CBCS SCHEME

USN | | | | | | | | | | |

15CV832

Eighth Semester B.E. Degree Examination, November 2020
Hydraulic Structure

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions irrespective of modules.

Module-1

1 a. Give details of uplift force, hydrodynamic force and wave forces acting on Gravity dams. **(10 Marks)**

b. Give definition sketch of galleries provided is gravity dams. List the functions of galleries. **(06 Marks)**

2 a. Assuming unit weight of concrete 23.5 kN/m^3, analyze for maximum stresses developed in the body of dam, shown in Fig Q2(a). Assume no uplift pressures get developed.

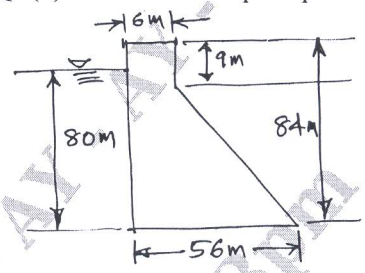

Fig Q2(b) **(10 Marks)**

b. With sketch, explain elementary profile and also practical profile of gravity dam. **(06 Marks)**

Module-2

3 a. Explain about parameters involved in deciding the preliminary section of an earthen dam. **(10 Marks)**

b. Based on method of construction, write about the classification of earthen dams. **(06 Marks)**

4 a. Draw the topmost seepage line for the homogeneous earthen dam section, show in Fig Q4(a). Determine quantity of seepage. Take K = 0.8m/day. Also draw the flow net.

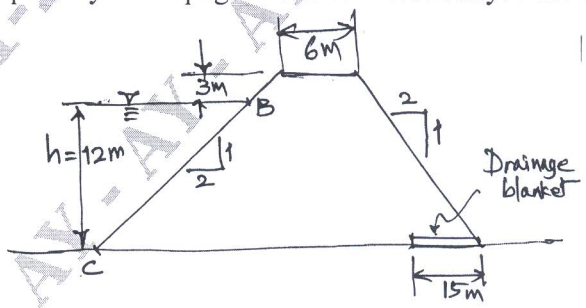

Fig Q4(a) **(10 Marks)**

b. Write about various types of causes of failure of earthen dams. **(06 Marks)**

Module-3

5 a. Define spillway. Explain various types of spillways with neat sketches. (10 Marks)
b. Explain various energy dissipator with sketches. (06 Marks)

6 a. Using Bligh's theory determine floor length, depth of vertical cutoffs and thickness of the floor for the vertical drop weir having :
Nature of bed : Corse sand with Bligh's C = 12

Flood discharge	=	300 cumec
Length of weir	=	40m
Height of weir above bed	=	2m
Height of falling shutter	=	0.6m
Top width of weir	=	2m
Bottom width	=	3.5m

Assume u/s and d/s cutoff each of depth 3m. (10 Marks)
b. Sketch the ogee spillway crest, the u/s and d/s profiles. Assume vertical u/s face of dam. (06 Marks)

Module-4

7 a. Explain in detail about various types of cross drainage works with neat sketches. (10 Marks)
b. List the various design features of cross drainage works. (06 Marks)

8 Design the components of CD works namely i) Drainage water way ii) Canal water way iii) Transitions iv) Tentative trough section.
Canal details :

Discharge	=	$30m^2/s$
Bed width	=	20m
Depth of water	=	1.5m
FSL	=	251.50m

Drainage details :

High flood discharge	=	250cumec
High flood level	=	247.50m
High flood depth	=	2.5m
General ground level	=	251.00m

(16 Marks)

Module-5

9 a. Explain various functions of Head regulator and cross regulator. Draw a sketch showing these regulators on parent canal. (10 Marks)
b. Write about the requirements of good canal outlets and list various types of canal outlets. (06 Marks)

10 a. Explain various types of canal drops with neat sketches. (10 Marks)
b. Write about the necessities of canal falls. (06 Marks)

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