



Enrolment No. _____

HASMUKH GOSWAMI COLLEGE OF ENGINEERING, VAHELAL

MID SEMESTER EXAMINATION, SEPTEMBER-2016

Subject Code: 2150602

Date: 24-9-2016

Subject Name: HWRE

Sem: 5TH

Time: 10:00 TO 10:50

Total Marks: 20

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

QUE.1 (A) Short questions: 3

Which of the formations may contain water but cannot transmit it?
Why S- hydrograph is known as summation hydrograph?
Define ϕ – index.

(B) Short numerical: 3

A rain gauge 'D' was inoperative during a specific storm. The rainfall recorded at three surrounding stations A, B, and C during that storm was 85, 70 and 52 respectively. If the average annual rainfall of the station A, B, C and D are 900, 650, 700 and 820 mm respectively estimate the storm rainfall of station D.

A 12- hr unit hydrograph of catchment is triangular in shape with a base width of 164 hr and peak discharge of 24 m³/s. Calculate the area of the catchment.

QUE.2 (A) Mention factors affecting evaporation in detail. 3

(B) For a storm of 3 – hr duration , the rainfall rates are as follows: 4

Time period (min)	30	30	30	30	30	30
Rainfall rates (cm/hr)	1.5	3.5	4.5	3.2	2	1

If surface runoff is 3.5 cm, determine the ϕ – index and W – index.

OR

(B) Design a tube well for the following data: 4

Yield required = 0.30 cumecs
Thickness of confined aquifer = 50 m
Radius of circle of influence = 300 m
Permeability coefficient = 80m/day
Drawdown = 6m

QUE.3 (A) Derive the equation for discharge for steady state flow to wells in confined aquifers in terms of coefficient of transmissibility and drawdown. 3

(B) A 6 hr UH for a basin has the following ordinates:

4

Time (hr)	0	6	12	18	24	30	36
Ordinates of 6 hr UH (m^3/s)	0	20	60	150	120	90	0

Determine the ordinates of 12 – hr UH. Using S – curve method.

OR

(A) Explain with neat sketch occurrence of groundwater.

3

(B) The ordinates of 4 hr unit hydrograph are given in the table. Compute the ordinates of 8 hr 4 unit hydrograph.

Time (hr)	0	4	8	12	16	20	24	28
UH (cumec)	0	30	50	150	70	50	10	0

***** ALL THE BEST *****