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ET-534(C)

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B.TECH. CIVIL (WATER RESOURCES MANAGEMENT)

Term-End Examination

June, 2013

ET-534(C) : WATER RESOURCES PLANNING

Time : 3 hours *Maximum Marks : 70*

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

1. (a) Define the following : 5

(i) Continental drift

(ii) Sial crust

(b) (i) Explain the difference between plains and plateaus. **2x2.5=5**

(ii) Explain the evolution of the landscape of a desert regions.

2. (a) What do you understand by land use pattern ? Describe its importance and application. 5

(b) Write a key note paragraph on Land use management in brief. 5

3. (a) What do you understand by hydrologic cycle ? Explain intensity of rainfall, runoff and evapo-transpiration. 5

(b) An average decline of 2m in the water table is noticed over an area of 50 km^2 due to withdrawl of 15 million m^3 of water from the phreatic aquifer during a period of drought. Subsequently, rainfall of 1200 mm occurred and the water table rose by an average on 1.6m. Determine the specific field in the zone of water level fluctuations and recharge coefficient. Assume the specific yield to be uniform. 5

4. (a) Explain the terms in brief. 5

(i) Ultimate irrigation potential

(ii) Irrigation potential created

(b) Define major, medium and minor irrigation projects. What are the factors affecting the completion of irrigation projects in time ? 5

5. (a) What are the salient points of Malthusian theory of population growth ? What do you understand by optimum population ? 5

(b) (i) Define design period for a water supply scheme. 5

(ii) List different methods of population forecasting.

6. (a) Find the delta for a crop with base period of 15 weaks if canal duty is 1500 hectare/ cumec under the field conditions. 5

(b) List the various methods of surface irrigation and explain any two of them with suitable sketches. Write a short note on drip-irrigation. 5

7. (a) Explain the following : 5

(i) Fresh Water and Brackish water

(ii) Chemical impurities in water

(b) Explain the method of removal of particulate mater from water. 5

8. (a) State various elements of integrated water resources management. Write at least two kinds of conjunctive use of water. 5

(b) What is the importance of forecasting water demand and how does it help in planning ? 5

9. (a) Government Construction of a hydro-electric project would cost 70 crore. The project has an annual operation and maintenance cost of Rs.40 lakh and a 50 year life. What is the annual cost of the project if a planning discount rate of 3% is to be used ? 5

(b) List advantages and disadvantages of simulation and optimisation techniques for water resources. 5

10. (a) Differentiate between induction and in-service training. How the training of senior official is advantageous ? 5

(b) Explain the method of computation of reservoir capacity by mass-curve method. What is reservoir routing ? 5