

Unit III

5. (a) What are the different types of faults occurred in synchronous generator ? Discuss briefly the protection scheme to protect the synchronous machines against these faults. **9**
- (b) Differentiate overload protection and short circuit protection of a motor. **6**
6. (a) Discuss briefly the different types of faults in a transformer. Explain protection schemes to protect transformer against the faults. **10**
- (b) Describe the merits of microprocessor based relaying scheme. **5**

Unit IV

7. (a) Give advantages and limitations of static relays. **5**
- (b) Describe the different types of amplitude comparators. **10**

M-BB-42

4

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M. Tech. EXAMINATION, May 2018

(Second Semester)

(B. Scheme) (Main & Re-appear)

EE(PS)

MPS504B

**ADVANCED IN SWITCH GEAR AND
PROTECTION**

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

(3-15/1) M-BB-42

P.T.O.

Unit I

1. (a) Explain process of current interruption and arc control in a typical Air-Blast Circuit Breaker. 7
- (b) One transformer is connected with an alternator rated as 10 MVA, 13.8 kV, $X_d'' = 10\%$, $X_d' = 15\%$ and $X_d = 100\%$. Three-phase short circuit between the breaker and the transformer occurred, when alternator was operating at no load and rated voltage, calculate the following for circuit breaker :
 - (i) Steady state short circuit current.
 - (ii) Initial symmetric rms current.
 - (iii) Maximum D.C. component of the short circuit current.
 - (iv) Momentary current rating.
 - (v) Current to be interrupted.
 - (vi) Interrupting kVA.

2. (a) Describe the different components of a SF_6 circuit-breaker with the help of neat diagram. What are the merits of SF_6 CB ? 8
- (b) Describe various components of vacuum circuit breaker with neat diagram. 7

Unit II

3. (a) Describe the essential qualities of a protective relay. 6
- (b) What is primary and backup protection ? Why is back up protection required ? What are the various methods of providing backup protection ? 9
4. (a) Explain the construction and working of a non-directional overcurrent relaying scheme. 7
- (b) How is definite minimum time achieved in an IDMT relay ? Describe the function of a shedding ring in the IDMT relay. 8

8. (a) Describe the method of fault location by using travelling waves. 7
- (b) Describe microwave direct relay to relay digital logic communication. How does it help in power system protection ? 8

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