



KERALA AGRICULTURAL UNIVERSITY
B.Tech. (Ag. Engg.) 2016 Admission
V Semester Final Examination-January 2019

Lwre.3107

Water Harvesting and Soil Conservation Structures (2+1)

Marks: 50

Time: 2 hours

I State True/False

(10x1=10)

- 1 Constructions of bunds are not recommended in deep black soils
- 2 Importance of harvested water is greater in high rainfall areas
- 3 Grassed waterways are lined with live grasses.
- 4 The most economical shape of a grassed waterway is parabolic
- 5 Harvested water is not suitable for fish farming
- 6 Water conservation in the soil is also a kind of water harvesting.
- 7 The dugout farm ponds are constructed for flood control
- 8 The side slope in an earthen farm pond is kept as 1:1.
- 9 A retaining wall retains the earth or soil.
- 10 Masonry structures are very strong regarding tensile strength

II Write Short notes on any FIVE of the following

(5x2=10)

- 1 Draw labelled top view of a hydraulic jump
- 2 Loads on head wall
- 3 Creep line theory
- 4 Safety against sliding
- 5 Safety against crushing
- 6 Design steps of a SAF stilling basin
- 7 Design steps of an earthen embankment

III Answer any FIVE of the following.

(5x4=20)

- 1 Hydraulic and hydrologic design of a drop spillway.
- 2 Structural design and stability analysis of a chute spillway.
- 3 Hydraulic and hydrologic design of a drop inlet spillway.
- 4 Structural design and stability analysis of a straight drop spillway.
- 5 Design of diversion structures.
- 6 Straight apron.
- 7 Nala bunds and its limitations.

IV Answer any ONE of the following

(1x10=10)

- 1 What do you understand by rooftop water harvesting system? Draw a labelled and neat sketch of a rooftop water harvesting system.
- 2 Calculate the volume of excavation required to construct a dugout farm pond if:
 - (a) Average depth of pond is 4.5m
 - (b) Bottom width is 12m
 - (c) Bottom length is 25m
 - (d). Side slope is 2:1
