

Name :

Reg. No:

SEVENTH SEMESTER B.TECH DEGREE EXAMINATION, OCTOBER 2012
CE 09 702 – DESIGN OF HYDRAULIC STRUCTURES
(2009 Admissions)



Time : Three Hours

Maximum - 70 Marks

Note : Drawing sheets may be supplied for the examination

PART – A

All questions are compulsory.

1. List out the various forces acting on dams.
2. Sketch the practical profile of a high gravity dam.
3. Differentiate between semimodular and non-modular canal outlets.
4. Write a short note on siphon well drop.
5. List out the various types of aqueducts.

(5 x 2 = 10 Marks)

PART – B

Answer any four questions.

6. List out the various types of spillways and explain any two in detail.
7. Explain the necessity and requirements of surplus works in tank structures.
8. Differentiate between arch dam and gravity dam.
9. What are the requirements of canal outlets?
10. Differentiate between weir and barrage.
11. Explain the necessity of cross drainage works.

(4 x 5 = 20 Marks)

PART – C

12. A canal drop is to be designed with two trapezoidal notch to suit the following condition:

General ground level at site is +51.00 m
 Good foundation soil available at +48.00 m

| Details of canal | U/S | D/S |
|---|-----------------------|----------------------|
| Full supply discharge | 6 m ³ /sec | 6m ³ /sec |
| Bed level | +50.00 | +47.50 m |
| Bed width | 5m | 5m 5m |
| Full supply level | +51.50 | 49.00 |
| Half supply depth | 1.1 m | 1.1 m |
| Top level of bank | +52.50 m | +50.50 m |
| Side slopes of canal cutting or filling | | |
| Water side | 1H : 1V | 1H : 1V |
| Rear side | 1.5 H : 1V | 1.5 H : 1V |
| Top width of canal bank | | |
| Left side | 5 m | 5 m |
| Right side | 2 m | 2 m |

- (a) Design the size of the notch, drop wall and notch pier of the drop. (10+10=20 Marks)

- (b) Draw to scale the following.

- (i) Longitudinal section of the canal drop
- (ii) Half plan at top and half plan at foundation.

(10+10 = 20 Marks)

(Or)

13. Design a siphon aqueduct if the following data at the crossing of a canal and adrainage are given. (20 Marks)

| | | | |
|--------|----------------------------------|---|------------|
| (i) | Discharge of canal | = | 40 cumecs |
| (ii) | Bed width of canal | = | 30 m |
| (iii) | Full supply depth of canal | = | 1.6 m |
| (iv) | Bed level of canal | = | 206.4 m |
| (v) | Side slopes of canal | = | 1½ H : 1V |
| (vi) | High Flood discharge of drainage | = | 450 cumecs |
| (vii) | High flood level of drainage | = | 207.0 m |
| (viii) | Bed level of drainage | = | 204.5 m |
| (ix) | General ground level | = | 206.5 m |

Also draw to scale the following.

- (a) Longitudinal section
- (b) Half plan at top and half plan at foundation.

(10 + 10 = 20 Marks)
