| G.R. No. | |

Paper Code:- P119-123 (ESE)

DECEMBER 2019 / ENDSEM

F. Y. M. TECH. (WREE) (SEMESTER - I)
COURSE NAME: Water Resource System planning
COURSE CODE: CVPA11183A
(PATTERN 2018: R1)

Time: [3 Hour]   [Max. Marks: 50]

(*) Instructions to candidates:
1) Answer Q.1, Q.2, Q.3, Q.4 OR Q.5, Q.6 OR Q.7, Q.8 OR Q.9
2) Figures to the right indicate full marks.
3) Use of scientific calculator is allowed
4) Use suitable data where ever required

Q.1) a)	Enlist the factors affecting on irrigation demand of water for a developing country like India	3
	OR	
b)	Enlist the factors affecting on hydropower demand of water for a developing country like India	3
Q.2) a)	What are the water tariff norms for different crops provided by Govt. of Maharashtra ?	3
	OR	
b)	What is the difference between National water laws and National water policies ?	3
Q.3) a)	What are the functions of Earthen Nala Bund Bund?	2
	OR	
b)	What is the use of Recharge shaft ?	2
Q.4) a)	Draw a schematic diagram showing the different planning regions and horizons of a reservoir operational system and explain each one in depth .	8
b)	Explain in depth Hydrologic uncertainty and Demand uncertainty in water resources systems	6
	OR	
Q.5) a)	Write in depth Draught mitigation process using any case study.	8
b)	Write in depth Flood mitigation process using any case study.	6
Q.6) a)	What are the different costs involved in the economic analysis of any Water resource development project?	6
b)	A pump is installed on a well to lift the water and to irrigate rice crop, sown over three hectors of land. If duty for rice is 864 hectares/cumec on the field and the pump efficiency is 48%;determine the minimum required input (H.P) of the pump , if the lowest well water level is 8 meters below the highest portion of the field. Assume negligible field canal losses.	4
c)	What is the equipment present worth about 10% interest of 3 investments of Rs. 60,00,000, one made now , one made at the end of 3 years and one at last of 10 years from now?	4

		OR	
Q. 7) a)		Explain in detail – a) Single payment factor , b) uniform annual series factor , c) Uniform gradient series factor	6
	b)	In a farm, the transplantation of rice takes 16 days, and the total depth of water required by the crops 60cm on the field. During this transplantation period of 16 days, rain starts falling and about 10 cm of rain is being utilized to fulfil the rice demand. Find duty of irrigation water required for rice during transplantation period. (a) Assuming 25% losses of water in water courses, find the duty of water at the head of water course.(b) Find the duty of water at the head of distributary, assuming 15% losses from the distributary head to the water course head.	4
	c)	Total cost of lining for certain canal is Rs. 10 million. If annual benefit resulting from the lining amount to Rs. 1 million. Determine whether the lining would be economical and feasible ? . Rate of interest is 8% per annum and life of lining is considered to be 20 years. If the project is to feasible then determine the estimated life of lining which should render it economically.	4
Q. 8) a)		What is basin planning? why it is necessary ? Elaborate it one with one sample case study.	6
	b)	Explain in detail the different aspects of ground water evaluation.	8
		OR	
Q. 9) a)		What is inter basin transfer of water ? Explain in depth with its feasibility norms, advantages and disadvantages.	6
	b)	What do you mean by 'conjunctive use of ground water' ?why it is necessary? Explain any two methods of it.	8