

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**

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]

PART -B

- 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]

