Roll No. ☐☐☐☐☐☐☐☐☐

B.E /B.Tech (FULL TIME) END SEMESTER EXAMINATION APRIL/MAY 2019
B.E AGRICULTURAL AND IRRIGATION ENGINEERING
V SEMESTER
AI 8503 – IRRIGATION ENGINEERING FOR AGRICULTURAL ENGINEERS
(Regulation 2012)

Time: 3 Hours

Answer ALL Questions
(11ᵗʰ question is compulsory)

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. When does Rabi season start? What are the major Rabi crops? Why?
2. Cotton crop has base period of 180 days and the depth of water required is 60 cm for the period. What should be the duty of water for a command area having 100% cotton crop.
3. What are the conditions under which sub surface irrigation is feasible?
4. What are system and non-system tanks? Give examples of each of them.
5. What is the function of fish ladder in canal head work?
6. With neat sketch draw different types of earth dams.
7. In a canal network where are canal escapes located and what is their function?
8. What is non-silting and non-scouring velocity in canals?
9. What are the salient features of Warabhandi system of water scheduling?
10. Under SRI (System Rice Intensification), how is cropping done.

Part – B (5 x 16 = 80 marks)

11. The consumptive use of requirement of a crop are 0.2 cm per day for days 1 to 15, 0.3 cm per day for days 16 to 40 days, 0.5 cm per day for 41 to 50 days and 0.1 cm per day for 51 to 55 days. Effective rainfall of 3.5 cm, distributed uniformly during the 36ᵗʰ to 45ᵗʰ days (both inclusive) is predicted. Compute the total quantity of water (in cu.m) to be delivered to a 50 hectares plot for the whole crop season with a pre-sowing requirement of 5 cm of water.   (16 Marks)

12.a) Elaborate why furrow irrigation is most suited for row crops, discuss under the following headings;
i) Suitable crops and slopes
ii) Planting techniques and water management
iii) Wetting pattern in root zone and causes for poor wetting pattern.   (16 Marks)

(OR)

12.b) i) List the components of sprinkler irrigation with a neat sketch of a typical layout.   (8 Marks)

ii) Classify sprinklers based on mobility and spraying arrangement.   (8 Marks)

13.a) i) Draw a neat sketch and show the forces acting on a gravity Dam.   (8 Marks)

ii) Elaborate on any three forces and how the forces are computed and used is design of gravity Dams.   (8 Marks)

(OR)

13.b) i) Compute the discharge over an ogee weir with coefficient of discharge equal to 2.4 at a head of 2 m. The length of the spillway is 100 m. The weir crest is 8 m above the bottom of the approach channel having the same width as that of the spillway.   (7 Marks)

ii) Sketch the components of head work and describe the functions of each.   (9 Marks)

14.a) i) Design a channel section to carry a discharge of 30 cumec, the side slope of the section is ½:1 and silt factor is 1.00. Find the longitudinal slope of the channel.   (8 Marks)

ii) Why is lining in irrigation channels necessary and list its advantages..   (8 Marks)

(OR)

(P.T.O)

14.b) i) How are suitable cross drainage works selected? (4 Marks)

ii) What are canal outlets? Briefly describe different types of canal outlets found in canal network. (12 Marks)

15.a) i) Why is command area development an important part of irrigation management. (8 Marks)

ii) Elaborate on the components of "ON Farm Development" works undertaken by command area development programme. (8 Marks)

(OR)

15.b) i) Elaborate on the impact of raise in air temperature on crop production. (7 Marks)

ii) Who are the members of Water Users associations? What is the role of WUA in irrigation management? (9 Marks)