

Practical manual

Plant Propagation and Nursery Management

Course No. HFS -103 Credit Hrs. 2(1+1)

For B.Sc. (Hons.) Horticulture II Semester students

Dr. Anjana Kholia

Dr. Ranjit Pal



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**College of Horticulture & Forestry
Rani Lakshmi Bai Central Agricultural University, Jhansi – 284003**

Syllabus:

Media for propagation of plants in nursery beds, potting and repotting. Preparation of nursery beds and sowing of seeds. Raising of rootstock. Seed treatments for breaking dormancy and inducing vigorous seedling growth. Preparation of plant material for potting. Hardening plants in the nursery. Practicing different types of cuttings, layering, graftings and buddings including opacity and grafting, top grafting and bridge grafting etc. Use of mist chamber in propagation and hardening of plants. Preparation of plant growth regulators for seed germination and vegetative propagation. Visit to a tissue culture laboratory. Digging, labelling and packing of nursery fruit plants. Maintenance of nursery records. Use of different types of nursery tools and implements for general nursery and virus tested plant material in the nursery. Cost of establishment of a mist chamber, greenhouse, glasshouse, polyhouse and their maintenance. Nutrient and plant protection applications during nursery.

Name of Student

Roll No.

Batch

Session

Semester

Course Name :

Course No. :

Credit

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CERTIFICATE

This is to certify that Shri./Km.ID No..... has completed the practical of course.....course No. as per the syllabus of B.Sc. (Hons.) Agriculture/ Horticulture/ Forestry semester in the year.....in the respective lab/field of College.

Date:

Course Teacher

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Practical No. 1

Objective: Identification of tools and equipment used for plant propagation and nursery management

1. Observation to be recorded:

S. No.	Tool / Equipment Name	Uses	Diagram
		
		
		
		

Precautions:

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Write in brief:

a) Vermiculite:

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b) Perlite:

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c) Peat:

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d) Cocopeat:

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Draw well labelled diagram of nursery bed



Stepwise procedure followed for Stratification:

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2. Observations:

S. No.	No. of seed kept for stratification	No. of seeds sprouted	Percentage of sprouted seeds	No. of seed sown in bed germinated	No. of seed germinated	Percentage of germination

Practical No. 9

Objective: To study about propagation through mound / stool layering

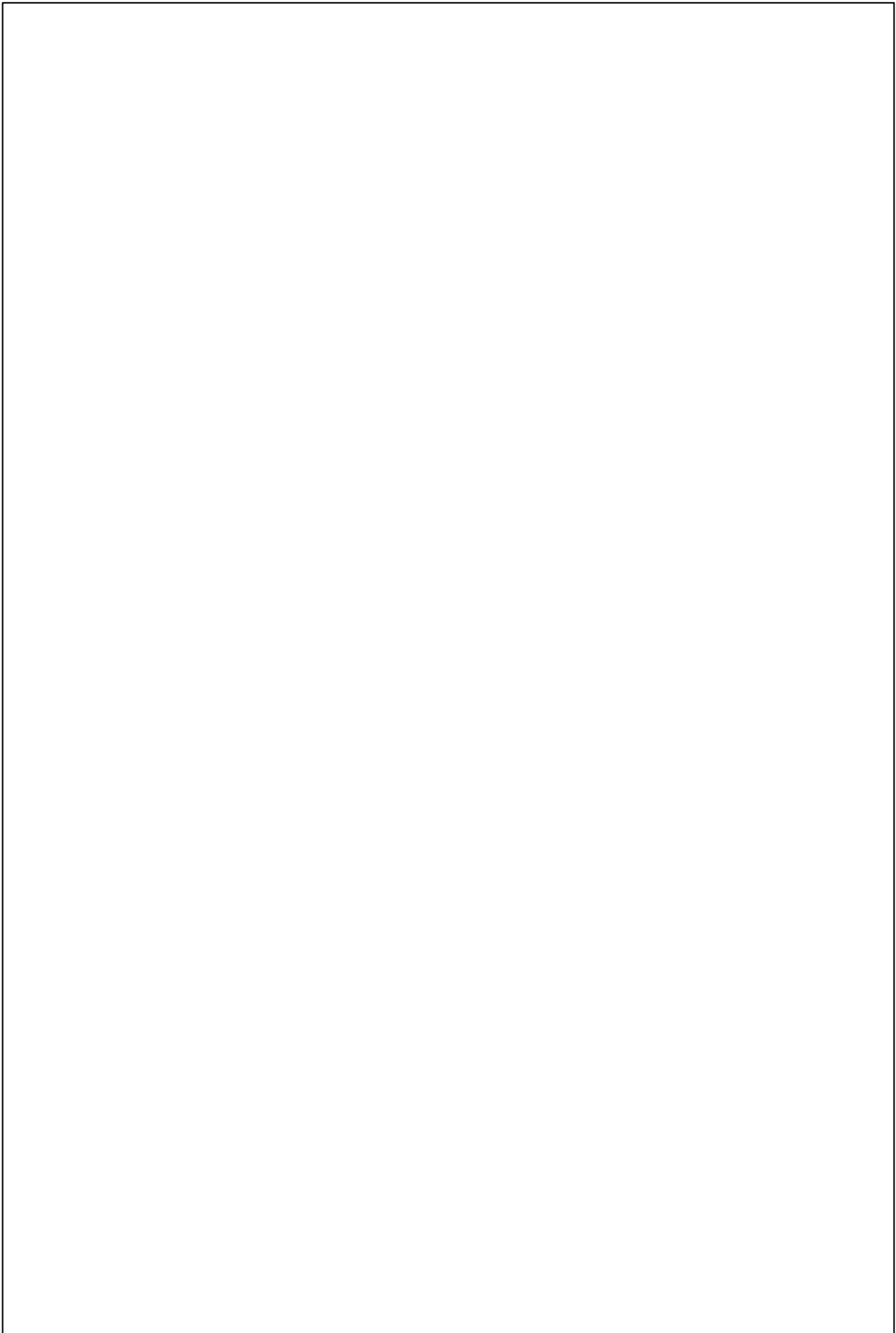
Material required: Knife, plastic strips, sphagnum moss, branches / shoots of suitable plants for practicing methods of vegetative propagation.

Procedure:
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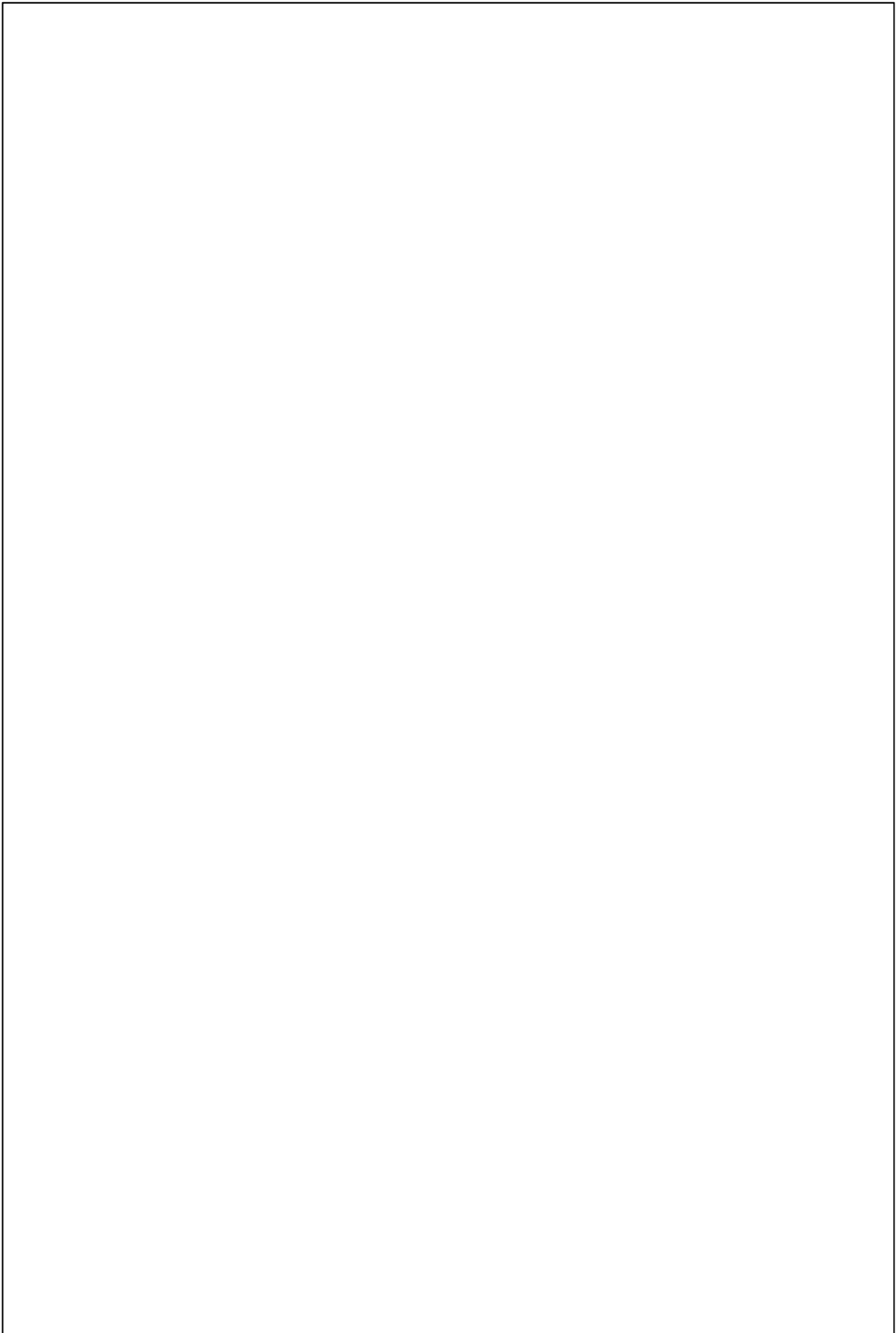
Draw the well labelled diagram of mound/ stool layering



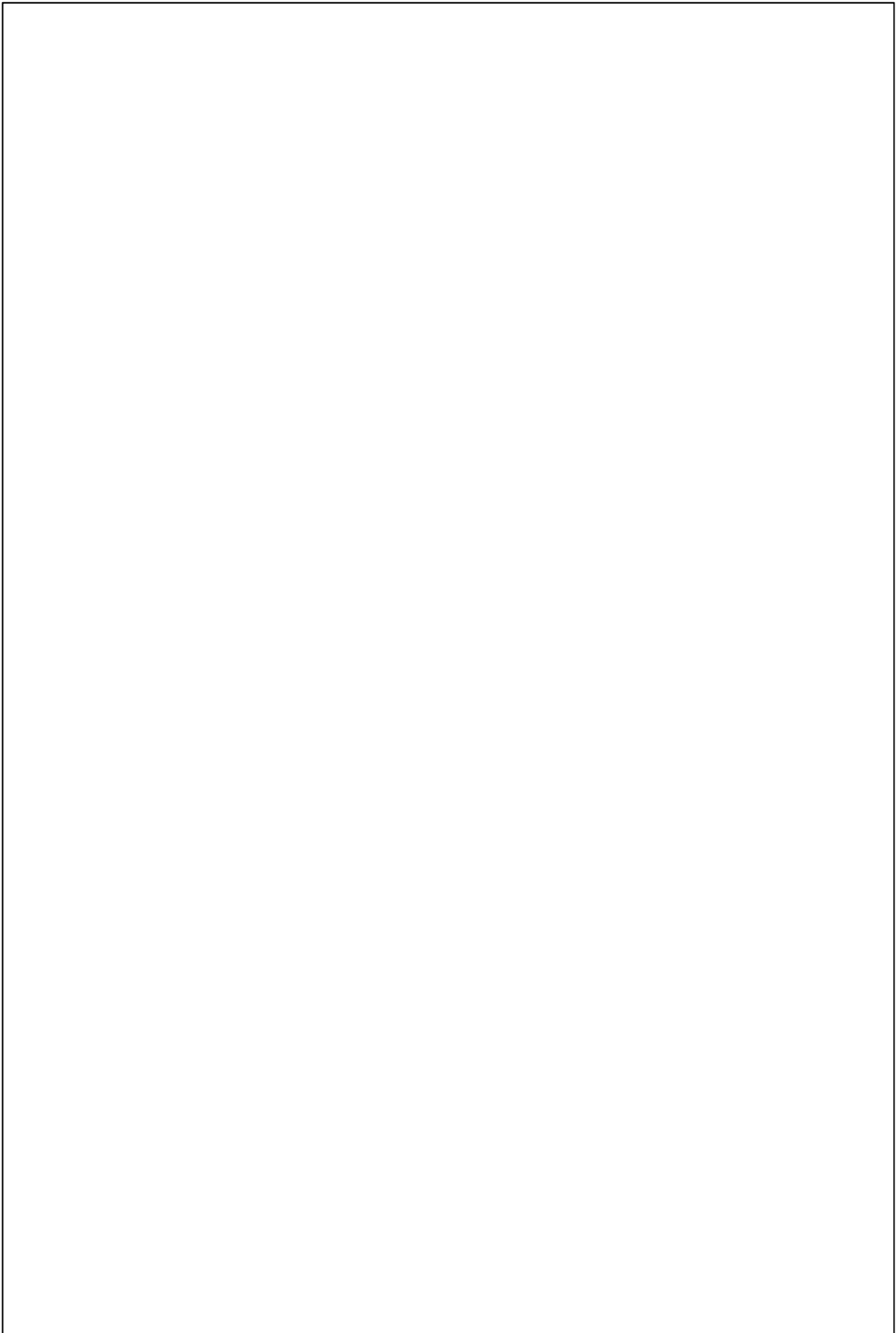
Draw the well labelled diagram of different types of grating



Draw the well labelled diagram of different types of budding



Draw the well labelled diagram



Practical No. 13

Objective: To study about preparation and calculation related to PGRs.

Material required: PGRs, glassware, distilled water, solvents and weighing balance and pH meter.

Procedure:

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Calculation:

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Elaborate following terms

PGRs:

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Stock solution:

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Working solution:

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Objective: Visit to tissue culture laboratory

Material required: Tissue culture laboratory

1. Write details of various tissue culture rooms/chambers

Media preparation room:

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Inoculation room:

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Growth Chamber:

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Hardening room/glass house:

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2. Write in brief about the important uses of the following in tissue culture.

Refrigerator:

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Analytical balance:

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Autoclave:

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pH meter:

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Laminar airflow:

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Agar:

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PGRs:

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Surface sterilants:

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Precautions to be followed while working in a tissue culture lab

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3. Explain the following terms:

Explants

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Subculture

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Transfer

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Plantlets

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In-vitro

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Ex-vitro

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Hardening

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Objective: To study about use of mist chamber for propagation and hardening of plants

Materials required: Mist chamber

Mist propagation units:

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Control mechanisms of mist:

Timer:

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Electronic leaf:

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Thermostat:

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Objective: Layout of commercial fruit nursery

Draw layout of commercial fruit nursery



Elaborate the following terms:

Mother block:
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Potting house:
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Seedling block:
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Stool bed:
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Seed store:
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Packing house:
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Wind breaks:
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Nursery Store:

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Nursery Bed:

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Pump House:

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Objective: Maintenance of nursery records.

Materials required: Registers, chronological operation record, nursery map.

Procedure:

1. Some records are essential if nurseryman is to plan his nursery for remunerative returns and establish as a reputed enterprise.
2. A nursery planner should know how long it takes to lift saplings or how much seed is required, or how much cuttings he can accommodate in a glasshouse or how much scion wood is required for grafting a particular plot of nursery.
3. There must be specific register for specific selected activities to keep day to day or pedigree or operation records in nursery.
4. These records are required by law to satisfy inspecting authorities, tax calculation, detect or discourage theft in case of big nurseries. The important aspects for which maintenance of record is necessary are as under:

Progeny orchard record:

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Nursery layout record:

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Cultural operations record:

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Disposal register:

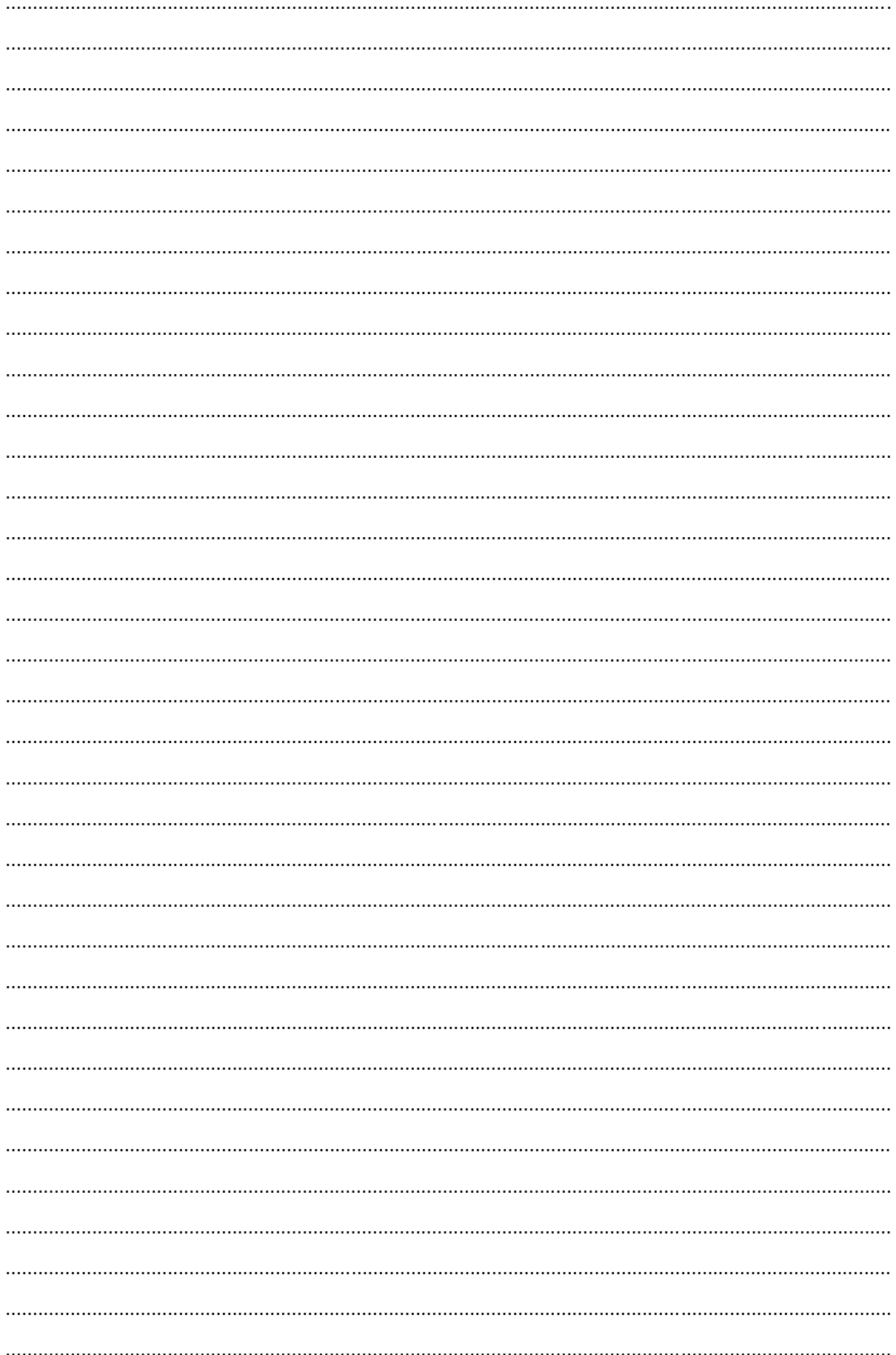
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Advisory/visitor register:

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Precautions:

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APPENDIX

Solvents for dissolving plant growth regulators			
S. No.	Group	Name	Solvent (s)
1.	Auxins	IAA, 2,4-D	Water
		IBA, NAA	EtOH, 1N NaOH
2.	Gibberellic acid	GA ₃	EtOH
3.	Cytokinins	6-Benzylaminopurine (BA), Kinetin, Zeatin	1N, NaOH
4.	Ethylene	Ethrel	Water
5.	Absciscic acid	ABA	1N NaOH