Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME- SEMESTER II– EXAMINATION – SUMMER 2015

Subject Code: 2723303 **Date: 30/05/2015**

Subject Name: Water Resources Planning

Time: 2:30 PM – 5:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What is planning of water resources development project? Explain how project evaluation helps in finding best alternative project.	**07**
	(b)	Write short notes on any two river valley development projects of our country.	**07**
Q.2	**(a)**	Discuss the compatibility of water use in multipurpose project.	**07**
	(b)	Explain the drawbacks in project planning.	**07**
		OR	
	(b)	Explain stages of project life with neat sketch.	**07**
Q.3	**(a)**	Define sinking fund factor. Initial cost of a project is Rs 2, 00,000 and an annual maintenance cost of Rs 40,000/- each year over a period of 60 years. Benefit realized were from 1, 20,000 immediately after construction to 2, 00,000 in the last year of project life. At 5% interest rate, what would be the annual cost of project?	**07**
	(b)	Explain economic analysis a water resources development project.	**07**
		OR	
Q.3	**(a)**	Following data are available for a reservoir. Catchment area = 1000Km^2 Live storage = 7600 ha m Dead storage = 3200 ha m Annual silt load = 36,0000 tonnes Average density of silt deposit = 1040 Kg/m^3. The silt load consists of the following grade: Coarse silt = 40%, medium silt = 50 % and fine silt = 10 %. Assume that all the coarse silt and 50% of the medium silt would be deposited in the dead storage space of the reservoir. Further 10 % of fine silt would pass as density current through dam outlet and 90% of the remaining silt with 50 % of medium silt would be deposited above the head reach of the reservoir. Estimate: a) Useful life of the reservoir b) Full life of the reservoir.	**07**
	(b)	Name the various discounting methods. Explain any two.	**07**
Q.4	**(a)**	Define live storage capacity of a reservoir. Explain how to determine live storage capacity from the stream flow record at proposed reservoir site.	**07**
	(b)	Differentiate alternative cost and alternative justifiable cost. Discuss any two guidelines for cost allocation of water resources project.	**07**
		OR	
Q.4	**(a)**	Mention the various cost allocation method of water resources project. Explain any two.	**07**

	(b)	What is reservoir simulation? Explain how reservoir simulation serves as a primary tool for quantitative reservoir management.	
Q.5	**(a)**	Explain operation of a single purpose conservation reservoir.	**07**
	(b)	Discuss in brief the sources and effect of risk and uncertainty in water resources projects.	**07**
Q.5	**(a)**	Discuss environmental consideration which influence the planning of water resources project.	**07**
	(b)	Write short notes on interstate water disputes in India.	**07**

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