Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. Summer 2018 - 19 Examination

Semester: 6 **Date: 30/04/2019**

Subject Code: 03110351 **Time: 10.30 am to 1.00 pm**

Subject Name: Soil and Water Conservation Structures **Total Marks: 60**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions -, (All are compulsory) (Each of one mark) **(15)**

1. When the flow condition is critical, Froude number is
a) equal to 1 b) less than 1 c) greater than 1 d) between 0 and 1
2. The most economical soil conservation method is to
a) construct check dams b) construct contour bunds
c) drain the soil d) afforest the soil
3. At a hydraulic jump, the depths at the two sides are 0.4m and 1.4m. The height of the jump is nearly
a) 1.0m b) 0.9m c) 0.7m d) 0.45m
4. The Froude number of a hydraulic jump is 1.5. The jump can be classified as
a) Undular jump b) Oscillating jump c) Weak jump d) Steady jump
5. The upstream face of earth dam is considered as
a) equipotential line b) stream line c) streak line d) path line
6._____ is the example of a Rigid dam
a.) Gravity Dam, b.) Earthen Dam, c.) Rock filled Dam, d.) all of the above
7. A flume is used to measure the discharge of a _____.
8. The commonly used earth dam is of _____ type.
9. The failure of an earth dam due to flow of water under the foundation and emerging on the downstream side is termed as a failure due to _____.
10. The topmost portion of a concrete dam is known as _____.
11. Depth of flow available at same specific energy are known as _____._____.
12. Explain Rainwater harvesting.
13. Define : specific energy.
14. Enlist any four soil conservation programmes.
15. What is barrage?

Q.2 Answer the following questions. **(Attempt any three)** **(15)**

A) What is flow net? Enlist characteristics of flow net.
B) What is meant by flume?. Explain Parshall flume.
C) What do you mean by Spillway? Explain drop spillway.
D) For a homogeneous earth dam 52 m high and 2 m free board, a flow net was constructed and following results were obtained:
Number of potential drops = 25 , Number of flow channels = 4
The dam has a horizontal filter of 40 m length at its downstream end. Calculate the discharge per metre length of the dam if the coefficient of permeability of the dam material is $3x10^{-3}$ cm/sec

Q.3 A) What is the purpose of energy dissipation devices? State different types of energy dissipaters. **(07)**
B) What are the soil conservation approaches? Explain any three method of biological control. **(08)**

OR

B) Explain the various types of cost estimation. **(08)**

Q.4 A) Explain over turning and tension failure of dam section. **(07)**

OR

A) What are the causes of soil erosion? Explain Mulching in detail. **(07)**
B) What is hydraulic jump? **(08)**
Find the depth of flow of water after the hydraulic jump in a rectangular channel of 4 m width having a discharge of 16 m^3/s. The depth of water in the channel before hydraulic jump was 0.5 m.