Registration no: | | | | | | | | | | |

Total Number of Pages: 02

B.TECH
PCCI4305

6th Semester Regular / Back Examination 2015-16
IRRIGATION ENGINEERING
BRANCH: CIVIL
Time: 3 Hours
Max Marks: 70
Q. CODE: W200

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: **(2 x 10)**

a) What are the objectives of command area development?
b) What are the factors that must be considered for deciding an ideal cropping pattern in a given area?
c) Distinguish between duty and outlet discharge factor.
d) What is consumptive use of water?
e) How can a water logged land be made useful for cultivation?
f) What is the purpose of providing a cross drainage structure?
g) What is Bligh creep theory?
h) What are the criteria for safe design of earth dam?
i) What is Watershed canal?
j) What are the forces acting on a gravity dam?

Q2

a) Describe various methods of irrigation mentioning their advantages, disadvantages and applicability to different field conditions. **(6)**
b) The field capacity and permanent wilting point for a given 0.8 m root zone soil are 35 and 10 percent, respectively. At a given time the soil moisture in the given soil is 20 percent when a farmer irrigates the soil with 250 mm depth of water. Assuming bulk specific gravity of the soil as 1.6, determine the amount of water wasted from the consideration of irrigation. **(4)**

Q3

a) Design a channel using Kennedy's theory to carry a discharge of 30 m^3/s with critical velocity ratio and manning's coefficient n is equal to 1.0 and 0.0225 respectively. Assume the bed slopes 1 in 5000 and the side slopes is 1H: 2V **(7)**
b) What is canal lining? What are its advantages? **(3)**

Q4 a) What is a super-passage? Draw a neat sketch of it and explain in brief the design procedure. **(5)**
b) With the help of a neat diagram, explain the various parts of a diversion head-work. **(5)**

Q5	**a)**	Explain Khosla's method of independent variables. How do you apply corrections for (i) thickness of floor, (ii) inclination of floor and (iii) interference of piles?	**(6)**
	b)	What is the necessity of a fall in a canal? How do you select its location?	**(4)**
Q6	**a)**	Describe different methods of controlling seepage through an embankment dam and its foundation.	**(6)**
	b)	For a homogeneous earth dam 50 m high, and 2 m freeboard, a flow net was constructed and following results were obtained. Number of potential drops = 25 Number of flow channels =4 The dam has a horizontal filter of 40 m length and its downstream end. Calculate the discharge per meter length of the dam if the coefficient of permeability of the dam is 3×10^{-3} cm/sec.	**(4)**
Q7	**a)**	Explain the step by step method of designing a high gravity dam.	**(5)**
	b)	Explain the functions of different components of a spillway and suitability of different types of spillways for different site conditions and other requirements.	**(5)**
Q8		Write short notes on any **two** of the following	**(5 x 2)**
	a)	Frequency of irrigation	
	b)	Garret's diagram	
	c)	Causes of failure of gravity dam	
	d)	Surface and sub-surface drainage	