18/10/13

Roll No. | | | | | | | | | | |

B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013

AGRICULTURE AND IRRIGATION ENGINEERING

Second Semester

PH 8202 – PHYSICS FOR AGRICULTURE AND IRRIGATION ENGINEERING

Regulation: 2012

Time: 3 Hours **Answer ALL Questions** **Max. Marks 100**

PART- A (10 x 2 = 20 Marks)

1. What is 'textural triangle'? Give its importance.
2. Distinguish between soil compaction and consolidation.
3. What is a photosystem? Name the pigment that reacts at the reaction centre?
4. What are the factors that affect the rate of photosynthesis..
5. What are the disadvantages of using chemical fertilizers for growing crops?
6. What is meant by sustainable agriculture?
7. Define the terms radiant energy and radiant intensity.
8. What is meant by 'spectral signature' in remote sensing?
9. What are the benefits of food irradiation?
10. What is the unit used to measure the radiation dose.

Part – B (5 x 16 = 80 marks)

11. Explain the various biophysical methods used in agriculture and its advantages in protecting the environment (16)

12. a) Explain the process of heat conduction in soil. Derive the expression for thermal conductivity of soil. (16)

(or)

b) Explain the importance of soil aeration and the factors affecting it? Explain the different mechanisms by which exchange of gases takes place between soil and atmosphere. (16)

13. a) Explain C-4 way of fixation of CO_2 and how its helps to minimize photorespiration. Compare it with C-3 pathway. (12+4)

(or)

b) Draw the transverse section of a leaf and the structure of chloroplast. Explain the process of photosynthesis in leaves. (6+10)

14. a) ii) With a schematic diagram explain the basic principle of Remote sensing system. (8)
ii) Discuss the application of remote sensing in the field of agricultures. (8)

(or)

b) i) Explain the different types of sensors used in remote sensing. How are they classified and their performance evaluated? (8)
ii) Explain the various steps involved in the processing of remote sensed data (8)

15. a) Explain the various radiation sources used for food irradiation? With a neat block diagram explain the process of electronic food irradiation. (6+10)

(or)

b) i) What are the various biological organisms that are responsible for spoilage of food? Discuss how irradiation destroys these organisms. (10)
ii) What are the effects of ionizing radiations on macronutrients? (6)