

00282

B.Tech. Civil (Water Resources Management)**Term-End Examination****December, 2011****ET-534(C) : WATER RESOURCES PLANNING***Time : 3 hours**Maximum Marks : 70*

Note : Answer *any seven* questions. Give sketches /examples in support of your answers. Use of scientific calculator is permitted. The Answers shall be in your own language.

1. (a) Explain briefly the continental drift, sial crust and roof of the world. 4
- (b) Explain the difference between plains and plateaus. 3
- (c) What is the difference between a lake and a swamp ? 3
2. (a) What do you understand by land use pattern ? Describe its importance and application. 2+3=5
- (b) Enumerate the information / data that can be obtained by Remote Sensing. 5

3. (a) Give the hydrologic budget equations for the recharge and discharge area of a basin respectively. 4
- (b) How much of surface water resources of India may be beneficially utilized by the conventional methods of development ? 3
- (c) What are the factors affecting completion of irrigation projects in time ? 3
4. (a) What are the salient points of Malthusian Theory of population growth ? 2
- (b) What do you understand by optimum population ? 2
- (c) As per the census records for the years 1911 to 1971, the population of a town is given below in the table. Assuming that the scheme of water supply was to commence in 1996. It is required to estimate the population 30 years thence i.e., in 2006 and also the intermediate population after 15 years since commencement i.e., in 1991. Use the geometrical progression method for the calculations. 6

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

5. (a) What do you meant by Irrigation Requirement and how will you estimate the consumptive use ? 4
- (b) Write about the various surface irrigation methods giving their neat sketches. Also give their advantages and disadvantages. 6
6. (a) What are the unaccounted system losses ? List various factors affecting the use of water. 5
- (b) How will you remove the particulate matter from water ? Explain briefly screening, sedimentations, coagulation / flocculation and filtration. 5
7. (a) Government construction of a hydroelectric project would cost Rs. 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 ? 3
- (b) Write about the Benefit - Cost Ratio Method. Also give the steps which you will adopt to choose the best alternative by this method. 4
- (c) Describe the use of storage yield relationship of a reservoir in river basin planning. 3

8. (a) What do you know about the optimization models ? Also write the reasons for the over-emphasis on optimization techniques. 5
- (b) What are the major sources of the skepticism that many agencies have about the possibility of actually implementing systems methodologies in water resources planning and management ? 5
9. (a) What would you suggest to be the scope of Training for Junior and Middle Level Officers of Water Resources Department ? 5
- (b) What are the various training methodologies for a training programme ? 5
10. (a) Write about various site selection criteria for a reservoir. 3
- (b) Explain about the area-elevation and storage elevation curves with the help of a typical contour plan of a reservoir area. 4
- (c) Write about the mass curve method for computing the reservoir capacity. 3
-