M.Tech(with Credits)-Regular-Semester 2012-Electrical Power System Sem II

EP202 - Advanced Power System Protection

P. Pages : 1 **GUG/W/16/3950**

Time : Three Hours * 4 7 7 8 * Max. Marks : 70

Notes : 1. All questions carry equal marks.
2. Answer **any five** questions.
3. Assume suitable data wherever necessary.
4. Non programmable calculator is permitted.

1.	a)	Explain the performance & operational characteristics of digital protection.	**7**
	b)	Discuss the basic structure of digital relay.	**7**
2.	a)	Derive Gregory – Newton forward interpolation formula for determining the value of a function from its forward difference table.	**7**
	b)	Define Walsh function and explain its fundamental properties.	**7**
3.	a)	Explain in detail the signal conditioning system.	**7**
	b)	Explain the sampling theorem.	**7**
4.		What are the various Least squares based algorithms used in digital protection. Discuss the integral LSQ fit techniques in detail.	**14**
5.	a)	Explain fourier analysis based full cycle window algorithm.	**7**
	b)	Formulate Sample and first derivative algorithm for directional relaying.	**7**
6.	a)	Discuss the RALDA system for protection of transmission system.	**7**
	b)	Explain with block diagram. Ultra high speed wave difference scheme.	**7**
7.	a)	Explain how fundamental and second harmonic components are extracted using FIR filters. Give FIR filter characteristics.	**7**
	b)	Explain Basic principle of Transformer protection. Also explain Biased differential relaying scheme.	**7**
8.	a)	Explain Frequency Modulation current differential protective scheme with its Relay characteristics.	**7**
	b)	Explain operating principle of Modal current based protection scheme & its tripping criteria. Also explain trip decision logic process.	**7**

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