Seat No.: Enrolment No GUJARAT TECHNOLOGICAL UNIVERSITY M.E -Ist SEMESTER-EXAMINATION - JULY- 2012			
Subject code: 711205N Date: 11/		07/2012	
Subject Name: Hydropower Engineering			,
Time: 2:30 pm – 05:00 pm Total Mark			ks: 70
Inst	ructi	ions:	
		empt all questions.	
2. 3.		ke suitable assumptions wherever necessary. ures to the right indicate full marks.	
Q.1	(a)	Discuss (i) Load factor (ii) Base factor (iii) peak factor (iv) Firm capacity	07
	(b)	Explain sources of Energy? Compare conventional and Non conventional Energy sources	07
Q.2	(a)	Give sketch of Hydropower plant , Enlist components of Hydropower plant and explain its function	07
	(b)	Calculate wall thickness of penstock if internal diameter of 2.5m Supplies at a head equivalent to $19.3~{\rm Kg/cm^2}$. There is a possibility of $16.5~\%$ increase pressure due to transient condition . The design stress and efficiency of joint may be assumed to $1040~{\rm Kg/cm^2}$ and 76% percent respectively.	07
		OR	
	(b)	From the details of the (i) Unit generated per year = 11.2×10^6 Kwh (ii) Station capacity 35 MW (iii) Total hours 2400 hr (iv) Maximum demand 16 MW Calculate (a) Annual load factor (b) Plant use factor (c) Capacity factor	07
Q.3	(a)	Assuming that the daily flow in a river constant 20 m ³ /s What would be the firm capacity of a runoff river plant to be used as an 8 hour peaking station? What would be the pondage factor and magnitude of pondage? Head of the plant 12m and overall efficiency 78 %	07
	(b)	Explain the Elastic column theory of water hammer OR	07
Q.3	(a)	Following data is available (i) Available head = 55m (ii) Total catchment = 80 Sq. Km. (iii) Rainfall per annum 150 cm(iii) percentage of rainfall utilized = 70 % (iv) Turbine efficiency = 81 % (v) Generator efficiency=90%(vi) Penstock efficiency =75%. Calculate suitable capacity of turbo generator	07
	(b)	Explain low medium and high head power plants	07
Q.4	(a) (b)	Explain Kaplan turbine Explain surge tank and effect of surge OR	07 07

Describe briefly the various controls in hydro power plant

Discuss draft tube .Give list of different type of draft tube

Explain (i) Tail race (ii) Trash rack (iii) Penstock(iii) Pond

Describe the Hydro power generation potential of India

OR

Explain factors affecting selection of turbines

Explain Economy in power plant

Q.4

Q.5

Q.5

(a)

(b)

(a)

(b)

(a)

(b)

07

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