PAPER ID-310177

Subject Code: REE702

Roll No: | | | | | | | | | | | | | |

B.TECH.
(SEM VII) THEORY EXAMINATION 2020-21
POWER SYSTEM PROTECTION

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a.	What is resistance switching?
b.	What is protection zone?
c.	Why current chopping is not common in oil circuit breaker?
d.	Briefly State the applications of over current relaying.
e.	Explain short time current rating of a circuit breaker.
f.	What are the desirable qualities of protective relaying?
g.	Why bus bar protection is important in power system?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a.	Describe the breaking and making capacity rating of the circuit breaker.
b.	Explain primary and secondary backup protection.
c.	Explain electro-mechanical relays and show its types.
d.	Describe amplitude and phase comparators.
e.	Explain automatic reclosing.

SECTION C

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

(a)	Explain the design considerations of electromagnetic relay.
(b)	What is important operating principle which are used in pilot wire scheme? Discuss the Transley scheme of wire pilot protection.

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

(a)	Define differential protection. With the help of neat sketch explain the operation of differential relay.
(b)	Describe in detail the fault clearing time of a circuit breaker.

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

(a)	What is carrier current protection? For what voltage range is it used for the protection of transmission lines?
(b)	Discuss in detail about a d.c circuit breaker with suitable diagram and waveforms.

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

(a)	Discussion in detail the testing of the circuit breaker.
(b)	With a neat schematic diagram explain the protection of transformer with differential protection scheme.

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

(a)	Explain the phenomenon of current chopping in a circuit breaker. What measure are taken to reduce it?
(b)	A circuit breaker interrupts the magnetizing current of a 100 MVA transformer at 220KV. The magnetizing current of the transformer is 5% of the full load current. Find out the maximum voltage which may appear across the gap of the breaker when magnetizing current is interrupted at 53 % of its peak value. The stray capacitance is 2500μF. The inductance is 30 H.