G.R. No.	

PAPER CODE	P. 122- 225 PSE/6JI2

May 2022 / INSEM+ENDSEM
F. Y. M. TECH. (WREE) (SEMESTER – II)
COURSE NAME: DAM ENGINEERING
COURSE CODE: CVPA12205B
(PATTERN 2020)

Time: [3 Hours]   [Max. Marks: 60]

(*) Instructions to candidates:
1) All Questions are compulsory
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. Explain five factors considered for selection of an ideal site for a dam.	5 Marks
	b. Discuss the displacement and rehabilitation issues with reference to a big dam project and State three differences between overflow and non-overflow types dams with the help of neat sketches.	5 Marks
Q.2)	a. Explain with sketches of the instrumentation required for monitoring (Measurement of) joints and cracks in a concrete dam.	5 Marks
	b. Explain the different sections of a hydro-electric power station and also write is the function of the dam in a hydro-electric power station.	5 Marks
Q.3)	a. A 20m high concrete gravity dam has vertical upstream face and downstream face is inclined at 45°. The top and base widths are 2m and 20m. respectively. The free board is 2m. Take weight density of water as $10kN/m^3$ & concrete $24kN/m^2$. Determine factor of safety against overturning. Consider full uplift.	5 Marks
	b. What is meant by 'elementary profile of gravity dam'? Draw an explanatory sketch. Using relevant formulas and assuming necessary values; show that maximum height of a small gravity dam is 88m.	5 Marks
Q.4)	a. An ogee spillway is to be designed for a discharge of 20 m^3 /s with upstream face vertical and downstream face	5 Marks

	having slope 1V: 0.8H. Obtain the downstream profile of spillway with 1 m interval for the 'x' coordinates in the profile equation $x^{1.85} = 2.y.H^{0.85}$ Assume C = 2.20 and L = 1 m. Neglect effects of end contractions and velocity of approach.	
	b. Draw sectional elevation and plan of a vertical lift (Sliding) gate provided for a spillway. Briefly explain its working.	5 Marks

Q.5)	Determine the factor of safety of downstream slope of homogenous earth dam section drawn to a scale of 1: 500
	   i) Length of slip circle arc = 15 cm
	   ii) Total area of N-Rectangles = 16.5 cm^2
	   iii) Total area of T Rectangles = 7 cm^2
	   iv) Total area of U - Rectangles = 5 cm^2
	   v) Angle of Internal friction = 26°
	   vi) Cohesion = 0.2 kg/cm^2
	   vii) Specific weight of soil = 1.8 kg/cm^3
		10 Marks

Q.6)	a. Explain constant angle and constant radius arch dam with the help of neat labeled plans and sections	5 Marks
	b. What is meant by an arch dam? Give classification of arch dams. Show these types in neat sketches.	5 Marks