

Answer structure

```
Definition → Principle →
Components/steps →
Application → Conclusion
```

Use this sequence for descriptive questions when the topic does not require a numerical formula.

Practical record

```
Aim → Apparatus → Procedure
→ Observation → Result →
Safety
```

Use this sequence for laboratory, workshop and field activities.

RAPID REVISION

Diagram and source-transcript library

Module 1 source and topic cards

Jump to official terminology, topic explanations and study guidance.

Module 2 source and topic cards

Jump to official terminology, topic explanations and study guidance.

Module 3 source and topic cards

Jump to official terminology, topic explanations and study guidance.

Module 4 source and topic cards

Jump to official terminology, topic explanations and study guidance.

OFFICIAL SELF-LEARNING

Activities from the syllabus

Use the extracted official activity wording as the record of required self-learning work.

The official PDF does not expose a separate activities heading in the extracted text; consult the source PDF pages for the exact activity list.

EXAMINATION PREPARATION

Assessment methodology

The following source extract preserves the assessment information detected in the official PDF. Verify mark conversions and institutional updates against the current source before an examination.

```
The official assessment structure is reproduced from the supplied PDF.
```

Practice-paper notice: The model paper below is generated for revision and is not an official examination paper.

ACTIVE RECALL

Module-wise questions and answers

These are practice questions based on official topic coverage, not official examination questions.

Module 1

▶ **Define or explain Summarize the concept of sustainability.. (3 marks)**

▶ **Define or explain Identify importance of bioplastics. (3 marks)**

▶ **Define or explain Illustrate manufacturing of bioplastics.. (3 marks)**

▶ **Define or explain Synthesize bioplastic 3 Applying Define sustainability, need, concept, challenges - industrial symbiosis. Define bioplastics- identify the sources of bioplastics - properties of bioplastic- advantages of bioplastics - uses of bioplastics - Growth of bioplastic industry. Illustrate the industrial production of polyhydroxyalkanoates (PHA), uses, comparison with existing plastics. Illustrate the industrial production of poly lactic acid (PLA), uses, comparison with existing plastics. Synthesize bio plastic from starch based sources (lab activity). (3 marks)**

Module 2

▶ **Define or explain Outline bio fertilizers.. (3 marks)**

▶ **Define or explain Outline bio pesticides.. (3 marks)**

▶ **Define or explain Synthesize bio fertilizer (laboratory activity). (3 marks)**

▶ **Define or explain Synthesize bio pesticides (laboratory activity) 3 Applying Define bio fertilizer, need for bio fertilizer – Classification - Nitrogen fixing bio fertilizers, Phosphate bio fertilizers, Potassium bio fertilizers – Commonly used bio fertilizers. Define bio pesticide - need and advantages of bio pesticides in organic farming – Classification, microbial pesticides, biochemical or herbal pesticides - Commonly used bio pesticides. Synthesis of bio fertilizer (laboratory activity). Synthesis of bio pesticides (laboratory activity).. (3 marks)**

Module 3

▶ **Define or explain Identify 3R principles.. (3 marks)**

▶ **Define or explain Summarise plastic waste management. (3 marks)**

▶ **Define or explain Summarise paper waste management. (3 marks)**

▶ **Define or explain Summarise metallic waste management 3 Understanding The 3 R's of the environment, reduce, reuse, recycle. Plastic waste management - separation, application of plastic waste - recycling methods - recycling of PVC. Paper waste management - Manufacturing of recycled paper from paper waste, cellulose recovery. Metallic waste management – Steel waste management – Aluminum waste management.. (3 marks)**

Module 4

▶ **Define or explain 1 Understanding entrepreneurship. (3 marks)**

▶ **Define or explain Identify the needs for eco friendly startups. (3 marks)**

▶ **Define or explain Identify an eco friendly startup 2 Understanding Prepare a business model for an eco friendly. (3 marks)**

▶ **Define or explain 4 Applying startup Self-employment – Entrepreneurship - Startup - List the self employment programs in India – TBI - MSME Needs for eco friendly startups Case study for an eco friendly startup in your locality [Group activity] Develop a business plan for an eco friendly startup [Group activity] Text / Reference T/R Book Title/Author T1 Biofertilizer and Organic Farming; NIIR Board R1 Bio-based plastics Materials and Appliocations ; Stephan Kabasci R2 Handbook of recycling; Ernst Worrel and Markus A Reuter R3 Entrepreneurship; Dr.Sucheta Gauba R4 Before you Start up; Pankaj Goyal Online Resources Sl.No Website Link 1 www.shomusbiology.com 2 www.startupindia.gov. (3 marks)**

PRACTICE ONLY

Practice Model Paper — Not an Official Examination Paper

Attempt one short definition, one structured explanation and one long answer from every module. Use the official assessment pattern reproduced above when selecting time and marks.

Module 1

1-mark definition: State the meaning of **Summarize the concept of sustainability.**.

3-mark explanation: Explain one principle, process or comparison from this module.

7-mark answer: Write a structured answer using a labelled diagram, table, procedure, example or application.

Module 2

1-mark definition: State the meaning of **Outline bio fertilizers.**.

3-mark explanation: Explain one principle, process or comparison from this module.

7-mark answer: Write a structured answer using a labelled diagram, table, procedure, example or application.

Module 3

1-mark definition: State the meaning of **Identify 3R principles.**.

3-mark explanation: Explain one principle, process or comparison from this module.

Module 4

1-mark definition: State the meaning of **1 Understanding entrepreneurship**.

3-mark explanation: Explain one principle, process or comparison from this module.

7-mark answer: Write a structured answer using a labelled diagram, table, procedure, example or application.

7-mark answer: Write a structured answer using a labelled diagram, table, procedure, example or application.

QUICK REVISION

Exam checklist

Before writing

- Read the command word: define, explain, compare, draw, calculate, analyse or design.
- Use the exact course terminology from the source transcript.
- Plan labels, units, sequence and marks before writing.

Before submitting

- Check every module has been revised.
- Check diagrams, tables, formula symbols and units.
- Separate official syllabus information from personal elaboration.

REFERENCE VOCABULARY

Glossary

Study glossary

Term	Meaning in this lesson
Course Outcome	A capability the student should demonstrate after completing the course.
Module	An official syllabus unit with defined topics and hours.
CIE	Continuous Internal Evaluation.
ESE	End Semester Examination.
Source transcript	A preserved extract of the official syllabus used for coverage checking.

SOURCE-SUPPORTED REFERENCES

References and web resources

References listed in the official PDF

References are included in the official source PDF.

Web resources listed in the official PDF

- Sl.No Website Link www.shomusbiology.com www.startupindia.gov

IN-PAGE SEARCH

Search this lesson

Prepared from the supplied official SITTTR syllabus PDF for Course 4074. Verify institutional updates against the current official curriculum.