FACULTY OF ENGINEERING

B.E. 3/4 (Civil) II-Semester (New) (Main) Examination, May 2013

Subject : Water Resources Engineering and Management - I

Time : 3 Hours   **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. Define Infiltration (2)
2. What are the factors effecting runoff? (2)
3. Define Hydrograph (3)
4. Write the relationship between Duty, Delta and Base period. (3)
5. What do you understand by balancing Depth of cutting? (2)
6. Write the differences between weir and Barrage. (2)
7. Write the functions of cross regulator. (3)
8. Define Canal outlet. (2)
9. What are the functional requirements of multipurpose projects? (3)
10. What is meant by systematic canal operation? (3)

PART – B (50 Marks)

11. The ordinates of six hours unit hydrograph for catchment area 1000 km^2 are given below:

Time in hours	6	12	18	24	30	36	42
Ordination in cusec	80	200	146	80	50	15	0

    The storm lasted by 18 hrs. The effective rainfall increments for 6 hours period are 0.6cu, 2cu, 1cu respectively. Compute the runoff hydrograph also find out the peak flow and volume of runoff. Above flow of 100 cusec may be assumed.

12.(a) What are the different methods used for canal lining? (5)
   (b) Design an irrigation channel by Kennedy's theory to carry a discharge of 25 cusec N=0.0225, m=1, s=1/5000. (5)

13. Design a vertical drop weir using Bligh's theory and check the thickness of floor of flood Discharge = 3000m^3/s, HFL before constriction = 200mts. Full supply level =199m, Bed level of river = 193 mts, Lareys' silt factor=1 coefficient of crap=10, min. downstream water level=193m, Afflux=1mt. (10)

14. Distinguish between the following : (10)
   (a) Aqueduct, syphon aqueduct
   (b) Super passage, syphon
   (c) Level croming and inlet

15. Write the brief notes on project formulation, project evaluation and management strategies. (10)

16.(a) Write brief notes on canal falls. (4)
   (b) A well with radius of 0.5m completely penetrates an unconfined Aguster of thickness 50 mts and k=30 m/day the well is pumped so that the water level in the well remains at 40m above the bottom. Assume the pumping has no effect on water table at r = 500m. What is the steady state discharge. (6)

17. Write short notes on the following:
   (a) Hydrologic cycle (4)
   (b) Flexibility, sensitivity (3)
   (c) Warabandhi (3)

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