Chhatrapati Shahu Ji Maharaj
University, Kanpur

Answer Script Details
Barcode 11077147

Roll No. 25088000033
Total Mark 42/50.00

Exam Master of Science (Agriculture)(HORTICULTURE)_ODD
Subject MHORT5007 - PRODUCTION TECHNOLOGY OF WAR

Question wise Mark Summary

Q.No	Mark	Q.No	Mark	Q.No	Mark	Q.No	Mark
1A	4/5						
1B	4/5						
1C	4/5						
1D	4/5						
1E	4/5						
1F	4/5						
2	0/10						
3	0/10						
4	9/10						
5	0/10						
6	9/10						
7	0/10						
8	0/10						
9	0/10						

Chhatrapati Shahu Ji Maharaj University
Kanpur, Uttar Pradesh

PART-I

Date of Exam: 08/12/25 Shift: 1st Room No.: 103

Paper Code: MHORTS007 Subject: PTO.WSVG Year/Semester: IIIrd sem

Name of Candidate: MOH ASIF

Roll No. 2508800033

Signature of Candidate

Signature of Invigilator

COE Facsimile

PART-II

MARKS OBTAINED										
Q.	1	2	3	4	5	6	7	8	9	10
(a)										
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Total										

Total Marks in Figures — Max. Marks

Total Marks in Words

MHORTS007

Paper Code

Signature of Evaluator

Course: M.Sc (Ag) [Horti]

Session: Year/Semester: IIIrd sem

Subject: Prod. Tech. of W. Season Veg. Crops

Paper Code: MHORT5007

Exam Date: 08/12/2025

Name of Candidate: MOH ASIF

Father's Name: D RASHID

महाविद्यालय का कोड College Code: EW02

परीक्षा केन्द्र का कोड Exam Centre Code: EW02

परीक्षा का प्रकार Type of Exam: Regular ● Ex. Student ○ Private ○ Back paper Exam ○

ANSWER BOOKLET NO. 11077147

MHORTS007

Paper Code

नामांकन संख्या Enrollment Number: CSJMA200132SS49

परीक्षार्थी अनुक्रमांक संख्या Candidate's Roll Number: 2508800033

पेपर कोड Paper Code: AG5007

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नोट : 1. परीक्षार्थी को निर्देशित किया जाता है कि आवरण पृष्ठ पर अंकित सभी निर्देशों को सावधानी पूर्वक पढ़ें। 2. बॉक्स में भरी जाने वाली प्रविष्टियाँ काली स्याही से शुरू की जायें। 3. गोलों को काले या नीले बॉलपेन से भरा जायें।

INSTRUCTIONS TO THE CANDIDATE FOR FILLING PART-I

1. Read the instructions carefully given on the answer script and admit card.
2. Write Date of Exam, Shift, Paper Code & Name of Subject Correctly.
3. Write Name & Roll No. Correctly.
4. Write Semester & Branch Correctly.

INSTRUCTIONS TO THE CANDIDATE FOR FILLING PART-III

1. Use blue or black ball point pen for writing alphabets & numerals in ☐ Boxes.
2. Carefully study the example before you start marking.
3. As shown in the example below blacken the circles completely.

Correct method ① ● ③ ④

Incorrect method ⊘ ✗ ◉ ⊙

4. Make no Stray marks on this sheet.
5. **DO NOT WRITE OR MARK ON THE BAR CODE.**

परीक्षार्थी के लिए निर्देश

1. प्रवेश पत्र एवं उत्तर पुस्तिका पर दिये गये निर्देशों को ध्यान से पढ़ें।
2. कवर पृष्ठ के दूसरी तरफ कुछ न लिखें।
3. उत्तर पुस्तिका के पृष्ठों पर दोनों तरफ लिखें।
4. प्रश्न पत्र पर अपने अनुक्रमांक के अतिरिक्त कुछ न लिखें।
5. प्रश्न पत्र कोड एवं प्रश्न पत्र कोड सावधानी पूर्वक लिखें।
6. अपनी स्थिति स्पष्ट लिखें।
7. उत्तर पुस्तिका के पृष्ठों की संख्या देखें। अगर उत्तर पुस्तिका में पृष्ठ (1–24) से कम है या फटे हुए है, तो परीक्षा शुरू होने के पूर्व दूसरी उत्तर पुस्तिका ले लें।
8. प्रश्नपत्र को देख, यदि प्रश्नपत्र के विषय कोड, विषय का नाम तथा प्रश्न में कोई त्रुटि है तो उसके परीक्षा शुरू होने के 30 मिनट के अन्दर कक्ष निरीक्षक को तत्काल सूचित करें, उसके बाद विश्वविद्यालय द्वारा को कार्यवाही नहीं की जायेगी।
9. प्रश्नों के उत्तर लिखने के लिये पेंसिल का प्रयोग न करें।
10. B कोपी या अतिरिक्त ग्राफ नहीं दिया जायेगा।

IN ORDER TO AVOID UFM (UNFAIR MEANS) :

1. The Roll No. and Answer Book no. found elsewhere or any other symbol found in the answer book will be treated as unfair means.
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3. Do Not bring the materials like slip of paper/mobile/digital diaries/ study material/ revision notes in examination hall. Possession of the mobiles/ digital diaries/ electronic watch and any other electronic gadget except memory less scientific calculator shall be considered as UFM case.
4. Do not keep or paste currency note in answer script it shall be consider as UFM.

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1. Read the instructions carefully given on the Question Pap Admit Card & Answer Script.
2. Do not write anything on back side of the cover page.
3. Write on both sides of pages of answer book.
4. Do not write anything on question paper except Roll Number.
5. Write Paper Code & Question Paper Id carefully.
6. CHECK the number of pages (1-32) or any other kind of dam in your answer script, if found than change the answer sc immediately before the commencement of examination.
7. CHECK the Question Paper for any kind of discrepancy Subject Code. Subject Name and Question of the Ques Paper during first THIRTY MINUTES of the commencemen the exam, so that it can be corrected in TIME. After that corrections shall be entertained by the university.
8. Do not use pencil for answering the question.
9. Write status correctly e.g. those appearing in carry over pa should fill in status as Carry Over. Those appearing as Students should fill in status as ex.
10. No supplementary answer book & graph paper will be provide

अनुचित साधन से बचने हेतु:

1. उत्तर पुस्तिका के निर्दैशित स्थान को छोड़कर अनुक्रमांक एवं उत्तरपुस्तिका का क्रमांक कहीं और न लिखे तथा कोई भी चिन्ह न बनायें क्योंकि यह अनुचित साधन प्रयोग की परिधि में आता है।
2. उत्तर पुस्तिका के बारकोड अथवा उत्तर पुस्तिका संख्या पर छेड़ करने पर अनुचित साधन प्रयोग माना जायेगा।
3. परीक्षा कक्ष में निम्न वस्तुएं साथ न लाये, जैसे लिखे हुए कागज के टुकड़े, मोबाईल, डिजिटल डायरी, कोपी, पुस्तक यह सभी वस्तुएं जो अनुचित साधन के अन्तर्गत आती है। केवल संबंधित प्रश्नपत्र में ही मेमोरी लेस साइंटफिक कैल्कुलेटर ले जाने की अनुमन्यता होगी।
4. उत्तर पुस्तिकाओं में रूपये न रखें न ही उत्तर पुस्तिका में चिपकायें। ऐसा करना अनुचित साधन प्रयोग की परिधि में आता है।

INSTRUCTIONS TO THE CANDIDATE FOR FILLING PART-

1. Use blue or black ball point pen for writing alphabets & number in ☐ Boxes.
2. Use blue or black ball point pen for filling the circles.

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Note - If your Roll No. is of 10 digits. Please leave first three col

Paper Code

01

Section – A

Ans of Qus – 1 (A)

Damping off – Damping off is a serious disease of nursery. It is mostly occure in the crops which requires their seedlings to be raised in nursery. This disease is common in warm season vegetables such as Tomato, Brinjal, Chilli etc. This is severe disease in waterlogged soils.

Causal organism – It is mainly caused by diffent fungi based on crops. There are important damping off causing fungi: Pythium aphanidermatum, Phytophthora parasitica, Fusarium spp, Rhizoctonia solani etc

Symptoms of damage –

1. It may cause in both pre & post emergence stage.
2. Rotting at the base of stem is prime symptom.
3. Plant wilted soon & die
4. Most commonly occure in nursery with water logging conditions.

Management –

1. Avoid over watering
2. Proper drainage
3. Summer deep ploughing
4. Grow resistant varieties

5. Chemically spray of fungicides like dithan M-45
6. Roging out infected plant.

Ans of Que 1(B)

Cat face – Cat face is a severe physiologic disorder of tomato. Affected fruit reduce quality & market price.

Symptoms – It is the result of destruction of Blossom End Rot. Development of ridges, scars & blotches on fruit is the main symptom to identify this disorder. Tomato fruits affected from this disorder display sunken leathery & dark colouration at the blossom end of fruit.

Cause of disorder – This disorder mainly caused by unfavorable climate condition like extreme heat, frost, high rainfall & other abiotic stress during fruit development.

Management –

1. Grow resistant varieties
2. Provide controlled atmosphere
3. Grow tomato in Poly house.
4. If this disorder is result of mineral deficiency then provide the essential nutrients.

Paper Code

03

Ans of Que - 1(C)

River bed cultivation — It is also known as Diyara cultivation. This is most commonly practiced in Cucurbitaceae crops specially melons. There is a brief cultivation of muskmelon under diyara conditions -

BN- Cucumis melo
Family - Cucurbitaceae
2n — 24
origin — East africa

- Seed rate for diyara - 1.5 - 2 kg/ha
  Spacing for diyara — 1.5 x 1 meter
  Methods for diyara — In ridge & furrow
- Suitable varieties — Pusa madhuras, Pusa madhuras, Pusa sharbati, Punjab sunheri, Hara madhu, Durgapur madhu, Hisar madhu, Arka Jeet, Arka Jegtees.
- Nutrient mnt —
  F.Y.M - 200 - 250 q/ha
  NPK — 80-100 : 60-80 : 60-80 kg/ha
  Full P2O5 & K2O and Half N at the time of sowing & remaining half of dose of N2 after 1 month at flowering
- Yield — 150 - 200 q/ha
- Harvesting — Half slip stage, Full slip stage & Netting stage in Pusa madhu

Paper Code

04

Ans of Qus- 1 (D)

Shoot & Fruit Borer

Shoot & Fruit borer is a severe pest of Brinjal crop. It infect brinjal fruit & shoots.

- Causal organism — It is an insect which is scientifically known as Leucinodes orbonalis
- Symptoms of damage — Symptoms may be occure in the following points.

1. Withering of tender shoots
2. Development of 'Dead hearts' on shoots
3. Bore holes are seen on shoot & fruit.
4. Bore holes are plug with excreta of insect.
5. Due to excreta a bad odour comes from fruits.
6. Withering & dying of leaves
7. Shedding of flower buds.

- Management — This insect may be control by the following practices.

1. Good resistant varieties eg. Arka shirish, Arka shel, Arka nidhi etc
2. Apply pheromon trap @ 12/hac
3. Application of Neem Seed Extract Kernel.

Paper Code

05

4. Apply insecticides such as Dimethoate, Quinalphos, Cypermethrin, Malathion etc.

Ans of Que - 1 (E)

Off Season Vegetable production

Off season vegetable production are also known as Vegetable forcing.

It is an agriculture technique which allows to grow / cultivation of crops outside their natural growing season by manipulating environmental factor such as temperature, relative humidity, Light etc.

This practical used for centuries to ensure the continuous supply of fresh vegetables.

Historically it was practiced in Europe by using methods such as clotches, Hotbeds & Heated green houses.

Methods - Several methods are used in vegetable forcing from traditional technique like cold frame, hotbeds to modern innovation like green house & artificial lighting.

1. Cold frame — These are simple & low cost structure. They provide insulated environment for plant growth.

2. Hot beds — They function similar to cold frame but it incorporate a heat unit like decompose organic manure. Breakdown of organic manure generate heat which warms the soil & accelerate

plant growth.

3. Green house — GH are most advance & widely used in vegetable farming. They manipulate the temp., humidity & light as suitable to crop growth.

Advantages —
1. off season vegetable production
2. Round year production
3. Increase yield
4. Increase market price.
5. Low risk of insect, pest & disease.

Disadvantages —
1. High initial cost
2. Required skilfull labour
3. Require proper maintenance

Paper Code

07

Ans of Que- 1 (F)

Yellow Vein Mosaic Virus

It is a severe viral disease most commonly occures in okra crop.

- Causal organism — okra Yellow Vein Mosaic Virus. This disease is transmitted by White fly botanically known as Bamisia tabaci.
- Symptom of damage — Following are the major symptoms of disease occurrence.

1. Yellowing the entire network of leaf blade.
2. In the severe infection leaves turns yellow, size reduce & curling of leaves.
3. Infection may occure at any stage of growth.
4. Due to infection plant does not bear flower & fruits.
5. If plant bear fruits fruits turns smaller & harden.
6. Immediate after infection whole plant wilted.

- Management —

1. Grow resistant varieties like Parbhani kranti, Arka abhay Arka anamika, Punjab padmini, Varsha uphar.
2. Rouge out infected plant & burning out
3. For vector control spray Imidacloprid / Acetamiprid.
4. Fumigate the soil with Furadon @ 1.5 kg active ingredient per hec.

Paper Code

08

Section – B

Ans of Qus- 4

1- Production Technology of Okra crop-1-

Botanical name – Abelmoschus esculentus
Family – Malvaceae
Chromosome number – 2n = 130 (Amphidiploid)
origin – Ethiopia
Fruit type – Capsule
Mode of Pollination – Often Cross pollinated.

- Introduction & Importance –
1. Okra is a good source of Vit-B, C, Calcium, Potash, Iron & Iodine.
2. Okra contains 33 gm Calories, 7.45 gm CHO, 1.93 gm Protein & 3.2 gm fiber.
3. Its stem & roots are used in clarification of sugarcane juice.
4. Okra has medicinal value and commonly used in Genito urinary disorder, Spermatorrhea & Chronic dysentery disease.
5. Stickiness is due to Mucilage enzyme.

- Climate – It is a warm season crop. it requires 25-30°C temp. for growth & development. Temp. above than 42°C is the main cause of flower drop. Optimum rainfall for okra cultivation is 60-150 cm annum.

Paper Code

09

- Soil & Field preparation — Well drained, fertile, loam to sandy loam soil with 5.5-7.5 pH is suitable for okra cultivation.
  For field preparation adopt 2-3 deep ploughing with cultivator & 1-2 light ploughing with harrow.

- Nutrient management — Proper nutrient management for good cultivation is essential.

FYM — 200-250 q/h at the time of field preparation
NPK — 100:60:50 kg/ha

Half dose of N & Full dose of P & K at seed sowing & remaining half N at flowering.

- Seed & sowing —

1. Seed rate: Rainy: 8-10 kg/ha
   Summer: 12-15 kg/ha

2. Time of sowing: Rainy — July-Aug
   Summer — Feb-March

3. Spacing: 45×30 or 60×45 cm

4. Seed treatment: Captan / Thiram @ 2-2.5 g/kg seed.

5. Method of sowing: In flatbed & Ridge and Furrow

- Varieties — Pusa makhmali, Pusa sawani, Parbhani kranti, Perkinsiang green, Harbhajan Hindi, Varsha uphar, Arka abhay, Arka anamika, Punjab padmini

Hybrids: Kashi Lalima (Swarnath Chaurasiya), Kashi Vaisau, Kashi Mohini, Kashi Pragati, Kashi Kesari, Arka Nikita,

Mutants: EMS-1, PDV-8 (Both are mutant of Pusa sawani).

- Irrigation — First irrigation just after planting & subsequent irrigation 98 per requirement. In summer at 3-4 day interval & in Rainy season no need of irrigation.

- Weed management — 1-2 weeding with khurpi at 20th & 35th day after sowing. Chemically spray of Alachlor / Fluchloralin @ 1.25-1.5 kg/Ac

- Harvesting — Fruits are picked at green, tender & long stage of fruits after 7-8 days of flowering.

- Yield — Rainy: 90-100 qtl
  Summer: 60-65 qtl

- Seed yield - 12-15 ton/ha
  I-D - Foundation seed = 400 m
  Certified seed - 200 m

Paper Code

11

Plant protection —

Insects : Following are major insects

1. Spotted boll worms
2. Aphid
3. Jassid
4. White fly
5. Root knot nematode

control - Spray of insecticides like malathion, cyper methrin, Dimethoate etc.

Disease - Important Disease are listed below

1. Yellow Vein Mosaic Virus
2. Bacterial blight
3. Downy mildew

Section – C

Ans of Qus - 6

Solanaceae Vegetables — Solanaceae vegetables are the group of vegetables which belongs to solanaceae family. eg. Potato, Tomato, Chillie, Brinjal etc.

-i- Cultivation of Chilli -i-

B.N — Capsicum annum
Family — Solanaceae
origin — S. America
2n no — 2x = 24 (Diploid)
Fruit type — Berry
Pollination — Cross pollinated / self pollinated

- Importance —

1. India is the leading chilli producer in world
2. Andhra pradesh occupy 1st rank in chilli prod.
3. Chilli is cultivated for Vegetable, pickle & spices
4. It is rich source of Vit B & C
5. Pungency in Chilli is due to Capsaicin $[C_{18}H_{27}O_3N]$
6. Red color is due to 'Capsanthin'

- Climate — It is a warm season crop it grow well in tropical & subtropical conditions.

Opt temp. — 24°C for growth (20-25°C)
Rainfall — 75-150 cm annum
Altitude — 2000 m from sea level.

- Soil & field preparation — It grow well in Loam to sandy loam soil rich in organic matter with 5.5-6.5 pH.
  Field is prepared by 2-3 deep ploughing with cultivator & light ploughing by rotavator.

- Nutrient management —

FYM — 200-250 q/h
NPK — 150 : 75 : 75 kg/Hec

Method: FYM at the time of field preparation Half dose of N_2 & Full P_2O_5, K_2O at seed sowing as basal dressing & remaining N_2 in two equal split doses at 25th & 35th day after transplanting.

- Seed & sowing —
  1. Seed rate: Spice — 1-1.5 kg/h
     Vegetable — 400-500 g/h
  2. Time of sowing: Oct - Nov
  3. Method: Propose seedlings at nursery & transplanting in plot beds

4. Spacing — Spice — 45×30 cm
Vegetable — 60×45 cm

5. Nursery — In 1/50 part of total area
6. Size of nursery bed — 10-12 beds per hec or required of 8m × 1.2m × 0.15 m size.

7. Transplanting — After 4-6 weeks of sowing in nursery.

- Varieties —

Spices: Pusa Sheftali, Pusa Jwala, NP-46A Kashi anupam, Kashi Vishwanath, Kalyanpur Chanchal, Kalyanpur Samrattan, Kalyanpur Rohini, Bhoot Jolokia, Andhra Jyoti

Vegetable — California wonder, Yellow wonder, Bullock Pusa deepti, Sonnet, Golden queen, Arka Rohini.

Pickle — Bharat, Kalyanpur Kalyan

- Irrigation —

Summer — 3-4 day interval
Winter — 8-10 day interval

- Weed mgt — Stomp, Pendimethalin, Alachlor, 1.25-1.5 kg a.i./ha

Yield — Green chilli — 80 — 100 Q/h
Dry chilli — 20 - 25 Q/h
Shimla mirch — 250 - 300 Q/h
Hybrid — 450 Q/h

Harvesting — After 60 days at green stage of fruit. generally 6-8 picking in green fruit & 2-3 picking in ripe fruit.

Disease — Anthracnose
Leaf spot
Leaf curl
MOSAIC

Insect — Fruit borer
White fly
Aphid
Jassid
Thrips

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