

2007
AGRICULTURE- I (Optional)

100311

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 :

40

- (a) Give the concept of multiple cropping with suitable examples. What is the importance of inter-cropping in Crop Production and Resource Management ?
- (b) Describe importance, scope and strategical scenario for sustainable productivity in dry farming areas.
- (c) What is sewage farming ? Classify the various types of impurities, which may make the water unfit for irrigation. Write the Indian Standard limits for disposal of municipal and industrial effluents for irrigation.
- (d) Enlist various plant materials used for lay out of landscaping and discuss about the scientific growing of shrubs.
- (e) What is the importance and scope of dryland horticulture ? Discuss briefly the Agri-Horticultural and Horti/Silvipastoral systems under dryland and rainfed conditions with suitable fruit tree examples.

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SECTION - A

2. Answer the following :

- (a) Define temperature. How does it affect the crops at different stages of their growth ? 10
- (b) How organic farming is defined ? What is its basic concept ? Give meaning, objectives and elements of Permaculture farming system. 10
- (c) Briefly discuss the methodology of increasing the productivity of ratoon crop of sugarcane in India. 10
- (d) What is tillage ? What are its objectives ? Give various types of tillage operations. How tillage is influenced by various factors ? 10

3. Answer the following :

- (a) What is the impact of soil and ground-water pollution by agro-chemicals on our environment ? Suggest various management practices to control soil and ground water pollution. 10
- (b) How do weeds reduce crop yield and its quality ? State the methods used for controlling weeds in field crops. Discuss various cultural practices for reducing crop-weed competition. 10
- (c) How do you compare the method of growing wheat on raised beds with bi-directional method of sowing ? Discuss improved package of practices for wheat cultivation under rainfed conditions. 10
- (d) Mention various tillage implements used to obtain good tilth and plant growth. Also discuss modern concepts of tillage. 10

SECTION - B

4. Answer the following :

- (a) Describe the recent criteria for soil taxonomy. Name the order to which black soils of Maharashtra belongs and explain the reasons why these soils put under this order of soil taxonomy. 15
- (b) Explain how soil acidity, salinity as well as sodicity affect soil properties which subsequently influence the growth of the crop plants. Enlist the important measures to be undertaken to bring sodic soil a normal one. 10

Marks

- (c) Discuss the recent criteria of essentiality of plant nutrients as stated by Arnon and Stout. Explain the important factors responsible for availability of sulphur in soil for plant utilization. Suggest which one is playing major contribution in inducing its deficiency in soils of Maharashtra. 15
5. Answer the following :
- (a) Describe the influence each of soil physical, chemical as well as microbiological environment on maintaining fertility of a cultivated soil. Suggest important measures to be considered for improving sustainability in soil health and subsequent potential productivity of crops. 15
- (b) Explain how conservation of soil and moisture deficit affect the physiological growth of plants. Suggest practical measures to improve productivity of crops growth specially under water scarcity zones of Maharashtra. 10
- (c) Define and enumerate the major objectives of Integrated plant nutrient supply system. Discuss its major component and state inclusion of chemical fertilizers with organic manure and biofertilizers improve the nutrient use efficiency of applied fertilizers. 15

SECTION - C

6. Answer the following :
- (a) Define the terms : Water conveyance efficiency, Water storage efficiency, Water distribution efficiency, Wilting range, Saturation Capacity. 2x5
- (b) How to keep Sprinkler system operating at peak efficiency ? 10
- (c) Enlist the various kinds of source of Farm power. Discuss the advantages and disadvantage of tractor power. 5+5
- (d) Explain the term Cleaning, Grading and Sorting. What is gin ? Discuss the types of gins for common use. 2+2+2+4
7. Answer the following :
- (a) Explain the term Moisture equivalent, Crop water use efficiency, Field water use efficiency. Write the Field water balance equation. 2+2+2+4

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| (b) What types of surface drainage systems can be used for the area having less than two per cent slope ? | 10 |
| (c) What are the types of seed metering mechanism commonly used ? Write the various steps used to calibrate the seed drill. | 2+8 |
| (d) What are the main objective of parboiling ? Enlist the methods of parboiling. | 3+7 |

SECTION - D

8. Answer the following :

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| (a) Mention the climatic requirements of Citrus, Mango, Muskmelon, Tomato and Gladiolus. | 10 |
| (b) What is the basis of preservation techniques ? Describe various methods of preservation of fruits and vegetables. | 10 |
| (c) (i) Name the major medicinal and aromatic crops. Give improved package of practices for TURMERIC cultivation. | 5 |
| (ii) Define "Forestry". Discuss various types of forestry. | 5 |
| (d) What is the present position of Forestry in India and Maharashtra ? | 10 |

9. Answer the following :

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| (a) State the scientific cultivation of Rose for higher production. | 10 |
| (b) What is the role of fruits and vegetables in human nutrition. | 10 |
| (c) (i) Give improved package of practices for scientific cultivation of CELERY. Also mention hints to minimize its shattering losses. | 5 |
| (ii) Discuss briefly various types of forests of India. | 5 |
| (d) Afforestation is the utmost need of our country. How ? | 10 |

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