Total No. of Questions : 10]   [Total No. of Printed Pages : 4

Roll No ....

CE-602 (GS)

B.E. VI Semester

Examination, May 2018

Grading System (GS)

Water Resources and Irrigation Engineering

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt five questions. Internal choice is given with each question.

    ii) All questions carry equal marks.

    iii) Assume suitable data wherever suitable.

Unit - I

1. a) Discuss in brief various methods of surface irrigation.   7

   b) Derive a relationship between duty and delta.   7

OR

2. a) Write short notes on the following: 7
   i)   Saturation Capacity
   ii) Field Capacity
   iii) Wilting Point
   iv) Optimum Water Content

   b) A water course has a culturable commanded area of 1200 hectare. The intensity of irrigation for a crop A is 40% and for B 35% both the crops being Rabi crops. Crop A has a kor period of 20 days and crop B has kor period of 15 days. Calculate the discharge of the water course if the kor depth for crop A is 10cm and for B it is 16cm.   7

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Unit - II

3. a) Derive an expression for discharge from a well in unconfined aquifer and discuss assumption of Dupuit's theory.   7

   b) Define the following terms: 7
   i)   Aquifer
   ii) Aquiclude
   iii) Specific Yield
   iv) Perched Aquifer

OR

4. a) Explain the terms storage coefficient and coefficient of transmissibility.   7

   b) Two tube wells each of 20cm diameter are spaced at 10m distance. Both the fully a confined aquifer of 12cm thickness. Calculate the discharge if only one well is discharging under a depression head of 3m. What will be the percentage decrease in the discharge of the well if both the wells are discharging under the depression head of 3m. Take radius of influence for each well equal to 250m., and coefficient of permeability of aquifer as 60 m/day? **rgpvonline.com**   7

Unit - III

5. a) Explain Unit hydrograph and its limitations.   7

   b) For catchment has six rain gauge stations. In a year the annual rainfalls recorded by the gauges are as follows:

Station	A	B	C	D	E	F
Rainfall (cm)	82.6	102.9	180.3	110.3	98.8	136.7

For a 10% error in the estimation of the mean rainfall, calculate the optimum number of stations in the catchment?   7

OR

CE-602 (GS)   Contd...

6. a) Define the following terms: (any two)   7
   i)   Hydrograph
   ii) Thiessen-Mean Method
   iii) Non-recording Gauges

   b) Give the ordinates of a 4-h unit hydrograph as below derive the ordinates of a 12-h unit hydrograph for the same catchment?   7

Time (h)	Ordinate of 4-h UH
0	0
4	20
8	80
12	130
16	150
20	130
24	90
28	52
32	27
36	15
40	5
44	0

Unit - IV

7. a) Describe Kennedy's silt theory and explain drawbacks in Kennedy's theory?   7

   b) A channel section has to be designed for the following data: 7

   Discharge Q = 30 cusecs

   Silt factor f = 1.00

   Side slope = 1/2:1,

   find also the longitudinal slope?

OR

8. a) What is Canal Lining and its advantages?   7

   b) What is Water Logging and what are causes of water logging?   7

Unit - V

9. a) Write short note on: 7
   i)   Risk
   ii) Reliability
   iii) Design storm

   b) Flood-frequency computations for the river Chambal at Gandhisagar dam, by using Gumbel's method, yielded the following results:

Return Period T (Years)	Peak Flood (m^3/s)
50	40,809
100	46,300

   Estimate the flood magnitude in this river with a return period of 500 years?   7

OR

10. a) Write short note on: (any three)   7
    i)   Hydrologic storage routing
    ii) Hydrologic channel routing
    iii) Prism storage
    iv) Wedge storage

    b) Route the following flood hydrograph through a river reach for which K=12.0 h and X = 0.20. At the start of the inflow flood the outflow discharge is 10m^3/s?   7

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