

# WATER-RESOURCE & ENG.-II

(IRRIGATION ENG.)

- Global Distribution of water
- Multi-purpose<sup>use</sup> of water
- Irrigation Eng. ⊕ Imp. for GATE
- Design of CANALS ⊕ " " "
- Analysis of Gravity Dams. ⊕ Imp. for ESE
- Water Logging & Drainage Design.
- Miscellaneous Topics } Gross Drainage work,  
River Training  
Spillways, etc

Ref. Books :

(1) Irrigation Engg & Hydraulic structures -  
by S.K Garg.

Marks Distribution

(1) Gate : 3-4 marks

ESE (O) : 8-10 que

ESE (C) : 25-30 marks

# 1. GLOBAL ESTIMATES OF WATER

S.No.	SEGMENT	Val. of water ( $\times 10^6 \text{ B m}^3$ )	% of total water
(1)	OCEANS.	1348	97.3
(2)	Fresh water	37.5	2.7*
	Distribution of F.W among various sources		
(i)	Polar Ice	28.2	2.03
(ii)	Ground water	8.45	0.61
(iii)	Lakes & Rivers	0.127	0.01*
(iv)	other sources	0.723	0.05
		1385.5	100%

## Multipurpose Use of water :-

The multipurpose use of water is best given by the water allocation priority of NWP (National Water Policy) 2002, which are as following.

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1<sup>st</sup> NWP is developed in 1988, & III<sup>rd</sup> → 2012  
↓  
2<sup>nd</sup>

- (1) Drinking water
- (2) Irrigation
- (3) Hydropower
- (4) Ecology
- (5) Agro & Non agro Industries. (Agriculture & Non Agriculture)
- (6) Navigation and other uses.

## IRRIGATION

### Introduction :-

(1) Every crop requires a certain quantity of water after a certain fixed interval, throughout its period of growth.

..... If the natural rain is sufficient and timely so as to satisfy both of the above requirement, no irrigation water will be required for producing that crop.

(2) In a tropical country like India, the natural rainfall is neither sufficient nor does the water fall regularly as required by the crops. Therefore, Irrigation is significantly needed.

Note :- Different crops will have different water requirements and the same crop may have different water requirements at different places of the same country, depending upon the variations in climate, types of soil, Methods of cultivation & useful Rainfall etc.

### Definition of Irrigation :

Irrigation may be defined as science of artificial application of water to the land/fields, in accordance with the crop requirements throughout the crop period for full development of the crops.