

AGRICULTURE (Optional) (Paper – I)**Standard : Degree****Nature : Conventional (Essay) type****Total Marks : 200****Duration : Three hours****N.B. :** 1) *Answers must be written in **English**.*2) *Question No. 1 is **compulsory**. Of the remaining questions, attempt **any Four** selecting one question from **each** section.*3) *Figures to the **RIGHT** indicate marks of the respective question.*4) *Number of optional questions upto the prescribed number in the order in which they have been solved will only be assessed. Excess answers will not be assessed.*5) *Credit will be given for orderly, concise and effective writing.*6) *Candidates should not write roll number, any name (including their own), signature, address or any indication of their identity anywhere inside the answer book otherwise he/she will be penalised.***Marks****1. Answer any four of the following :****(40 Marks)**

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| (a) Define multi-storey cropping and relay cropping. Explain the principles and importance of each in enhancing the resource use efficiency. | 10 |
| (b) (1) What is soil conservation ? Explain in brief agronomic and cultural practices of soil conservation. | 5 |
| (2) Define dry land agriculture. Explain seasonal planning for dry land farming. | 5 |
| (c) Describe the benefits of drainage in brief in relation to soil improvement and crop growth. | 10 |
| (d) What do you understand by formal and informal gardens ? Give at least two examples of each. Also give main features of any two gardens. | 10 |
| (e) Describe the importance and scope of dryland horticulture in Maharashtra. | 10 |

SECTION – A**2. Answer the following :**

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| (a) Enumerate the predominant environmental pollutants. Describe their effects on crop plants. | 10 |
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- (b) What do you understand by integrated weed management ? List out the important weeds associated with rice and cotton in different parts of Maharashtra. What integrated management practices you suggest for their control. 10
- (c) Describe production techniques of rice in North Konkan Coastal Zone of Maharashtra with emphasis on varieties, system of rice establishment, fertilizer, water and weed management practices. 10
- (d) What do you understand by tillage systems ? Discuss the conventional and conservation tillage systems. 10
3. Answer the following :
- (a) Explain eco-system and agro-ecology with the help of conceptual models. 10
- (b) Describe the principles and practices of organic farming. Briefly discuss the constraints of organic farming. 10
- (c) Describe the improved techniques for cultivation of sugarcane in Western Maharashtra Plain Zone. 10
- (d) What is modern concept of tillage ? How are the objectives of tillage are achieved under this concept ? 10

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SECTION - B

4. (a) Answer the following sub-questions.
- (i) State types of soil survey. Describe in detail characteristics of land capability class I, II and III. 5
- (ii) Explain the factors of soil formation. 5
- (iii) Enlist physicochemical properties of soil. Describe soil structure and soil reaction. 5
- (b) (i) State types of erosion and explain in detail factors affecting erosion by water. 5
- (ii) Differentiate between Saline and Alkali soils state measures of reclaiming saline soils. 5
- (c) (i) State Arnon's criteria of essentiality of plant nutrients. State the functions of Nitrogen and deficiency symptoms phosphorus in plants. 5
- (ii) Define organic manure. Classify nitrogenous fertilizers on the basis of form of nitrogen along with example of each class. 5
- (iii) Explain in brief 'Slow release' fertilizers. Write in detail about the use of glyricidia green manuring and use of blue green algae in low land rice. 5

5. (a) Answer the following sub-questions.
- (i) Explain in brief major soil types found in Maharashtra state. 5
 - (ii) Define Soil Taxonomy. State soil orders as per seventh approximation. State important characteristics of 'Oxisol'. 5
 - (iii) State chemical properties of soil. Describe soil texture and soil air. 5
 - (b) (i) What is watershed ? Explain major activities in watershed development. 5
 - (ii) State Problem Soils. Explain factor affecting formation of acid soils. 5
 - (c) (i) Define biofertilizers. Explain in brief N-fixing microorganisms. 5
 - (ii) Explain the methods of increasing fertilizer use efficiency. 5
 - (iii) Explain integrated plant nutrient management system for sustainable crop production. 5

SECTION – C

6. (a) Enlist different soil water constants. Explain them in brief. 10
- (b) What are different criterias for scheduling of irrigation ? Explain them in brief. 10
- (c) What are the different sources of farm power in India ? 10
- (d) Enumerate the different products and by products of Agro processing industries. State the scope and utilisation of by-products of Rice milling industry. 10
7. (a) Describe different water use efficiencies in brief. Enlist different factors affecting water use efficiencies. 10
- (b) Explain in brief the components of drip irrigation system. 10
- (c) What is tillage ? What are the main objectives of tillage ? 10
- (d) State the importance of value addition in fruits and vegetable processing. Discuss in detail about Mango Canning Process. 10

SECTION – D

8. Answer the following :

- (a) Describe the climatic requirement, recommended varieties, time and method of planting and spacing for establishment of mandarin orange orchard in Maharashtra. Also give the recommended fertilization schedule and pest management practices in an established orchard. 10

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| (b) | Describe the principle methods of preservation of fruits. | 10 |
| (c) | (i) Give a brief account of the importance, scope and present status of medicinal and aromatic plants in India. | 5 |
| | (ii) Enumerate the reasons for desertion of bee colonies. | 5 |
| (d) | What is agro-forestry ? Describe various agro-forestry systems and their benefits. | 10 |

9. Answer the following :

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| (a) | Write down the package of practices for cultivation of tomatoes in Maharashtra. | 10 |
| (b) | Describe the role of fruits and vegetables in human nutrition. | 10 |
| (c) | (i) What strategies you suggest for enhancing the honey production in Maharashtra ? | 5 |
| | (ii) Give a brief account of the importance, scope and present status of sericulture in India vis-a-vis Maharashtra. | 5 |
| (d) | What is social forestry ? What is its relevance in rural Maharashtra ? Name at least four most important trees having multipurpose (giving the purpose for which they are used) uses in Maharashtra. | (2+6+2=10) |



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