b) Explain with neat sketches the following: (10)

i) Rock toe (ii)Horizontal drainage blanket (iii) cut-off (iv) Rip-rap

Q.7) Write short notes on : (20)

(i) Drainage galleries

(ii) Losses of water in canals

(iii) Sprinkler irrigation

(iv) Life of reservoir

(LA)

BE - Civil - Sem - VII - Rev

IE

21/5/15

QP Code : 8451

Maximum Marks: 100

Duration : 3 Hours

N.B. (i) Question **No. 1** is compulsory

(ii) Attempt any **Four** Questions out of **Six** Questions

(iii) Illustrate with figures wherever necessary

(iv) Assume suitable data if necessary and state it clearly

Q1. Explain the following: (20)

i) Determination of average rainfall over a catchment
ii) Ill effects of irrigation
iii) Well development
iv) Relation between duty and delta

Q. 2a) The culturable commanded area of water course is 120 hectares. Intensities of sugarcane and wheat crops are 20% and 40% respectively. The duties for the crops at the head of water course are 730 ha/ cumecs and 1800 ha/ cumecs respectively. Find (i) the discharge required at head of the water course , (ii) determine the design discharge at the outlet assuming a time factor of 0.8 (10)

b) A 3-hour storm produced a flood hydrograph and the observations were at 3-hour intervals, staring from zero hour.The observed discharges (cumecs) are 4, 9, 12, 18, 20, 16, 20, 10, 8, 6, 4. Assume constant base flow 4 cumecs, determine unit hydrograph ordinates. The catchment area is 50 sq.km. (10)

Q. 3a) Derive the equation for discharge from well in an unconfined aquifer. (10)

b) A 30 cm dia well penetrates 20 m below the static water table. After 24 hours of pumping at a rate 5000lt/minute , the water level in a test well at 100m is lowered by 0.5 m and in a well 30 m away the drawdown is 1.00m. what is the transmissibility of the aquifer? Also determine the drawdown in the main well. (10)

Q. 4a) Explain the foundation treatment for gravity dams.. (10)

b) a concrete dam can be assumed to be trapezoidal in section having top width 2m and bottom width 10 m. height of dam 15m and its u/s face has a batter of 1: 10. Check the stability of dam in the full reservoir condition assuming no free board allowance. Consider uplift pressure with intensity factor 100%. Also determine stresses at toe and heel. Assume weight of concrete 24 KN/m^3, unit shear strength of concrete 14 Kg/ m^2, and coefficient of friction between concrete and foundation soil is 0.7. (10)

Q. 5a) Explain different types of spillway gates. (10)

b) Draw the elementary profile of gravity dam and explain the procedure for determining base width of elementary profile of a gravity dam. (10)

Q.6a) Explain the various causes of failure of earth dam. (10)