



UNIVERSITY OF RUHUNA

Faculty of Engineering

Mid-Semester 8 Examination in Engineering: November 2014

Module Number: CE 8239

Module Name: Irrigation Engineering (TE)

[Two Hours]

[Answer all questions, each question carries five marks]

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- Q1. a) Discuss the major cultivation seasons in Sri Lanka giving special reference to the rain fall pattern of the country. [1.0 Mark]
- b) Several major irrigation schemes in Sri Lanka are located in the dry zone. In such schemes it is required to implement water saving techniques. Describe with examples, water saving techniques and strategies that could be practiced in order to optimize the water usage. [2.0 Marks]
- c) Discuss the significance of following soil moisture levels for crop growth:
i) Field capacity.
ii) Permanent wilting point. [2.0 Marks]
- Q2. a) In irrigated agriculture, maintaining soil fertility by natural means has become popular in the recent past. In this context, discuss the importance of practicing *crop rotation* and *Intercropping*. [1.5 Marks]
- b) i) What are the causes of accumulation of salts in soils in irrigated agricultural lands?
ii) State the amendment methods for reclaiming saline soil. [2.0 Marks]
- c) What are the influences of *texture* and *structure* of soil on the field capacity? [1.5 Marks]
- Q3. a) What are the advantages and limitations of *surface* and *sub-surface* irrigation methods? [1.0 Mark]
- b) Briefly explain the topographical conditions appropriate for the following methods of irrigation:
i) Basin irrigation.
ii) Drip irrigation.
iii) Furrow irrigation. [1.0 Mark]

c) How would following influence the choice of irrigation method?

- i) Quality of water.
- ii) Socio-economic factors.

[1.5 Marks]

d) Vegetable farm land is irrigated using furrow method. Though it seems no shortage of water flowing in the furrows, it has been noted that the root zone of the vegetable plants has remained dry. State all possible reasons that could give rise to the above situation.

[1.5 Marks]

Q4. a) Farmland having sandy loam soil is required to irrigate using the basin irrigation method. How would you adjust *size* and *shape* of basin in order to ensure high water application efficiency and high cultivation efficiency?

[2.0 Marks]

b) Having a fixed irrigation schedule may reduce the water application efficiency of Border method of irrigation. Explain the above statement.

[2.0 Marks]

c) State the advantages of permanent sprinkler systems over portable sprinkler systems.

[1.0 Mark]