Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**ME - SEMESTER– II (Old course)• REMEDIAL EXAMINATION – SUMMER 2015**

**Subject Code: 1721202** **Date:13/05/2015**

**Subject Name: Water Resource Planning**

**Time: 02:30 pm to 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)** Signify the planning of water resource and its necessity with context of India. **07**

**(b)** How do you give weightage to uncertainty and allied risks in water resources planning **07**

**Q.2** **(a)** Describe the Environmental and Economical impacts of water resources projects **07**

**(b)** The total cost of a multipurpose project is Rs. 225 crores. Allocate the costs to different project purposes using the following information by alternate justifiable method. **07**

| *Project Purpose* | *Flood Mitigation* | *Hydro-Power* | *Irrigation* | *Navigation* |
|---|---|---|---|---|
| *Separable cost (Rs. in crores)* | 45.00 | 70.00 | 18.00 | 6.00 |
| *Estimated Benefits (Rs. in crores)* | 58.00 | 175.00 | 42.00 | 12.00 |
| *Alternative single purpose cost (Rs. in crores)* | 44.00 | 110.00 | 70.00 | 10.00 |

**OR**

**(b)** Describe the following terms in details: **07**
(i) Design yield (ii) Dead Storage (iii) Useful life of reservoir (iv) Trap efficiency

**Q.3** **(a)** Explain following terms in brief: **07**
(1)Reservoir losses (2) Useful storage (3)Capital Recovery Factor

**(b)** Describe various feasibility tests carried out in the project evaluation. **07**

**OR**

**Q.3** **(a)** Describe the reservoir operation by emphasizing on multipurpose project. **07**

**(b)** Explain storage elevation curve with neat sketch.Also focus on available storage capacity of reservoir. **07**

**Q.4** **(a)** Differentiate between: **07**
(1) Direct benefits and indirect benefits
(2) Engineering feasibility test and financial feasibility test

**(b)** Describe the following terms in detail. **07**
(i) Cash flow diagram
(ii) Compound amount factor
(iii) Capital Recovery and Capital Recovery Factor
(iv) Joint Cost

**OR**

| | | | |
|---|---|---|---|
| **Q.4** | **(a)** | Explain various water laws and policies in brief. | **07** |
| | **(b)** | How do you see the uncertainty in water resources planning? | **07** |
| **Q.5** | **(a)** | How will you evaluate the water resource project socially? explain with suitable example | **07** |
| | **(b)** | Describe the project life with its various stages. Support your answer with necessary example | **07** |

**OR**

| | | | |
|---|---|---|---|
| **Q.5** | **(a)** | What is Cost Allocation? Enlist and explain its principles. | **07** |
| | **(b)** | Write short notes on :<br>(i)The rate of return method. (ii) The annual cost method. | **07** |

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