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B. Tech
PECE 8409

Eighth Semester Examination – 2008

WATER RESOURCE MANAGEMENT

Full Marks – 70

Time : 3 Hours



Answer Question No. 1 which is compulsory
and any **five** from the rest.

The figures in the right-hand margin
indicate marks.



1. Answer the following questions : 2 × 10
- (a) What percentage of total water available in the globe can be utilized as drinking water.
- (b) Mention 4 adverse effects of water resources project in the environment.

- (c) How the height of dam is fixed from the known value of required volume of reservoir ?
- (d) What is irrigation scheduling ?
- (e) Mention two examples where linear programming is used in water resources project planning.
- (f) In which situation Dynamic programming can be applied in water resources project planning ?
- (g) What is the impact of water resources project on river regime ?
- (h) Mention two advantages and two disadvantages of inter-basin transfer.
- (i) What is the role of benefit cost ratio for evaluation of water resources projects ?

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Contd.

(j) What is conjunctive use in water resources project ?

2. Quantified hydrological cycle is essential for making the planning of water resources for a region. Show an authenticated quantified hydrological cycle. 10
3. The following table gives the details about the average seasonal discharges of a river for the duration of 1963-1971. Determine the storage capacity required to maintain a flow of 475 cumecs throughout the year. 10

Year	Season June – September (cumecs)	Winter Oct–March (cumecs)	Summer April–May (cumecs)
1971-71	2000	150	120
71-72	1200	350	65
72-73	1400	400	100
73-74	3600	200	80
74-75	3000	150	120
75-76	700	210	50
76-77	800	320	80
77-78	2400	120	120

4. (a) Why it is felt the interbasin transfer is necessary in Indian context ? Discuss the difficulties to implement it. 5
- (b) Considering the peak and non-peak hour power requirement, discuss the way of operation of hydropower and other power system. 5
5. (a) There are two drinking water project alternatives. In alternative-1, 6 crores rupees will be spend in first year and 1 crore rupee will be obtained as water tax for 10 years of life of the project. In alternative-2, 7 crores rupees will be spend on construction in first year and 1 crore rupee will be spend annually on maintenance. Because of better mainte-

nance, this project will give return of 2 crores annually for 2 years of life of the project. Which alternative is better considering only the economic criterion. The interest rate may be assumed constant @6%. 10

6. Explain the operation of water resources project for

(a) conservative purpose

(b) Non conservative purpose. 10

7. What is effect of sedimentation of the life of the project ? Explain various short term and long term precautions for increasing the life against sedimentation at various stages of project. 10

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8. Write short note on the following : 2.5x4

(a) Rule curve

(b) Conjunctive use of surface and ground water

(c) Pre-release

(d) Riparian right.

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