Code No: RT32022

R13

**SET - 1** 

## III B. Tech II Semester Supplementary Examinations, November-2018 SWITCHGEAR AND PROTECTION

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (Part-A and Part-B)

- 2. Answering the question in **Part-A** is compulsory
- 3. Answer any THREE Questions from Part-B

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PART -A			
1	a)	Write the list of parts of a MCB?	[4M]
	b)	What are the main features of a good protecting system?	[4M]
	c)	What are the abnormal conditions in a large alternator against which protection is necessary?	[4M]
	d)	State the importance of bus bar protection.	[4M]
	e)	What is the need of static relays protection?	[3M]
	f)	State the merits of neutral grounding of an electrical system	[3M]
<u>PART -B</u>			
2	a)	Distinguish clearly between the recovery voltage and restriking voltage and explain the significance of RRRV in the operation of a circuit breaker by deriving necessary expression.	[8M]
	b)	Describe the operating principle of an air blast circuit breaker with the help of a diagram.	[8M]
3	a)	What is mean by percentage bias? How is this achieved in a practice in a differential relay? Under what circumstances is a percentage differential relay preferred over the differential relay?	[8M]
	b)	Derive the operating conditions of various types of distance relays. Discuss operating characteristics of these relays.	[8M]
4	a)	Discuss the faults in transformer and describe with sketch Mertz-Price scheme of transformer protection.	[8M]
	b)	A 3-phase, 11 / 220 KV Delta – star connected transformer is protected by differential protection. The current transformer connected on high voltage side is having a ratio of 300 / 5 A. Find the ratio of current transformer connected on the low voltage side also draw the connection diagram?	[8M]
5	a)	Describe the three zone distance relay protection of the line using impedance relays.	[8M]
	b)	Explain the differential pilot wire method of protection of feeders.	[8M]
6	a)	Discuss about rectifier type amplitude comparator by deriving necessary equations?	[8M]
	b)	Describe the realization of MHO, offset MHO, and restricted MHO relays by using a generalized mathematical model?	[8M]
7	a)	Discuss the internal and external causes of over voltages in a power system.	[8M]
	b)	What is horn gap arrester? Explain how it works. What is the purpose of inserting a resistance between horn gap arrester and the line?  ******	[8M]