EE-802

B.E. VIII Semester

Examination, June 2016

Power System Protection

Time : Three Hours *Maximum Marks : 70*

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

1. a) How are faults are classified? Explain each types of fault?
b) State the significance of double line fault.
c) What is symmetrical and unsymmetrical fault explain with some examples?
d) Analyze line to ground fault with and without fault impedance using sequence network.

OR

A 25 MVA, 13.2 KV alternator with solidly grounded neutral has a subtransient reactance of 0.25 p.u. The negative and zero sequence reactances are 0.35 and 0.1 p.u respectively. A single line to ground fault occurs at the terminals of an unloaded alternator, determine the fault current and the line to line voltages, neglect resistance.

2. a) What is the difference between a protective relay and fuse?
b) What are over and under current relays? Give some examples of each.
c) Define the following:
i) Operating time of a relay
ii) Resetting time of a relay

d) Draw and explain the schematic of an impedance relay and its operating characteristics on R-X diagram.

OR

Explain the working of Bucholz relay.

3. a) What are the types of stator winding faults in alternator. Mention the most commonly used protection scheme for alternators.
b) What are the types of feeders in power system?
c) What is transverse or split phase protection of an alternator?
d) Draw and explain the merz-price protection of alternator stator winding.

OR

What are the different protection schemes normally used for protection of a power transformer from internal faults? Discuss one of them in brief.

4. a) What is meant by switch gear?
b) Distinguish between recovery voltage and restriking voltage.
c) Give the advantage of SF_6 circuit breaker over Air blast circuit breaker.
d) Explain different arc control mechanism with suitable diagrams in bulk oil CB.

OR

Explain with single diagram the testing procedure of various tests conducted on a circuit breaker.

5. a) With neat circuit diagram explain level detectors.
b) State the advantages of static relay.
c) Write short note on logic circuits.
d) What are different types of amplitude comparators? Explain the working of circulating current type rectifier bridge comparator.

OR

With a block diagram and flow chart, explain the construction and working of microprocessor based over current relay.

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