

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE  
SEMESTER END THEORY EXAMINATION  
B.Sc.(Hons.) Agriculture

Semester	: IV (New)	Term	: Second	Academic Year	: 2022-23
Course No.	: AGRO 248	Title	: Principles of Organic Farming		
Credits	: 2 (1+1)	Time	: 09:00 to 11:00 hrs.	Total Marks	: 40
Day & Date	: Thursday, 06.07.2023				

- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 What do you mean by certification? Write minimum requirement for organic certification and enlist accredited certification agencies involved in it.
- Q.2 Describe in short weed management in organic mode of production.
- Q.3 Write in detail about pest and disease management in organic farming.
- Q.4 Write in detail about the criteria for choosing the varieties in organic farming.
- Q.5 What is organic farming? Describe in brief the important principles of organic farming.
- Q.6 Describe in detail the operational structure of NPOP.
- Q.7 Write in short about marketing and export potential of organic produce.
- Q.8 Define green manuring. Write its types, advantages and disadvantages.
- Q.9 Explain in detail about vermicomposting technology.
- Q.10 Write short notes on (Any Two):
- a) Biofertilizer    b) Compost enrichment    c) Packing and labeling of organic produce

SECTION 'B'

- Q.11 State True or False:
- 1) The Department of Commerce shall act as the apex body of the NPOP.
  - 2) The benefits of organic practices are seen immediately.
  - 3) 'Biochar' is an organic carbon rich material produced via pyrolysis of agricultural bio-waste such as wood chip or crop straw.
  - 4) The use of genetically engineered seeds, transgenic plants or plant material is not prohibited.
- Q.12 Match the pairs:
- |                                 |                            |
|---------------------------------|----------------------------|
| 'A'                             | 'B'                        |
| 1) NPOP                         | a) Hyderabad               |
| 2) Non-symbiotic nitrogen fixer | b) 2 <sup>nd</sup> October |
| 3) CRIDA                        | c) Solapur                 |
| 4) MOFF                         | d) <i>Azotobacter</i>      |
|                                 | e) Ghaziabad               |

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE  
SEMESTER END THEORY EXAMINATION

B.Sc.(Hons.) Agriculture

Semester	IV (New)	Term	Second	Academic Year	2022-23
Course No.	AHDS 242	Title	Livestock Breeding and Nutrition		
Credits	2 (1+1)	Time	09:00 to 11:00 hrs.	Total Marks	40
Day & Date	Friday, 07.07.2023				

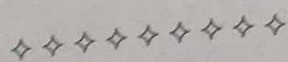
- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1. Enlist the methods of selection. Explain independent culling method.
- Q.2. Define feeding standards. State the advantages of feeding standards.
- Q.3. Differentiate between qualitative and quantitative traits of farm animals.
- Q.4. Give the classification of feed stuffs with suitable example.
- Q.5. Enlist the systems of breeding. Write advantages and disadvantages of Crossbreeding.
- Q.6. Define nutrient. Enlist different types of nutrient and explain functions of water in animal body.
- Q.7. Describe the digestion and absorption of proteins in ruminants.
- Q.8. Draw a well labeled diagram of digestive system of cow and explain rumen.
- Q.9. Define mutation. Give its characteristics and classification.
- Q.10. Write short notes on (Any Two):
  - a) Scope of Animal Breeding in India
  - b) Hardy-Weinberg Law
  - c) Mendel's Law of Segregation

SECTION 'B'

- Q.11. Fill in the blanks:
- 1) In large population of cattle, the frequency of heterozygotes will not be greater than \_\_\_\_\_%.
  - 2) Deficiency of vitamin \_\_\_\_\_ causes night blindness.
  - 3) In meiosis, exchange of genetic material takes place in \_\_\_\_\_ stage of cell division through chiasma.
  - 4) The allowance of feed given to the animal for a period of 24 hours is called \_\_\_\_\_.
- Q.12. Define the following terms:
- 1) Half Sib
  - 2) Feed Additives
  - 3) Species
  - 4) Animal Breeding



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SEMESTER END THEORY EXAMINATION  
B.Sc.(Hons.) Agriculture

Semester	: IV (New)	Term	: Second	Academic Year	: 2022-23
Course No.	: ENGG 243	Title	: Renewable Energy and Green Technology		
Credits	: 2 (1+1)	Time	: 09:00 to 11:00 hrs.	Total Marks	: 40
Day & Date	: Saturday, 08.07.2023				

- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 What is biomass? Give the uses of biomass.
- Q.2 Explain KVIC biogas plant with its advantages and disadvantages.
- Q.3 What is gasification? Enlist types of gasifiers and explain downdraft gasifier.
- Q.4 Explain box type solar cooker.
- Q.5 What is solar water heating? Explain direct natural circulation type solar water heater.
- Q.6 Discuss working of solar still.
- Q.7 What is solar drying? Enlist different types of solar dryer.
- Q.8 Discuss the application of solar photovoltaic system.
- Q.9 Give the uses of wind energy system.
- Q.10 Compare conventional and non-conventional energy sources.

SECTION 'B'

- Q.11 Define the following terms:

- 1) Anaerobic digestion
- 2) Gasification
- 3) Hydraulic retention time
- 4) Solar cell

- Q.12 Fill in the blanks:

- 1) Insulation is provided in solar devices to minimize the \_\_\_\_\_.
- 2) Wind is the result of uneven heating of the \_\_\_\_\_.
- 3) The calorific value of biogas is \_\_\_\_\_ kcal/m<sup>3</sup>.
- 4) Orientation of solar appliances are generally \_\_\_\_\_ facing.





MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE  
SEMESTER END THEORY EXAMINATION

B.Sc.(Hons.) Agriculture

Semester	: IV (New)	Term	: Second	Academic Year	: 2022-23
Course No.	: ENTO 243	Title	: Pest of Horticultural Crops and their Management		
Credits	: 2 (1+1)	Time	: 09:00 to 11:00 hrs.	Total Marks	: 40
Day & Date	: Monday, 10.07.2023				

- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 Describe the nature of damage and management practices for Banana pseudostem borer and Sapota bud borer.
- Q.2 Write the scientific name, host plants, nature of damage and management practices of diamond back moth.
- Q.3 Give the site of oviposition and management strategies of the following pests:  
a) Coconut black headed caterpillar      b) Pomegranate fruit borer
- Q.4 Explain the nature of damage and management strategies for Tomato fruit borer and Pumpkin beetle.
- Q.5 Write short notes on:  
a) Pollu beetle      b) Coffee berry borer
- Q.6 Explain the nature of damage and management practices for Okra leaf hopper and whitefly.
- Q.7 Write the scientific name and nature of damage of Fig jassids and Grape stem girdler.
- Q.8 Enlist any four important insect pests of Citrus along with scientific name. Describe nature of damage and management practices of Citrus psylla.
- Q.9 Enlist four major pests of Mango with scientific names. Describe the nature of damage, and management practices for Mango hopper.
- Q.10 Describe the nature of damage and suggest management practices for Turmeric rhizomefly and Rose bud borer.

SECTION 'B'

- Q.11 Give the site of pupation of the following pests:  
1) Hadda beetle    2) Brinjal shoot and fruit borer    3) Ber fruit fly    4) Potato tuber moth
- Q.12 Do as directed:  
1) The predator, *Cryptolaemus montrouzieri* is used to control \_\_\_\_\_.  
2) *Helopeltis antoni* is a pest of \_\_\_\_\_.  
3) Which plant parasitic nematode is responsible for galls on root?  
4) Chilli leaf curl, an important disease of chilli peppers is caused by \_\_\_\_\_.



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SEMESTER END THEORY EXAMINATION  
B.Sc.(Hons.) Agriculture

Semester	: IV (New)	Term	: Second	Academic Year	: 2022-23
Course No.	: GPB 243	Title	: Principles of Seed Technology		
Credits	: 3 (1+2)	Time	: 09:00 to 11:00 hrs.	Total Marks	: 40
Day & Date	: Tuesday, 11.07.2023				

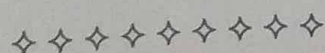
- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 Define seed technology and write down role of seed technology.
- Q.2 Describe hybrid seed production of Maize in regard to the following points:  
a) Isolation distance    b) Planting ratio    c) Detasseling    d) Field inspection
- Q.3 What do you mean by seed certification? Write down the phases of seed certification.
- Q.4 Describe in detail about the different classes of seed.
- Q.5 What is Seed Act? Write down its applicability, sanctioning regulations and regulatory legislation.
- Q.6 Define seed quality. Give the characters of good quality seed.
- Q.7 Write the importance of seed storage and describe in brief factors affecting seed longevity during storage.
- Q.8 Explain in detail factors affecting deterioration of a crop variety.
- Q.9 Furnish the information on the following points with regards to hybrid seed production of Cotton:  
a) Planting ratio    b) Rouging    c) Emasculation    d) Pollination
- Q.10 Write short notes on (Any Two):  
a) Field inspection  
b) Seed marketing  
c) Seed testing

SECTION 'B'

- Q.11 Define the following terms:  
1) Synchronization    2) Rouging    3) Dockage    4) Pollen shedder
- Q.12 Expand the following abbreviations:  
1) ISTA    2) MSSC    3) NSC    4) MSCS





MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE  
SEMESTER END THEORY EXAMINATION

B.Sc.(Hons.) Agriculture

Semester	: IV (New)	Term	: Second	Academic Year	: 2022-23
Course No.	: HORT 243	Title	: Production Technology for Fruit and		
Credits	: 2 (1+1)		Plantation Crops		
Day & Date	: Wednesday, 12.07.2023	Time	: 09:00 to 11:00 hrs.	Total Marks	: 40

- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 Write the importance of fruit and plantation crops in India.
- Q.2 Write the cultivation of Mango on the following points:
- a) Soil and Climate
  - b) Propagation
  - c) Improved Varieties
  - d) Harvesting and Yield
- Q.3 Describe in brief the cultivation of Coffee on the following points:
- a) Soil and Climate
  - b) Propagation and Planting
  - c) Improved Varieties
  - d) Processing
- Q.4 Describe the cultivation of Coconut in respect to the following points:
- a) Soil and Climate
  - b) Propagation
  - c) Improved Varieties
  - d) Harvesting and Yield
- Q.5 Write cultivation practices of Grapes on the following aspects:
- a) Soil and Climate
  - b) Propagation
  - c) Training and Pruning
  - d) Harvesting and Yield
- Q.6 Write the cultivation of Guava on the following aspects:
- a) Soil and Climate
  - b) Planting
  - c) Varieties
  - d) Harvesting and Yield
- Q.7 Describe the cultivation of Cashew nut on the following points:
- a) Soil and Climate
  - b) Propagation and Planting
  - c) Varieties
  - d) Harvesting and Yield
- Q.8 Describe the cultivation of Mandarin on the following points:
- a) Soil and Climate
  - b) Propagation
  - c) Improved Varieties
  - d) Harvesting and Yield

(P.T.O.)

Q.9 Write short notes on:

- a) High density planting
- b) Papain extraction

Q.10 Describe the cultivation of Apple on the following points:

- a) Soil and Climate
- b) Propagation
- c) Varieties
- d) Harvesting and Yield

#### SECTION 'B'

Q.11 Fill in the blanks:

- 1) Sindhu is the variety of \_\_\_\_\_.
- 2) The botanical name of Plum is \_\_\_\_\_.
- 3) Pineapple is propagated by \_\_\_\_\_.
- 4) Salt resistance rootstock of Grape is \_\_\_\_\_.

Q.12 Match the pairs:

'A'

'B'

- |                |                  |
|----------------|------------------|
| 1) Guava       | a) Euphorbiaceae |
| 2) Pomegranate | b) Punicaceae    |
| 3) Jackfruit   | c) Myrtaceae     |
| 4) Rubber      | d) Moraceae      |



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SEMESTER END THEORY EXAMINATION

B.Sc.(Hons.) Agriculture

Semester	: IV (New)	Term	: Second	Academic Year	: 2022-23
Course No.	: ELE-PATH 243	Title	: Bio-fertilizers, Bio-control agents and Bio-pesticides		
Credits	: 3 (2+1)				
Day & Date	: Thursday, 13.07.2023	Time	: 09:00 to 12:00 hrs.	Total Marks	: 80

- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 a) Write the contributions made by the following Scientists:  
i. S.N. Winogradsky ii. J.B. Boussingault iii. M.W. Beijerinck iv. S.A. Waksman  
b) Enlist different microorganisms used as a biofertilizer, bioagent and biopesticide in organic farming system.
- Q.2 a) Describe the growth characteristics of *Azotobacter* and *Rhizobium*.  
b) Give brief account of classification of biofertilizers based on microorganism used by citing suitable example.
- Q.3 What is the Nitrogen cycle in nature? Draw a neat diagram of nitrogen cycle. Describe the biochemical reactions in nitrogen cycle.
- Q.4 a) Write in short:  
i. Enzyme nitrogenase and its components ii. Cross inoculation groups of *Rhizobia*  
b) Explain in detail any two methods used for studying selection of efficient strain of *Rhizobium*.
- Q.5 a) Write in brief different methods of application of carrier based biofertilizers.  
b) Explain in short:  
i. Mechanism of nodule formation ii. Mechanisms of disease controlled by bioagents
- Q.6 a) Discuss the role of microorganism in decomposition of organic farm waste.  
b) What are the factors responsible for effectiveness of biocontrol agent on soil borne plant pathogen? Explain in brief.
- Q.7 Describe (Any Two):  
a) Registration of biopesticides with CIB b) Ideal features for establishing insectary  
c) Ideal features for establishing biofertilizer laboratory
- Q.8 Explain in brief Standard Quality parameters for the following microbial inoculants:  
a) *Rhizobium* spp. b) *HaNPV* c) *Metarhizium* spp. d) *Pseudomonas* spp.
- Q.9 Explain in detail mass multiplication and packing of the following (Any Two):  
a) *Trichoderma* spp. b) *HaNPV* c) *Azotobacter* spp. d) *Metarhizium* spp.
- Q.10 Describe the importance of the following (Any Four):  
a) *SNPV* b) *Verticillium* spp. c) *Beauveria* spp. d) *Pseudomonas* spp.  
e) *Trichogramma* spp.



## SECTION 'B'

Q.11 Answer in one sentence:

- 1) Name the fungal bioagent used for the management of soil borne pathogens.
- 2) Name the biopesticide which causes the white muscardine disease in insects.
- 3) Name the biopesticide which causes the green muscardine disease in insects.
- 4) Write any one bacterial bioagent used for the management of plant diseases.
- 5) Name the medium used for the isolation of BGA.
- 6) Write the full form of CIB.
- 7) The NPV is effective for the management of which insect?
- 8) The *Cryptolaemus* spp. is effective for the management of which insect?

Q.12 Choose the correct answer-option:

- 1) The *Paecilomyces lilacinus* is effective to manage \_\_\_\_\_ disease.  
 a) Fungal                      b) Bacterial                      c) Viral                      d) Nematode
- 2) \_\_\_\_\_ is a selective medium for isolation of *Azospirillum* spp.  
 a) NFB semi-solid medium                      b) Pikovaskya's medium  
 c) CRYEMA                      d) Jenesen's medium
- 3) The \_\_\_\_\_ encoding enzymes are involved in the fixation of atmospheric nitrogen into available form of nitrogen.  
 a) Nif gene                      b) Nod gene                      c) Both 'a' and 'b'                      d) None of these
- 4) In carrier based biofertilizer, the proportion of broth culture and carrier powder by weight, is \_\_\_\_\_.  
 a) 1:10                      b) 1:5                      c) 1:4                      d) 1:2
- 5) A genus which belongs to Vesicular Arbuscular Mycorrhiza (VAM) is \_\_\_\_\_.  
 a) *Pseudomonas* spp.                      b) *Gigaspora* spp.                      c) *Nocardia* spp.                      d) *Micromonospora* spp.
- 6) Vinegar is obtained from molasses with the help of \_\_\_\_\_.  
 a) Yeast and *Acetobacter*                      b) Yeast and *Rhizobium*  
 c) Yeast and *Rhizopus*                      d) Yeast and *Mucor*
- 7) Which is the Potash Solubilizing as well as Mobilizing Bacteria?  
 a) *Fraturia aurantia*                      b) *Cellulomonas folia*  
 c) *Bacillus stearothermophilus*                      d) None of these
- 8) Who discovered the antibiotic 'Streptomycin' produced by *Streptomyces griseus*?  
 a) Alexander Fleming                      b) Hiltner                      c) S.A. Waksman                      d) M.W. Beijerinck



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Semester	: IV (New)	Term	: Second	Academic Year	: 2022-23
Course No.	: ELE-EXTN 244	Title	: Agricultural Journalism		
Credits	: 3 (2+1)	Time	: 09:00 to 12:00 hrs.	Total Marks	: 80
Day & Date	: Thursday, 13.07.2023				

- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 Define the term Journalism and write the importance of Journalism in detail.
- Q.2 What is meant by Agricultural Journalism? Discuss its problems.
- Q.3 Write in detail about the language and style basics of newspapers and magazines.
- Q.4 Write in detail about any four types of the Agricultural Story.
- Q.5 What are the important parts of newspaper? Discuss any six parts in brief.
- Q.6 Discuss the different sources of information for gathering Agricultural Information.
- Q.7 Write in detail the role of Agricultural Journalism in Agricultural Development.
- Q.8 Explain in detail the types of Interviews and discuss about points to be kept in mind while interviewing.
- Q.9 Write in detail steps involved in measuring the readability of extension publication.
- Q.10 Write in detail the prospectus of Agricultural Journalism.

SECTION 'B'

- Q.11 a) Define the following terms:

- |                |                 |
|----------------|-----------------|
| 1) Newspaper   | 2) Magazine     |
| 3) Readability | 4) Illustration |

- b) State True or False:

- 1) A popular magazine which caters to the general public uses non-technical language.
- 2) Press Trust of India (PTI) is India's premier news agency, having a reach as vast as the Indian Railways.
- 3) The purpose of proof reading is to avoid errors in printed materials.
- 4) Newspaper stories interpret or explain the meaning of news to us.

(P.T.O.)

Q.12 a) Fill in the blanks:

- 1) Most commonly used forms of news story writing is \_\_\_\_\_.
- 2) A person who writes for a newspaper, magazine or a journal is known as \_\_\_\_\_.
- 3) \_\_\_\_\_ is condensed news, which gives abstract of entire information.
- 4) An article in which the people, who run a newspaper give their opinion on an important issue, is called \_\_\_\_\_.

b) Do as directed:

- 1) Spell-out ABCs of Journalism.
- 2) Write two examples of artwork used in news stories.
- 3) Write names of any two Farm Journals.
- 4) What is 5 Ws and 1 H in News?





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SEMESTER END THEORY EXAMINATION

B.Sc.(Hons.) Agriculture

Semester : IV (New)	Term : Second	Academic Year : 2022-23
Course No. : SSAC 242	Title : Problematic Soils and their Management	
Credits : 2 (1+1)		
Day & Date : Friday, 14.07.2023	Time : 09:00 to 11:00 hrs.	Total Marks : 40

- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 Define degraded soil. Write in short about types of soil degradation.
- Q.2 Define soil quality. Discuss about different soil quality indicators.
- Q.3 Define saline soil. Describe the management practices of saline soil.
- Q.4 Define coastal saline soils. State the problems of coastal saline soil.
- Q.5 How are acid sulphate soils formed?
- Q.6 What are the characteristics of calcareous soil? How do calcareous soils affect plant growth?
- Q.7 Define soil erosion. Give the factors causing soil erosion.
- Q.8 Describe the effect of submergence on plant growth.
- Q.9 What is pollution? Write in brief about the kinds of soil pollutants.
- Q.10 What is quality irrigation water? Describe the management practices of soil under saline water irrigation.

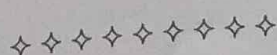
SECTION 'B'

- Q.11 Define the following terms:

- 1) Soil health
- 2) Soil pollution
- 3) Phytoremediation
- 4) Remote sensing

- Q.12 State True or False:

- 1) Deforestation reduces the soil erosion process.
- 2) Saline soil is having pH greater than 8.5.
- 3) Lime is used for reclamation of acidic soil.
- 4) More availability of nutrient is in neutral pH range.



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Register No.	IV (New)	Term	Second	Academic Year	2022-23
Roll No.	AGRO 246	Title	Crop Production Technology-II		
Date	2 (1+1)		(Rabi crops)		
Date	Saturday, 15.07.2023	Time	09:00 to 11:00 hrs.	Total Marks	40
Note :	1. Solve ANY EIGHT questions from SECTION 'A'. 2. All questions from SECTION 'B' are compulsory. 3. All questions carry equal marks. 4. Draw neat diagram wherever necessary.				

SECTION 'A'

1. State the dry land technologies adopted while cultivating rainfed *rabi* Sorghum under rainfed condition.
2. Explain the package of practices of irrigated Wheat on the following points:  
a) Soil and climatic requirements      b) Varieties  
c) Irrigation scheduling      d) Harvesting and yield
3. Write the package of practices of desi Brown Chickpea on the following points:  
a) Seed and sowing      b) Varieties  
c) Manures and fertilizers      d) Harvesting and yield
4. State the cultivation of Sunflower on the following points:  
a) Field preparation      b) Seed and sowing  
c) Varieties      d) Irrigation management
5. Write the cultivation practices of Mustard on the following aspects :  
a) Climatic requirements      b) Seed and sowing  
c) Varieties      d) Harvesting and yield
6. State package of practices of *suru* Sugarcane on the following points:  
a) Planting      b) Fertilizer requirement  
c) Varieties      d) Irrigation management
7. Write the cultivation practices of Tobacco on the following aspects:  
a) Soil requirements      b) Time of transplanting  
c) Preparation of field      d) Fertilizer requirement
8. State the cultivation of Lentil on the following points:  
a) Seed and sowing      b) Varieties  
c) Disease management      d) Harvesting and yield

(P.T.O.)

Q.9 Prepare a leaflet on the 'Cultivation of Lucerne'.

Q.10 Write short notes on (Any Two):

- a) Malting in Barley
- b) Sowing and varieties of Oat
- c) Processing of Sugar beet for sugar manufacturing

#### SECTION 'B'

Q.11 Do as directed:

- 1) Why is it essential to cover the potato tubers with soil during Interculturing operations?
- 2) Essential oil of *Mentha arvensis* is used in food, flavor industry and pharmaceutical preparations (State True or False).
- 3) \_\_\_\_\_ is used as oilseed and fiber crop (Fill in the blank).
- 4) The chief constituent of Lemon grass/Citronella oil is the citral that imparts strong lemon-like aroma (Choose the correct word).

Q.12 Match the pairs:

'A'

- 1) French bean
- 2) Safflower
- 3) Sweet potato
- 4) Sweet corn

'B'

- a) Topping
- b) Vine cuttings/ slips
- c) *Zea mays saccharata*
- d) *Pisum sativum* L.
- e) Fabaceae

