

Name :  
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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY  
07 THRISSUR CLUSTER

SECOND SEMESTER M.TECH. DEGREE EXAMINATION APR 2018

Civil Engineering

Water Resources and Hydroinformatics

07CE6414 WATER POWER ENGINEERING

Time : 3 hours

Max.Marks: 60

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

Q.no.	Module 1	Marks
1a	Discuss the relative merits and demerits of hydropower as compared to other power sources?	4
	<b>Answer b or c</b>	
b	From the flow duration curve, how will estimate the water power potential?	5
c	With a schematic sketch, explain the various components of hydro power scheme?	5
Q.no.	Module 2	Marks
2a	With a figure, differentiate firm power and secondary power?	4
	<b>Answer b or c</b>	
b	What are the different methods for the prediction of the load?	5
c	What are the different elements of an intake? Explain Dam intake in detail?	5
Q.no.	Module 3	Marks
3a	Explain the general concepts used in the design of penstock?	4
	<b>Answer b or c</b>	
b	What are the function of anchor blocks? What are the forces which should be taken into account in their stability analysis?	5
c	What are the function of surge tank? Derive the dynamic equation for a orifice surge tank?	5

<b>Q.no.</b>	<b>Module 4</b>	<b>Marks</b>
<b>4a</b>	What are the different elements of power station?	<b>4</b>

**Answer b or c**

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|----------|---|----------|
| <b>b</b> | What are the general criteria for the design of main dimension of the power house?    | <b>5</b> |
| <b>c</b> | Explain underground power stations? State its advantages over surface power stations? | <b>5</b> |

<b>Q.no.</b>	<b>Module 5</b>	<b>Marks</b>
<b>5a</b>	What is meant by a pumped storage scheme? Explain the specific feature of turbine used in pumped storage scheme?	<b>5</b>

**Answer b or c**

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|----------|---|----------|
| <b>b</b> | Differentiate the hydraulic features of reaction turbine and impulse turbine? | <b>7</b> |
| <b>c</b> | Explain characteristics of turbine with a neat sketch?                        | <b>7</b> |

<b>Q.no.</b>	<b>Module 6</b>	<b>Marks</b>
<b>6a</b>	With a layout, explain the concepts of tidal power plant?	<b>5</b>

**Answer b or c**

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|----------|--|----------|
| <b>b</b> | What is meant by depression power plant? Explain with an example?  | <b>7</b> |
| <b>c</b> | Explain the governing equations representing transient flow? Discuss any numerical method for the solution of this equation? | <b>7</b> |