KADI SARVA VISHWAVIDYALAYA

B.E SEMESTER- VII EXAMINATION (NOVEMBER / 2016)

SUBJECT CODE: CV-703   **SUBJECT NAME: Irrigation Engineering**

DATE: 12/11/2016   TIME: 10:30A.M TO 01:30P.M.   TOTAL MARKS: 70 MARKS

Instructions:
1. Answer each section in separate AnswerSheet.
2. Use of scientific Calculator ispermitted.
3. All questions arecompulsory.
4. Indicate clearly, the options you attempted along with its respective questionnumber.
5. Use the last page of main supplementary for roughwork.

Section -1

Q:1   (AllCompulsory)

(A)Write a short note on benefits of irrigation.   05

(B) What do you understand by waterlogging? What are the main causes of waterlogging?   05

(C)Explain the terms 'Duty' and 'Delta'. Derive a relation between the two.   05

OR

(C)An earthen channel with a base 3 m wide and side slope 1:1 carries water with a   depth of 1 m. The bed slope is 1:1600. Estimate the discharge. Take value of N in Manning's formula N =0.04   05

Q:2   Answer the followingQuestion.

(A)Explain advantages and disadvantages of drip irrigation.   05

(B)What do you understand by Lacey's initial and final regime conditions?   05

OR

(A)What is balancing depth in a canal? Derive an expression for the same.   05

(B)Explain border strip method of irrigation.   05

Q:3   Answer the followingQuestion.

(A)What are the limitations of Kennedy's theory?   05

(B)Describe with the help of sketch various forms of soil moisture. Which of these moistures is mainly available for utilization by the plants?   05

OR

(A)Describe check basin flooding method of irrigation with sketch.   05

(B) A water course has culturable commanded area of 2600 hectares, out of which the intensities of irrigation for perennial sugar cane and rice crops are 20% and 40% respectively. The duty for these crops at the head of water course are 750 ha/cumec and 1800 ha/cumec respectively. Find the discharge required at the head of water course if the peak demand is 20% higher than the average requirement.   05

Section -2

Q:4   (AllCompulsory)

(A)Explain Khosla's method of independent variables.   05

(B) Design a lined canal to carry 100 m^3/s on a slope of 1 in 2500. The maximum permissible velocity is 2 m/s, N= 0.13 in Manning's formula and the side slope is 1.25 H: 1.0 V.   05

(C)What is distributary head regulator? Give its functions.   05

OR

(C)Describe with the help of neat sketches of the various types of cross drainage works   05

Q:5   Answer the followingQuestion.

(A)A syphon aqueduct has single barrel of 3.5 m, length 100 m and discharge capacity of 30 cumecs, f in Darcy –Weisbach formula is 0.013, co-efficient of bend loss 0.10 (2 bends), Co-efficient in expansion at outlet 0.20, Co-efficient in contraction at inlet 0.10.

Determine afflux.   05

(B)Describe Bligh's creep theory for the design of weir over pervious foundation.   05

OR

(A)Discuss causes of failure of weirs and briefly explain measures to prevent such failures. 05

(B)Design an irrigation channel in alluvial soil according to Lacey's silt theory using following data: Full Supply discharge = 15 m³/s, Lacey's silt factor = 1.0, Side Slopes = ½: 1.   05

Q:6   Answer the followingQuestion.

(A)Sketch the layout of a typical diversion headwork and describe briefly the functions of the various components of diversion headworks.   05

(B)What is cross regulator? What are its functions?   05

OR

(A)Distinguish clearly between a weir and a barrage.   05

(B)Explain the method of determining uplift pressure on barrel roof of syphon aqueduct.05

-----All the Best--------

KADI SARVA VISHWAVIDYALAYA
B.E. SEMESTER-VII EXAMINATION NOVEMBER-2015

Subject Code:CV703   Subject Name: Irrigation Engineering
Date: 27/11/2015   TIME: 10:30a.m. To 1:30p.m.   Total marks: 70

Instruction:

1. Answer each section in separate Answer Sheet.
2. Use of scientific calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly** the options you attempted along with its respective question number
5. Use the last page of supplementary for rough work.

Section-1

Q.1 (A) Briefly describe the ill effects of irrigation.   [05]
    (B) Discuss various characteristics of ideal site for diversion headworks.   [05]
    (C) Sketch a typical cross-section of a canal which is partly in cutting and partly in filling. [05]

OR

    (C) Explain soil moisture tension and soil moisture stress.   [05]

Q.2 (A) Explain border strip method of irrigation.   [05]
    (B) Calculate the design discharge of the canal for the following data: [05]

Sr. No.	Crop	Base period	Area to be irr. (ha)	Duty at the head Of the canal (ha/cumec)
1	Sugarcane (Perennial)	300	1000	600
2	Overlap for sugarcane in hot weather	100	200	600
3	Jower (Rabi)	130	900	1500
4	Bajra(Kharif)	130	800	1800
5	Vegetable (HW)	130	300	700

Take time factor = 7/10, & the capacity factor of 0.8.

OR

Q.2 (A) Discuss various types of water losses which occur in an irrigation canal.   [05]

    (B) Design an irrigation channel in a non-erodible material to carry a discharge of 15 [05]
        cumes when maximum permissible velocity is 0.8m/s. Assume bed slope as 1 in 4000,
        slide slope as 1:1 and Manning's constant N 0.025.

Q.3 (A) Enlist various irrigation efficiencies and explain any two. [05]
    (B) Explain the salient features of drip irrigation. [05]

OR

Q.3 (A) What do you mean by water logging of soil? What are the main causes of [05] waterlogging?
    (B) What do you understand by Lacey's initial and final regime condition? [05]

Section-2

Q.4 (A) Define diversion headwork. Describe the function of each component of diversion [05] head work with a neat diagram.
    (B) Discuss the various silt control devices used for sediment control in the off taking [05] channel.
    (C) What factors will you consider while selecting suitable types of cross-drainage work? [05]

OR

    (C) List the various methods for estimating peak flood discharge and [05] explain rational method.

Q.5 (A) What is canal fall? Why is it necessary to provide a fall in a canal? [05]
    (B) What are the causes of piping failure and the failure due to rupture of floor? [05]

OR

Q.5 (A) Below a horizontal apron of 16 m length a sheet pile is provided at 12 m distance from [05] the upstream end. The sheet pile is of 4 m depth. The weir on the floor stored water upon 3 m height. Calculate uplift pressure at both faces of the sheet pile just below the floor and also at lower end of the sheet pile.
    (B) Design an expanding transition for a channel for the following data by using [05] Chaturvedi's method.
    Length of flume=15 m, Width if throat=10m, Width of channel=16m

Q.6 (A) Distinguish clearly between a weir and barrage. [05]
    (B) Explain functions of cross regulator and distributory head regulator. [05]

OR

Q.6 (A) Describe Bligh's creep theory for the design of weir over pervious foundation. [05]
    (B) What is an escape? Enlist different types of escapes? Explain the working of each [05] type.

----------All the Best----------