

**B.Tech Odd Semester (CBCS) Exam.,
December—2017**

AGRICULTURAL ENGINEERING

(3rd Semester)

Course No. : AE-306 (C)

(Crop Production Technology)

Full Marks : 75

Pass Marks : 30

Time : 3 hours

- Note :*
1. Attempt **one** question from each Unit.
 2. Begin each answer in a new page.
 3. Answer parts of a question at a place.
 4. Assume reasonable data wherever required.
 5. The figures in the margin indicate full marks for the questions.

UNIT—1

1. (a) What is the scope of agriculture in India? What are the major categories of agriculture? 4+4=8

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(Turn Over)

- (b) A field soil having different distinct layers has the following soil water coefficients :

7

	Thickness (cm)	FC (% vol.)	WP (% vol.)	Present state of Moisture (% vol.)
Layer-1 (0-20 cm)	20	35	15	25
Layer-2 (20-40 cm)	20	40	18	27
Layer-3 (40-60 cm)	20	43	20	30

Maize crop is shown in the field. The effective root zone depth of the crop is 50 cm.

Determine the following :

- (i) Total maximum available soil water
 - (ii) Total present available soil moisture
2. (a) What do you understand by the word agronomy? Discuss in brief the basic principles of agronomy. 3+7=10
(b) Mention the classification of crops. Describe any one with the suitable examples. 5

UNIT—2

3. (a) What is tillage? Define the objectives of using different types of tillage practice. 2+3+4=9

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(Continued)

(3)

(b) Write short notes on the following : $2 \times 3 = 6$

- (i) MB plough
- (ii) Disc plough
- (iii) Angles of disc plough

4. (a) Define the following : 10

- (i) Gravitational water
- (ii) Capillary water
- (iii) Field capacity
- (iv) Permanent wilting point
- (v) Evapotranspiration

(b) If the field capacity of a soil is 30% by volume, permanent wilting point is 15% by volume, calculate the plant available soil moisture storage capacity in 40 cm of soil depth. 5

UNIT—3

5. Differentiate between natural and synthetic fertilizers. Discuss the factors affecting manure and fertilizers used, time and method of application of fertilizers in general. $5+5+5=15$

6. (a) Write short notes on the following : 9

- (i) Mixed cropping
- (ii) *In-situ* moisture conservation
- (iii) Soil water constraints

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(Turn Over)

(4)

(b) How can the dry land agriculture be classified according to the rainfall received? 6

UNIT—4

7. (a) Write short notes on the following : $3 \times 3 = 9$

- (i) Organic farming
- (ii) Sustainable agriculture
- (iii) Conventional farming

(b) Distinguish between organic farming and conventional farming. How to classify it? $3+3=6$

8. (a) What do you understand by the cropping patterns and cropping systems? 5

(b) Discuss the factors determining the cropping system and the cropping pattern. 3

(c) Why is plant protection necessary? Discuss in detail with plant protection methods. $2+5=7$

UNIT—5

9. (a) Discuss all the major steps involved in the post-harvest operation of crops in general. What are the problems can face during the post-harvest operations in rice industry? $8+2=10$

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(Continued)

(5)

(b) 500 kg of paddy at 22% moisture content (wb) is dried to 14% moisture content (wb) for milling. Calculate the amount of moisture removed in drying. 5

10. (a) Define agricultural processing. Why is it required? 2+3=5

(b) How can a crop be processed after harvesting? Discuss all the major steps involving post-harvest operation. 10
