Printed pages: 2   **EAG024**

(Following paper code and roll No. to be filled in your answer book)

Paper code: 180763   Roll No. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

B TECH
(SEM VII) THEORY EXAMINATION 2014-15
Gulley and Ravine Control Structures

TIME: 3 Hours   **Total Marks: 100**

Note: Attempt **all** questions. Each question carries equal marks.

SECTION - A

Q1. Attempt any 4 questions: **(4X5=20)**

1. Define unit hydrograph and explain the factor affecting runoff hydrograph?
2. What do you understand by probable maximum flood and explain the Gumble probability paper with its use?
3. What is channel routing explain with Muskingum method?
4. Classify the different types of flood distributions and also explain the Log-Pearson type-III distribution.
5. Explain the flood control methods and briefly discuss method of non-structural methods.

SECTION – B

Q2. Attempt any three questions: **(10X3=30)**

1. Define the sediment and write the sources of sediments, explain the mechanics of sediment transport.

2. Determine the dimension of trapezoidal shaped grassed waterway to carry the peak runoff rate of 4.0 m^3/s. The grade of waterway is 0.3%. Assume flow velocity as 0.9m/s.
3. Explain briefly the terms
   (a) Design flood
   (b) Reservoir routing
   (c) Synthetic hydrograph
4. Explain the depth-area-duration analysis.

SECTION – C

Attempt any five questions: **(10X5=50)**

3. Explain the various methods for estimation of peak flood.
4. A catchment has an area of 5.0 km^2. The average slope of the land surface is 0.006 and maximum travel depth of water in the catchment is 1.95km. the maximum depth of rainfall in the area with a return period 25 years is as tabulated below:

Time duration (min)	5	10	15	20	25	30	40	60
Rainfall Depth (mm)	15	25	32	45	50	53	60	65

Consider that 2.0 km^2 of catchment area has cultivated sandy loam soil (C=0.02) and 3.0 km^2 has light clay cultivated soil (C=0.7). Determine the peak flow rate of runoff by using the Rational method.

5. Explain Gully erosion and state the stages of development of Gully.
6. Make a proposal for planning flood control project for an area of 10,000 km2 with the sandy soil nature.
7. Explain the modified Pul's method
8. Explain the steps of designing the grassed water ways,