Printed Pages:2 **Sub Code:NEE 602**

Paper Id: 120248 **Roll No.** | | | | | | | | | | |

B.TECH
(SEM VI) THEORY EXAMINATION 2018-19
SWITCHGEAR AND PROTECTION

Time: 3 Hours **Total Marks: 100**

Note: 1. Attempt all Sections. If you require any missing data, choose suitably.

SECTION A

1. Attempt all questions in brief. **2 x10 = 20**

a) What is meant by short circuit?
b) What is difference between a short circuit and an overload?
c) What is a comparator?
d) Define PSM?
e) What is unit type protection?
f) What is meant by time-graded protection?
g) What is meant by current chopping?
h) What are type tests which are conducted on circuit breakers?
i) What are the common types of generator faults?
j) What are the faults that are likely to occur in a power transformer?

SECTION B

2. Attempt any three of the following: **10 x 3 = 30**

a) Describe about primary and backup protection. Explain the process of fault clearing with the help of a neat sketch.

b) Discuss about phase and amplitude comparators in detail.

c) Compare merits and demerits of various pilot wire relaying schemes for protecting transmission lines.

d) What is the difference between direct and indirect testing? Also describe the procedure of indirect testing.

e) What are the abnormal conditions in a large alternator against which protection is necessary? Discuss them in detail.

SECTION C

3. Attempt any one part of the following: **10 x 1 = 10**

a) Draw a neat sketch of an induction disc or cup type relay and explain its principle of operation.
b) Explain the working principle of electromagnetic induction type relays. What is use of shading ring?

4. Attempt any one part of the following: 10 x 1 = 10

a) What are the advantages and disadvantages of static relays over electromagnetic relays?

b) By taking an example, explain the dual input comparator relay threshold characteristic.

5. Attempt any one part of the following: 10 x 1 = 10

a) How is a busbar protected? Explain with a suitable example the phenomenon of auto-reclosing.

b) Explain the principle of time grading and current grading in a simple radial system equipped with IDMT overcurrent relays for protection.

6. Attempt any one part of the following: 10 x 1 = 10

a) What is current chopping in air blast circuit breaker? What are the usual ratings of a circuit breaker?

b) What is a circuit breaker? Explain the phenomenon of arc formation. Explain RRRV.

7. Attempt any one part of the following: 10 x 1 = 10

a) Describe the construction, principle of operation and application of Buchholz relay. Why is this form of protection an ideal protection?

b) Explain the construction, principle of operation and application of a minimum oil circuit breaker.