



KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Ag. Engg.) 2015 Admission
V Semester Final Examination-January-2018

Iden.3106

Irrigation Engineering (2+1)

Marks: 50
Time: 2 hours
(10x1=10)

I State True or False

- 1 Pipe flowing partially full is open channel flow.
- 2 Hydraulic efficiency of trapezoidal channel is greater than rectangular channel.
- 3 Water courses are maintained by government.
- 4 Acid treatment is given to remove algae
- 5 Single super phosphate can be applied through drip ventury system.
- 6 Permissible discharge variation in drip irrigation is upto 20 per cent.
- 7 Flumes are used to carry water under roads.
- 8 Most economical channel cross section is trapezoidal.
- 9 Soils having infiltration rate less than 0.4 cm/hr are not suitable for sprinkler irrigation
- 10 Application rate of emitter should be more than infiltration rate.

II Write Short notes on any FIVE of the following

(5x2=10)

- 1 Explain constraints or limitations in use of sprinkler irrigation system.
- 2 Write down in brief about proper location of canal falls.
- 3 Write short note on infiltration of water in soil.
- 4 Determine discharge capacity of an underground pipeline from the following data:
Diameter of pipe 15 cm, length of pipeline 150 meters , difference in elevation between water levels at pump stand and discharge point 2 meters.(Darcy's $f=0.009$)
- 5 Give types of emitters and explain criteria for selection of emitters.
- 6 Enlist and explain different types of soil water..
- 7 Write in short about pressure discharge relationship of emitter.

III Answer any FIVE of the following.

(5x4=20)

- 1 Write utility of following irrigation system components
 - a Desilting basin
 - b Hydrocyclone filter
 - c Air release valve
 - d Solenoid valve
- 2 Explain the capillary and non-capillary pores.
- 3 Define various soil moisture constants and give soil moisture tensions at different soil moisture constants.
- 4 An irrigation stream of 27 liters per second is diverted to a check basin of size 12x10 m. the water holding capacity of the soil is 14 percent. The average soil moisture content in the crop root zone prior to applying water is 6.5 percent. How long should the irrigation stream be applied to the basin to replenish the root zone moisture to its field capacity, assuming no loss due to deep percolation. The average depth of crop root zone is 1.2 m. the apparent specific gravity of the root zone soil is 1.50
- 5 Enlist and explain classification of canal modules
- 6 Determine the required capacity of a sprinkler system to apply water at the rate of 1.25cm/hr. Two 186 meter long sprinkler lines are required. Sixteen sprinklers are spaced at 12m interval on each line. The spacing between lines is 18 meters.
- 7 Differentiate between aqueduct and siphon aqueduct.

IV Write an essay on any ONE of the following

(1x10=10)

- 1 Write an essay on various irrigation efficiencies
- 2 Write an essay on adaptability and limitations of conventional and advanced irrigation methods
