No. of Printed Pages : 2

ET-536(A)

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00285

December, 2014

ET-536(A) : HYDRAULIC STRUCTURES – I

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any* ***five*** *questions. All questions carry equal marks.*

1. (a) What do you understand by Mass curve ? Explain the use of Mass curve to determine "Reservoir Capacity" for a specified yield. *7*

(b) Describe the empirical relations for estimating sedimentation rates of Indian rivers. *7*

2. (a) What do you understand by the Arbitrary Profile of a Gravity dam ? *4*

(b) Derive expressions for determining the base width of such a dam based on (i) stress criteria (ii) sliding criteria. *10*

3. (a) Discuss the various causes for failures in earth dams. *7*

(b) Explain in detail as to how you will test the stability of an earth dam constructed with C-ϕ soils. *7*

4. (a) Draw a typical layout of a canal headworks with all the components including river training works. 7

(b) Describe the various types of fish ladder. Also explain their general requirements. 7

5. (a) Explain Bligh's method of safeguarding the foundation against the ill-effects of piping. 7

(b) Describe the need and requirements of a spillway. 7

6. (a) Discuss the necessity of an energy dissipator arrangement downstream of a spillway. 7

(b) Explain the different types of drainage facilities provided in earth dam. 7

7. Write short notes on the following : $4 \times 3\frac{1}{2} = 14$

(a) Multipurpose Reservoir

(b) Grouting

(c) Area velocity method of stream flow measurement

(d) Froude Number

8. Differentiate between the following : $4 \times 3\frac{1}{2} = 14$

(a) Diversion and Detention Dams

(b) Reservoir Capacity and Reservoir Yield

(c) Low Gravity and High Gravity Dams

(d) Exit Gradient and Safe Exit Gradient
