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ET-534(C)

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00632

December, 2016

ET-534(C) : WATER RESOURCES PLANNING

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. (a) Explain the difference between plains and plateaus and also describe in detail Alluvial plains, Terraced plains and Glacial plains. *10*

(b) Explain the difference between a lake and a swamp. *4*

2. (a) Explain about Land Use Classification of India. *7*

(b) Define the following terms : *7*

(i) Intensity of Rainfall

(ii) Run-off

(iii) Evapotranspiration

3. (a) Define major, medium and minor irrigation projects. How are minor irrigation schemes financed in India ? *9*

(b) An average decline of 2 m in the water table is noticed, over an area of 50 sq. km due to withdrawal of 15 million cubic metres of water from the phreatic aquifer during a period of drought. Subsequently, rainfall of 1200 mm occurred and the water levels rose by an average of 1·6 m. Determine the specific yield in the zone of water level fluctuation and the recharge coefficient. Assume the specific yield to be uniform. *5*

4. (a) As per the census records for the years 1911 to 1971, the population of a town is given below. Assuming that the scheme of water supply was to commence in 1996, estimate the population in 1996 and 2006. *10*

Year	*Population*
1911	40,185
1921	44,522
1931	60,395
1941	75,614
1951	98,886
1961	1,24,230
1971	1,58,800

(b) Find the delta for a crop with a base period of 15 weeks if the canal water duty is 1500 hectares/cumec under the field conditions. *4*

5. (a) Explain various factors affecting the use of water. *6*

(b) What are regression models ? Explain the steps involved in the development of a regression equation. *8*

6. (a) A system of three reservoirs is considered with the following data. It is required to find the optimum yield combination from each reservoir for obtaining a total system yield of 40. *9*

Reservoir 1		Reservoir 2		Reservoir 3	
Yield	Cost	Yield	Cost	Yield	Cost
0	0	0	0	0	0
20	15	20	10	20	20
40	30	40	35	40	40

(b) Describe the role of environmental impact indices. *5*

7. (a) Write a note on training programmes and organisation. *7*

(b) Discuss the investigations required for reservoir planning. *7*

8. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Land Use Management

(b) Water Resources Requirement

(c) Crop Rotation

(d) Salvage Value

(e) Training Needs
