CLASS: BE   SEMESTER : VII
BRANCH: CIVIL   SESSION : MO/18

SUBJECT: CE7003 IRRIGATION ENGINEERING AND HYDROLOGY
TIME: 3.00 HOURS   FULL MARKS: 60

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Differentiate between flow irrigation and lift irrigation.	[2]
Q.1(b)	What is sprinkler irrigation? Discuss different types of sprinkler irrigation systems.	[4]
Q.1(c)	Find the field capacity of a soil for the following data: root zone depth = 2 m, existing water content = 5 %, dry density of soil = 15 kN/m^3, water applied to the soil = 500 m^3, water loss due to evapotranspiration and deep percolation = 10 %, area of plot = 1000 m^2.	[6]
Q.2(a)	Define kor depth and kor period.	[2]
Q.2(b)	What are the factors that affect duty? Describe these factors briefly.	[4]
Q.2(c)	A water course commands an irrigated area of 600 hectares. The intensity of irrigation of rice crop is 60 %. The transplantation of rice crop takes 12 days and the total depth of water required by the crop is 50 cm on the field during transplantation period. The useful rain falling on the field during transplantation period is 10 cm. Find the duty of irrigation water for the crop on the field during transplantation period at the head of the field and at the head of the water course assuming the loss of water to be 20 % in the water course. Also, calculate the discharge required in the water course.	[6]
Q.3(a)	What do you understand by regime channel?	[2]
Q.3(b)	Compare between Lacey's method and Kennedy's method of design of alluvial channels.	[4]
Q.3(c)	Using Kennedy's method, design an irrigation channel to carry a discharge of 45 cumecs. Assume *N* = 0.0225 and *m* = 1.05. The channel bed has a slope of 1 in 5000.	[6]
Q.4(a)	Differentiate between open well and tube well.	[2]
Q.4(b)	Discuss briefly about the losses in canal.	[4]
Q.4(c)	Design a tube well for the following data: yield required = 0.08 cumec, thickness of confined aquifer = 30 m, radius of influence = 300 m, permeability = 60 m/day, and drawdown = 5 m	[6]
Q.5(a)	What are the functions of a divide wall?	[2]
Q.5(b)	What are the causes of failure of weirs? Discuss any one cause of failure in detail.	[4]
Q.5(c)	Discuss briefly about the silt control at headworks.	[6]
Q.6(a)	What are the losses from precipitation?	[2]
Q.6(b)	Discuss briefly the measurement of precipitation.	[4]
Q.6(c)	A storm with 10 cm precipitation produced a direct runoff of 5.8 cm. Given the time distribution of the storm as below, estimate the φ index of the storm.	[6]

Time from Start (hrs)	1	2	3	4	5	6	7	8
Rainfall Excess (cm)	0	0.35	0.95	1.75	1.25	1.05	0.45	0

Q.7(a)	Differentiate between direct runoff and base flow.	[2]
Q.7(b)	Explain the rational method of estimation of flood discharge.	[4]
Q.7(c)	Discuss various factors that affect a hydrograph.	[6]