B.Tech Odd Semester (CBCS) Exam., December—2016

AGRICULTURAL ENGINEERING

(7th Semester)

Course No. : AE-703

(Tea 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—I

1. *(a)* Why is climate change bad news for India's tea producers? 8

(b) What are the key factors for growth of tea in different growing regions? 7

2. *(a)* Write short notes on : 8

(i) Vegetative propagation

(ii) Manuring for nursery and matured tea

(iii) Soil rehabilitation

(iv) Types of planting. (Discuss all the processes in brief)

(b) In a tea estate, frequently it is observed that a significant fraction of plucked leaves goes into waste due to lack of quality parameters. Suggest a sustainable model for the utilization of the waste leaves that can contribute in the economic development of the tea estate. 7

UNIT—II

3. *(a)* Elaborate design and performance of sprinkler irrigation system for tea plantation with specific components. 8

(b) Determine the required capacity of sprinkler system to apply water at rate of 12·5 cm/h. Two 186 m long sprinkler lines are used. 16 sprinklers are placed at 12 m interval on each line. The spacing between lines is 18 m. How many hours would be required to apply

5 cm irrigation to a square 16 hectares field? How many days are required for irrigation? Assuming sprinkler operates 10 hours per day. 7

4. *(a)* How is spray irrigation system useful for the irrigation in tea garden? Discuss with the characteristics. 8

(b) Determine the system capacity for a sprinkler irrigation system to irrigate 16 hectares of maize crop. Design moisture rate is 5 mm per day. Moisture replaced in soil at each irrigation is 6 cm. Irrigation efficiency is 70%. Irrigation period is 10 days in a 12 days interval. The system is to be operated for 20 hours per day. 7

UNIT—III

5. *(a)* What is withering? What are the different types of withering? How will you calculate the withering percentage? 4

(b) Why is proper steaming very much crucial for green tea? 3

(c) What are the different types of primary grades for CTC tea? 3

(d) What is gapping? What is the role of rotorvane in CTC manufacturing? 5

6. *(a)* What is the use of troughs? What are the different types of troughs? 2

(b) What is the role of cyclone separator in fluidized bed dryers? 2

(c) Why should leaf not be kept in heap after withering and before CTC processing? 2

(d) Explain some problems and their possible solutions related to withering. 6

(e) What are the basic requirements for good CTC tea? 3

UNIT—IV

7. *(a)* Write down the problem associated with the workers while plucking the tea leaves with example. What should facilities be provided to the workers of tea industry? 8

(b) Write short notes on expectancy, equity theory and goal setting. 7

8. *(a)* Write the basic principles of human resource management. What are the human resource management activities in general? 8

(b) Distinguish between the following : 7

(i) Voluntary turnover and involuntary turnover

(ii) Downsizing and outsourcing

UNIT—V

9. *(a)* What are the key points a farm management body must follow for waste management purpose? 6

(b) What is the use of Ghoogi in CTC manufacturing? 3

(c) Write down about the essential requirements for proper firing of tea. 6

10. *(a)* Stepwise explain the conventional orthodox green tea manufacturing process. 10

(b) What are the steps involved in CTC green tea manufacturing process? 3

(c) What are the advantages of Myddleton Stalk extractor? 2

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