Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (R,S) Examination November 2025 (2019 Scheme)

Course Code: EET473

Course Name: DIGITAL PROTECTION OF POWER SYSTEMS

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks.

		Marks
1	What is the basic requirement of a protection C.T.?	(3)
2	What are the disadvantages of current differential relay?	(3)
3	Describe travelling wave generation and name the two methods of fault detection using travelling waves.	(3)
4	Suggest any three important protection schemes employed for the stator protection.	(3)
5	Discuss the concept of signal aliasing error.	(3)
6	Give any three types of numerical relays based on logic.	(3)
7	Why digital filtering is required in a digital relay?	(3)
8	What are the advantages of finite impulse response digital filter?	(3)
9	What are the advantages of adaptive relaying?	(3)
10	Discuss the concept of deterministic decision making in protective relays.	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	Explain the operation and advantages of Magneto optic CT with neat schematic.	(8)
	b)	Explain the time current characteristics of instantaneous and definite time over current relays with neat schematic.	(6)

OR

12	a)	For an IDMT relay the plug setting is 50% and CT ratio is 400/5A. If the fault current is 3000A, find the plug setting multiplier.	(6)
	b)	Explain the construction and working of induction type non-directional over current relay with neat circuit schematic.	(8)

Module II

13	a)	Discuss the effect of power swings on the performance of distance relays.	(6)
	b)	Explain carrier current transmission line protection with neat schematic.	(8)

OR

14	a)	Explain Merz-Price voltage balance differential pilot wire Protection employed in a transmission line.	(10)
	b)	Discuss about three zone distance protection in a power system.	(4)

Module III

15	a)	Explain the signal conditioning subsystem in numerical relays.	(10)
	b)	Compare numerical relay with static relay.	(4)

OR

16	a)	Explain the components of a numerical relay with the help of a block diagram. Also discuss the disadvantages of the numerical relays.	(10)
	b)	State the sampling theorem.	(4)

Module IV

17	a)	Explain how the impedance to the fault is found by using Least square method.	(8)
	b)	Give comparisons between infinite impulse filter and finite impulse filter.	(6)

OR

18	a)	Derive the basic formulation of sample and first derivative method in sinusoidal wave-based algorithm.	(10)
	b)	Define Finite Impulse Response filter.	(4)

Module V

19	a)	Explain phasor measurement unit with the help of neat schematic.	(10)
	b)	What do you meant by decision making in protective relays.	(4)

OR

20	a)	Explain the architecture of wide-area measurement unit.	(7)
	b)	Explain the methods of decision making with multiple criteria in protective relays.	(7)

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