B.E.(with Credits)-Regular-Semester 2012-Civil Engineering Sem VII

BE-Elective-II : Advanced Hydraulic Structures

P. Pages : 2 **GUG/W/16/6519**

Time : Three Hours * 4 6 5 0 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.
5. Use of non programmable calculator is allowed.

1. A weir with a vertical drop has following particulars **16**
Nature of bed : course sand with Bligh's C = 12
Flood discharge - 300 cumec
Length of weir - 40 m
height of weir above low water - 2m
height of falling shutter - 0.6 m
top width of weir - 2.0 m
bottom width of weir - 3.5 m
Design the length and thickness of aprons and draw cross section of weir.

OR

2. a) State fundamental difference between Khosla's theory and Bligh's creep theory for seepage below a weir. **8**

b) What are different types of weir explain with neat sketch circumstances under which each type is adopted. **8**

3. Write a note on : **16**

i) Cavitation process in spillway.

ii) Location of spillway.

iii) Trough spillway.

iv) Hooded type syphon spillway.

OR

4. a) What do you mean by an energy dissipater ? discuss the various method used for energy dissipation below spillway. **8**

b) Explain in detail with neat sketch. **8**

i) Syphon well drop

ii) Straight Glacis fall

5. a) Design a irrigation outlet for the following data ; **8**
F. S. discharge at outlet = 50 lit / sec
F.S.L. in distributary on u/s side of outlet - 200 m
F.S.L. in water course on d/s side of outlet = 199.92 m
FSD (Depth) in distributary on u/s side of outlet = 1.05 m

b) What is mean by canal regulation and what are diff canal regulation work. **8**

OR

6. a) What is mean by canal escape ? How do they help in protecting adjoining area against flooding due to some breach in canal embankment. **8**

b) Write a note on : **8**

i) Cattle crossing

ii) Bed bars

7. Design a suitable C.D. work for given data **16**

Canal Full supply discharge - 32 cumec
Full supply level - 213.5 m
Canal bed level - 212.0 m
Canal bed width - 20 m
Trapezoidal section - 1.5 H : 1V
Canal water depth - 1.5 m

Drainage- High flood discharge - 300 cumec
High flood level - 210 m
High flood depth - 2.5 m
General Ground level - 212.5 m

OR

8. Write a short note on : **16**

a) Fluming of canal

b) Inlet and outlet

c) Level crossing

d) Suitability of cross drainage work

9. Explain in brief. **16**

a) Dry intake tower
b) Trash Rack
c) Simple submerged intake
d) Hydraulics of outlet work

OR

10. a) Explain in detail stepped spillway with its suitability. **8**

b) Explain in detail with neat sketch labyrinth spillway. **8**

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