Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC-Semester –VI (May-2012) Examination

Subject code: X60603

Subject Name: Irrigation Engineering

Date:10 /05/2012

Time: 10.30 am – 01.00 pm **Total Marks: 70**

Instructions:

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

Q.1	**(a)**	Define Irrigation and explain the factors which necessitate irrigation	**07**
	(b)	Discuss briefly the benefits as well as ill-effects of irrigation	**07**
Q.2	**(a)**	Classify the irrigation methods and explain any one briefly	**07**
	(b)	Find the field capacity of a soil for the following data (i) Depth of root zone =2 metre, (ii) Existing water content = 6 % , (iii) Dry density of soil = 1400 kg/cubic metre, (iv) Water applied to soil = 500 cubic metre (v) Water lost due to evaporation and deep percolation=10 % (vi) Area of land irrigation = 1000 square metre.	**07**
		OR	
	(b)	A water course has a culturable commanded area of 1000 hectares. The intensity of irrigation for crop A is 40 % and for crop B is 45 % , both the crops being rabi crops. Crop A has a kor depth of 150 mm and kor period 3 weeks and Crop B has a kor depth of 100 mm and kor period 2 weeks. Calculate the discharge of the water course.	**07**
Q.3	**(a)**	What is a gravity dam ? Enumerate the various forces acting on a gravity dam.	**07**
	(b)	Discuss the various purposes for which galleries are provided in dams	**07**
		OR	
Q.3	**(a)**	What are the different types of earth dams ? Support your answer with neat sketches	**07**
	(b)	A 100 m high concrete gravity dam trapezoidal in cross-section has upstream face vertical, crest width 6 m , base width 75 m and free board equal to 4 m. Calculate the maximum and minimum vertical stress at the toe and heel. When the reservoir is full. Take unit weight of concrete as 23.544 KN/cubic m. Neglect all other forces except hydrostatic water pressure, uplift pressure and self weight. There is no drainage gallery and no tail water.	**07**
Q.4	**(a)**	What are the different types of canals ? And how canals are classify according the canal alignment. Explain with sketch.	**07**
	(b)	What are the advantages and disadvantages of the canal lining	**07**
		OR	
Q.4	**(a)**	What are the factors affecting duty? How can duty be improved.	**07**
	(b)	What is a fall in a canal ? Why is it necessary to provide a fall in a canal. Describe briefly with neat sketches the different types of falls.	**07**
Q.5	**(a)**	What is a spillway ? What are its essential requirements. Describe the various components of a spillway.	**07**
	(b)	Sketch the layout of a typical diversion headworks and describe briefly the	**07**

functions of the various components of diversion headworks.

OR

Q.5	**(a)**	Differentiate between (a) aqueduct and syphon aqueduct (b) super passage and canal syphon.	**07**
	(b)	What is water logging ? What are the ill effects and causes of water logging.	**07**

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