Total No. of Printed Pages:2

SUBJECT CODE NO:- H-337
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (Civil)
Water Resources Engineering-II
(REVISED)

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B
1) Question no.1 and Question no.6 are compulsory.
2) Attempt any two questions from remaining questions from each section.
3) Figures to right indicate the maximum marks.
4) Assume suitable data, if necessary.

Section A

Q.1 Attempt any Five. 10
a) What is meant by a Dam & Reservoir?
b) Define with neat sketch mass curve and demand curve.
c) Give the classification of dams.
d) Give the wave height formulae's and explain the terms in it.
e) Define phreatic line and show its probable path in an earthen dam.
f) Define arch dam and buttress dam with sketch.
g) Draw a neat diagram of elementary profile of gravity dam.

Q.2 a) Explain the procedure for calculating the reservoir capacity for a specific yield from the mass inflow curve. 08
b) Discuss the factors which affect the selection of site for dam. 07

Q.3 a) Determine the uplift pressure on a gravity dam having 35.0m height 8.0m top width, 20.0m base width and up-stream face vertical. The tail-water depth is 3.5m and free board is 1.5m. Also determine the uplift pressure when there is a drainage gallery at a distance of 4.0m from the up-stream face. 08
b) Discuss the stability analysis of a gravity dam. 07

Q.4 a) Draw the typical cross-sections of earth dams when: 09
i. Only pervious material is available.
ii. Only impervious material is available.
iii. Both pervious and impervious materials are available.
b) Explain with neat sketch multiple arch type buttress dam. 06

Q.5 Attempt any Three. 15
a) Write a short note on Joints in gravity dam.
b) Write a short note on maintenance of earthen dam.
c) What are the characteristics of the phreatic line?
d) Explain with neat sketch effect of tension cracks.

Section B

Q.6 Attempt any Five. 10

a) Define spillway and enlist its types.
b) Define canal and canal lining.
c) What is a necessity of cross drainage works?
d) Define head regulator and cross regulator.
e) Draw a typical layout of diversion head-works.
f) Define weir and barrage.
g) Define with neat sketch syphon spillway.

Q.7 a) Enumerate the important types of spillway gates. Describe with a neat sketch the construction and working of Tainter gates. 08

b) Find the channel section and discharge Q that can be allowed to flow in it. If $B/D = 5.4$, bed slope=$1/5200$ and N=0.0225. Use Kennedy's theory. 07

Q.8 a) Discuss various design features of cross regulators and distributary head regulator. 07

b) Explain with neat sketch various roughening devices. 08

Q.9 a) Explain with neat sketch Bligh's creep theory for seepage flow. 08

b) Explain the design of an ogee-shaped spillway. How would you fix the d/s and u/s profiles? 07

Q.10 Attempt any Three. 15

a) Explain with neat sketch side channel spillway.
b) Define: Permanent Canals, Feeder canals, Main canal, alluvial canals, and Lined canals.
c) Define canal fall and explain with neat sketch stepped fall and ogee fall.
d) List out the different functions served by scouring sluices.