D 1230 (Pages : 2) Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2009

CE 04 702-DESIGN OF HYDRAULIC STRUCTURES

(2004 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

Part A

1. (a) Discuss the factors affecting selection of a site for a dam.
   (b) Explain different types of spillway.
   (c) Explain the forces acting on gravity dam and arch dam.
   (d) Write down the requirements of canal outlets.
   (e) What are the forces to be taken into account in the design of weirs and barrages.
   (f) Explain the factors governing the selection and location of canal escapes.
   (g) Discuss the factors affecting the selection of a suitable cross drainage work.
   (h) Differentiate aqueduct, super passage and canal syphon.

(8 × 5 = 40 marks)

Part B

2. Design a direct sluice for the following data

   Irrigation land : 100 Hectares with a duty of 800

   Full discharge of canal : 500 cumec

   Bed width : 25 m

   Full supply depth : 3 m

   Half supply depth : 2 m

   Bed level : + 10.00

   FSL : + 13.00

   Ground level : + 12.00

   Top level of bank : +14.00 with a top width of 5 m

   There is a berm of 2m width at ground level inside the canal section. The canal has 1:1 side slopes in cutting and 2:1 side sloping in embankment.

Turn over

Hydraulic particulars of the distributary

Bed level of distributary : + 11.5

Bed width : 1 m

Full supply depth : 0.50 m

FSL : + 12.00

Top level of bank : +12.75

Top width : 1m

Hard soil available at + 11.50 (30 marks)

Draw the following

(i) Plant of the sluice. (10 marks)

(ii) Longitudinal section. (10 marks)

(iii) Cross section. (10 marks)