D 90232 (Pages : 2) Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE EXAMINATION, NOVEMBER 2015

CE/PTCE 09 702—DESIGN OF HYDRAULIC STRUCTURES

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. What is the limiting height of gravity dam ?
2. What is the use of surplus weir ?
3. Where is canal drop provided ?
4. Where is siphon well drop provided in canal ?
5. What is super passage ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. What are the different types of notches ?
7. What is the use of ogee weir in dam construction ?
8. What are the components of canal regulator and their uses ?
9. What are the necessities of cross drainage works ?
10. How direct sluices differ from tank sluice ?

(4 × 5 = 20 marks)

Part C

11. Design a sluice taking off from a tank with the following data, irrigating area 200 hectares at 1000 duty. The tank bund through which the sluice is taking off has a top width of 2 m. with 2 : 1 side slopes. The top level of tank is + 40.00 m. and the ground level at site is + 34.50 m. Good hard soil for foundation is available at + 33.50 m.

    The sill of the sluice at off take is + 34.00 m.

    The maximum water level in tank is + 36.00 m.

    The full tank level is + 37.00 m.

    Average low water level of the tank is + 36.00 m.

Turn over

The details of the channel below the sluice are as follows :

Bed level	:	+ 34.00 m.
Full supply level	:	+ 34.50 m.
Bed width	:	1.25 m.

Side slope 1.5 to 1 with top of bank at + 35.50. (20 marks)

Draw the section across barrel and well. (20 marks)

Or

12. Design a canal drop with the following data.

Hydraulic particulars of the canal *above drops* :

Full supply discharge	:	5 m^3 /s.
Bed width	:	7.00 m.
Bed level	:	+ 15.00 m.
Full supply depth	:	2.00 m.
Full supply level	:	+ 17.00 m.
Top of bank 2.50 m wide at water level	:	+ 18.00 m.
Half supply depth	:	1.25 m.

Hydraulic particulars of the canal *below drops* :

Full supply discharge	:	5 m^3/s.
Bed width	:	7.00 m.
Bed level	:	+ 13.00 m.
Full supply depth	:	2.00 m.
Full supply level	:	+ 15.00 m.
Top of bank 2.50 m wide at water level	:	+ 16.00 m.
The ground level at site of work is	:	+ 16.00 m.
Good soil is available for foundation at	:	+ 14.00 m. (20 marks)

Draw the following view to a suitable scale :

Plan half at top and half at foundation. (10 marks)

Longitudinal section. (10 marks)

[1 × 40 = 40 marks]