	ADAMAS UNIVERSITY ***END-SEMESTER EXAMINATION : JANUARY 2021*** ***(Academic Session: 2020 – 21)***		
Name of the Program:	***B. Tech.***	***Semester:***	***VII***
Paper Title :	***Hydraulics Structure***	***Paper Code:***	***ECE44105***
Maximum Marks :	***40***	***Time duration:***	***03 hrs.***
Total No of questions:	***08***	***Total No of Pages:***	***02***

Answer all the Groups

Group A

(Answer all the questions)

$5 \times 1 = 5$

1. **a)** Write the difference between Weir and Notch.
   b) Depict the difference between Weir and Barrage.
   c) What is Headwork?
   d) What is the necessity of Cross drainage works?
   e) Depict the function of Spillway.

Group B

(Answer any three questions)

$3 \times 5 = 15$

2. Explain the functions of different types of Gallery according to their locations.
3. Discuss about different types of methodologies, adopt for constructing the Earthen dams.
4. Describe the Phreatic line of Earthen dam with filter according to Flow net diagram.
5. Write the short notes on the functions of the following structures:
   (a) Under sluice of barrage (b) River training works

Group C

(Answer any two questions)

$2 \times 10 = 20$

6. Write about the various types of Cross drainage works with descriptions, mentioning proper function of each type. Also draw the diagrams of each type.
7. A gravity dam of 25 m high, retain 22 m high water body at its upstream and the depth of sediment is about 6 m at its upstream, of base width of 15 m. Consider, the top width is 5 m., the downstream face is sloped 0.5 H : 1 V, unit weight of water as 10 kN/m^3 , unit weight of concrete as 24 kN/m^3 , friction angle for sediment=30 degree and submerged unit weight=15 kN/m^3.
   Determine (i) The maximum vertical stresses at the heel and toe of the Dam,
   (ii) The major principal stress at at the heel and toe of the Dam.
8. Design a concrete gravity dam for the following data; assuming 2 equal strips for the length of high dam and suitable free board :
   Maximum allowable compressive stress in concrete= 3000 kN/m^2
   Maximum reservoir level = 200 m
   R.L of bottom of dam = 102 m
   Specific gravity of concrete = 2.4
   Unit wt. of water = 10 kN/m^3