

SIR

2010
AGRICULTURE-I (Optional)

100100

Standard : Degree

Total Marks : 200

Nature : Conventional

Duration : 3 Hours

Note :

- (i) Answers must be written in English.
- (ii) Question No. 1 is **Compulsory**. Of the remaining questions, attempt **any four** selecting one question from **each section**.
- (iii) Figures to the **RIGHT** indicate marks of the respective question.
- (iv) 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.
- (v) Credit will be given for orderly, concise and effective writing.
- (vi) Candidate 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.
- (vii) For each slab of 10, 15 and 20 marks, the examinee is expected to write answers in 125, 175 and 250 words respectively.

1. Answer **any four** of the following :

- (a) Describe the principles and advantages of crop rotation. 10
- (b) What are the problems associated with slowly permeable soils? What short-term and long term measures would you suggest for ameliorating these problems ? 10
- (c) Describe the effects of water logging on crop growth. List the advantages of sub-surface drainage over surface drainage. How the soils get polluted through the irrigation water containing industrial effluents and what are the ultimate effects of soil pollution on human health. 10
- (d) Discuss the relevance of greenhouse technology for flower production in Maharashtra. Also highlight the problems associated with floriculture industry. 10
- (e) Enumerate the agro-techniques for enhancing the scope of horticultural and field crops cultivation in drylands. 10

P.T.O.

SECTION - A

2. Answer the following :

- (a) Give an account of classification of droughts and mechanism of adaptation of plants to drought conditions. 10
- (b) What is organic farming? Discuss the prospects and problems of organic farming in India. 10
- (c) Describe the improved package of practices for cultivation of rice in South Konkan Coastal region of Maharashtra. 10
- (d) Describe the modern concept of tillage vis-a-vis conventional tillage. 10

3. Answer the following :

- (a) Write down the characteristic features of agro-climatic zones of Maharashtra. 10
- (b) Enumerate the important weeds associated with Kharif oilseed and pulse crops in different parts of Maharashtra. What integrated management practices you suggest for their control? 10
- (c) Describe the recommended agro-techniques and inputs required for cultivation of cotton in Maharashtra. 10
- (d) Define tillage and tith. Enumerate different types of tillage and corresponding tillage implements used. 10

SECTION - B

4. Answer the following :

- (a) Why we consider climate and biosphere as active soil forming factors? Explain briefly the role of climate on soil development. Differentiate between podzolization and laterization pedogenic processes. 5, 5, 5
- (b) What are the principles and approaches to be kept in mind while planning soil conservation measures in the catchment area. List and explain briefly any four biological measures for soil conservation. 10
- (c) Write down the essential plant nutrients and the forms in which these are taken up by the plants. Describe the deficiency symptoms of phosphorous and zinc in plants. Suggest measures to overcome the deficiency of these nutrients. Write down the various methods of fertilizer application and list the measures to increase fertilizer use efficiency. 3, 4, 2, 3, 3

Marks

5. Answer the following :

- (a) Mention the agriculture significance of soil structure. Classify the soil structure based upon the shape and peds. Describe the red soils of South Eastern Maharashtra giving their parent material, properties, problems, classification and common land use. 8, 7
- (b) What are the factors affecting run off amount and velocity in a watershed. Describe in situ and ex-situ measures of utilizing rainfall/run off water for efficient dryland agriculture. 10
- (c) What do you understand from fertigation and slow release N and P fertilizers. Describe briefly various organic manures and bio-fertilizers. Explain their role in Integrated Plant Nutrient Management in relation to sustainable agriculture. 5, 5, 5

SECTION - C

6. Answer the following :

- (a) Name and define soil water constants. Which of them are used for defining soil water availability? Why soil matric potential is a more reliable criterion of soil water availability than simply soil water content. 10
- (b) Describe the parameters used in assessing the quality of irrigation water. List the measures adopted for using poor quality irrigation water in crops. 10
- (c) Differentiate between i) seed drill and planter ii) tilt angle and disc angle. Write down the adjustments needed in a disc harrow for getting higher penetration. Describe the procedure for calibration of a seed drill. 2, 2, 2, 4
- (d) Describe the procedure for value addition in fresh vegetables. Discuss briefly various methods for utilization of rice husk. 5, 5

7. Answer the following :

- (a) How can we increase water use efficiency in rice crop grown under irrigated conditions? Which soil water constants are associated with rice crop under these conditions? 10
- (b) How rice and wheat plants behave under water-stress conditions? What are the advantages of sprinkler irrigation over surface irrigation? Describe the effects of saline water use on soil health. 10
- (c) Define the following : - 10
Concave clearance, Allignment, Registration, cylinder loss and field efficiency. Briefly describe the working of a biogas plant and solar cooker. Differentiate between a four stroke and two stroke cycle engine.
- (d) Write a short note on post harvest processing and equipments used for processing of paddy. Give your views on the establishment of various agro industries in Maharashtra. 10

P.T.O.

SECTION - D

8. Answer the following :

- (a) Describe the climatic requirements, recommended varieties, time and method of planting and spacing for establishment of mango orchard in Maharashtra. Also give the recommended fertilization schedule and part management practices in an established orchard. 10
- (b) Write the nutritional value of tomatoes. Enlist the processed products prepared from tomatoes. Also write down the processing procedure for one of the commercially important product. 10
- (c) (i) Enumerate major causes for limited cultivation of medicinal and aromatic plants as commercial crops by the farmers. 5
(ii) Describe the importance and scope of sericulture in Maharashtra. 5
- (d) Describe the predominant agro-forestry systems of Maharashtra. 10

9. Answer the following :

- (a) Give an account of the scope of fruits, vegetables and flowers for domestic and export market. 10
- (b) Describe the principles of fruits and vegetable preservation. List out the various value added products prepared from pomegranate and guava. Write the procedure for preparation of one of the products of pomegranate. 10
- (c) (i) Write a note on the role of agro-forestry in sustaining the productivity of a farm. 5
(ii) Discuss the importance and present status of apiculture in Maharashtra. 5
- (d) What strategies you would suggest for enhancing the scope of medicinal and aromatic plants in Maharashtra. 10

- o O o -