Code No. 6327/ M

FACULTY OF ENGINEERING

B.E. 3/4 (Civil) II – Semester (Main) Examination, June 2014

Subject: Water Resources Engineering and Management – I

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

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1	Enumerate various types of aquifer parameters.	3
2	Differentiate between weir and a barrage.	2
3	Define the terms: Flexibility and base period.	3
4	Describe various methods of computing average rainfall over a basin.	3
5	State the limitations of Dupuit's theory.	2
6	List out the benefits of irrigation.	3
7	State the various functions of head regulator.	4
8	Enumerate the functional requirements of multipurpose projects.	3
9	Classify various types of regulators.	2

PART – B (5x10 = 50 Marks)

10 (a) Explain in detail various factors affecting runoff. 4

(b) A large sample of peak flood data was available for a river. Flood frequency computations using Gumbel's method, yields the following results:

Return period T (Year)	Peak flood (m^3/s)
50	40,200
100	45,800

Estimate the magnitude of a flood for this river with a return period of 210 years. 6

11 (a) Explain Darcy's law. What are its assumptions? Discuss its validity. 5

(b) The isohyets for annual rainfall over a catchment were drawn and the areas of strips between isohyets are obtained as below. Determine the average depth of annual precipitation over the area. 5

Isohyets (mm)	450-550	550-650	650-750	750-950	950-1150
Area (Km^2)	1200	2900	2600	950	800

12 (a) An area of 1 hectare was irrigated in 10 hours with a stream of 30 ℓ/sec. Depth of root zone was 1 m and available moisture holding capacity 16 cm/m. Irrigation was given when 50% of available moisture was depleted. Water application efficiency was 60%. Determine water storage efficiency. 5

(b) Define duty and delta of canal. Derive a relationship between duty and delta for a given base period. 5

……2

13 (a) Outline the steps involved in determining the flood thickness of a weir placed over permeable foundation. 5

(b) Discuss briefly the causes of failures of weirs on permeable foundation and their remedies. 5

14 (a) What do you understand by flexibility of an outlet? Derive the expression for the same. 5

(b) Discuss the various considerations according to which the location of a fall is decided. 5

15 (a) Discuss the various steps involved in the planning of water resources development project. 5

(b) Enumerate various management strategies and problems of a development project. 5

16 Write short notes on any two of the following: 5x2=10

a) Integrated water management
b) Design principles of cross drainage works
c) Methods of irrigation.

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