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PART–A — 2 MARKS

1. Bud fly blasting

Drying/falling of flower buds due to bud-fly larval feeding.

Maggots damage developing floral parts.

Management: Remove infested buds and use recommended insecticide if necessary.

2. Storage bio-fumigation

Use of natural/biological materials to control storage pests.

Neem products are commonly used.

It reduces dependence on chemical fumigants.

3. Climate Smart Pest Management

Pest management adapted to changing climate conditions.

Uses monitoring, resistant varieties, biological control and need-based pesticides.

Reduces crop loss and environmental damage.

4. Rhizome scale weakening

Rhizome scales suck sap from ginger/turmeric rhizomes.

Causes shrivelling, poor sprouting and weak growth.

Control: Use healthy, scale-free rhizomes.

5. Trichogramma japonicum

A tiny egg parasitoid used in biological control.

Parasitizes eggs of lepidopteran pests.

Prevents development of damaging larvae.

PART–B — 4 MARKS

1. Lemon butterfly & fruit-sucking moth

Lemon butterfly: Caterpillars feed on citrus leaves → defoliation.

Control: Collect larvae, conserve natural enemies and use need-based insecticides.

Fruit-sucking moth: Adults pierce ripe fruits → juice loss, rotting and fruit drop.

Control: Orchard sanitation, destroy fallen fruits and use suitable traps.

2. Citrus psylla

Scientific name: Diaphorina citri.

Distributed in tropical/subtropical citrus regions.

Hosts: Orange, lemon, lime, mandarin and other Rutaceae.

Nymphs suck sap from young shoots.

Causes curling, poor growth and honeydew.

Important vector of citrus greening disease.

3. Cruciferous vegetable pests

Major pests: Diamondback moth, cabbage butterfly, aphids and painted bug.

Use crop rotation and field sanitation.

Hand-pick larvae/egg masses.

Use Trichogramma, Bacillus thuringiensis and neem products.

Use insecticides only when necessary.

4. Hermetic storage

Hermetic storage means airtight storage of grain.

Proper sealing restricts gas exchange and suppresses insects.

Advantages: Less insect damage, fewer chemicals and better grain quality.

Promote through farmer demonstrations, training and affordable hermetic bags.

5. Wheat stem borer

Larvae bore into stems and damage internal tissues.

Symptoms: Wilting and dead hearts.

Life cycle: Egg → Larva → Pupa → Adult.

Control: Healthy seed, sanitation, crop rotation and biological control.

Use insecticides only at economic threshold.

PART–C — 6 MARKS

1. Gram pod borer — Helicoverpa armigera

Major pest of chickpea and other pulses.

Damage: Larvae feed on leaves, flowers and pods.

Larvae bore into pods and eat developing seeds.

Life cycle: Egg → Larva → Pupa → Adult.

Control:

Timely sowing.

Field sanitation.

Pheromone traps.

Bird perches.

Trichogramma and HaNPV.

Neem products.

Need-based insecticides.

2. Potato tuber moth — Phthorimaea operculella

Important pest of potato.

Damage: Larvae mine leaves and bore into tubers.

Tunnels contain frass and make tubers unfit for use.

Life cycle: Egg → Larva → Pupa → Adult.

Control:

Proper earthing-up.

Healthy seed tubers.

Timely harvesting.

Remove infested tubers.

Clean storage.

Proper storage management.

3. Important short notes

a) Leaf skeletonization

Larvae eat leaf tissue between veins.

Veins remain → skeleton-like leaf.

Causes defoliation and yield loss.

Control by removing larvae and using biological/need-based chemical control.

b) Tea mosquito bug

Helopeltis spp.

Sucks sap from young shoots/leaves/fruits.

Causes brown-black necrotic spots and shoot drying.

Control by monitoring, sanitation and need-based insecticides.

c) Moisture content limit

Grain must be properly dried before storage.

Generally about 10–12% moisture is suitable for long-term storage, depending on crop and conditions.

High moisture causes insects, fungi, heating and deterioration.

d) Diamondback moth

Plutella xylostella.

Major pest of cabbage and other crucifers.

Larvae produce holes and skeletonize leaves.

Control: Bt, neem, natural enemies and need-based insecticides.

e) Plant resistance to DBM

Antixenosis: Prevents feeding/egg laying.

Antibiosis: Reduces pest growth and survival.

Tolerance: Plant withstands damage with less yield loss.

4. Storage pests & control

Primary pests

Attack whole, sound grains.

Examples: Rice weevil, lesser grain borer.

Secondary pests

Attack broken/damaged grains.

Examples: Flour beetles.

Preventive control

Dry grain properly.

Clean storage structures.

Use healthy grain.

Maintain sanitation.

Curative control

Used after infestation occurs.

Remove infested material.

Use biological control or approved insecticides/fumigation where appropriate.

5. Papaya insect pests & IPM

Major pests: Papaya mealybug, fruit fly, aphid and whitefly.

Mealybug sucks sap → yellowing and sooty mould.

Fruit fly maggots damage fruits → rotting and fruit drop.

IPM:

Healthy planting material.

Remove infested parts/fruits.

Orchard sanitation.

Traps for fruit fly.

Conserve natural enemies.

Neem products.

Use registered insecticides only when necessary.