



KERALA AGRICULTURAL UNIVERSITY
B.Tech. (Agrl. Engg.) 2019 Admission
V Semester Final Examination – January 2022

Lwre.3107

Water Harvesting and Soil Conservation Structures (2+1)

Marks: 50
Time: 2 hours

- I Fill in the blanks (10x1=10)**
1. The shape of seepage line in an embankment is -----.
 2. Rational formula for computing discharge -----.
 3. The main function of permanent structures is to halt the advance of ----- at a gully head.
 4. The kind of spillway used in farm pond as mechanical spillway, is -----.
 5. The design of permanent gully control structures is done for a return period of -----.
 6. In a chute spillway, the hydraulic jump is created at its -----.
 7. Downstream section of straight drop spillway is called as -----.
 8. The line of seepage in an earthen embankment is also called as -----.
 9. ----- structure is used for water storage along with gully control.
 10. The drop height of straight spillway should be ----- m.
- II Write short notes on ANY FIVE of the following (5x2=10)**
1. Write in brief the long term runoff harvesting techniques.
 2. Safety against crushing
 3. Write short notes on loose rock check dam.
 4. Design steps of a SAF stilling basin
 5. Hydraulic Jump
 6. Uses of farm ponds
 7. Creep line theory
- III Answer ANY FIVE of the following (5x4=20)**
1. Explain in detail about the components of farm pond and selection of site for construction of farm pond.
 2. Hydraulic and hydrologic design of drop inlet spillway.
 3. Write the trapezoidal formula and Simpson's formula for calculate the capacity of farm pond.
 4. Discuss in detail about the concepts of hydrologic, hydraulic and structural design of gully control structures.
 5. Design and earthen embankment of 20m height.
 6. Structural design and stability analysis of a straight drop spillway.
 7. Nala bunds and its limitations.
- IV Write an essay on ANY ONE of the following (1x10=10)**
1. Discuss the different types of small earth embankments. List down the design criteria and design procedure of earthen dam in detail with all protective measures.
 2. What do you understand by rooftop water harvesting system? Draw a labelled and neat sketch of a rooftop water harvesting system.
