Code: 15A02602 **R15**

B.Tech III Year II Semester (R15) Supplementary Examinations December/January 2018/19

POWER SYSTEM PROTECTION

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What are unit system and non-unit system?
(b) What is the need of relay coordination?
(c) What are over and under current relays?
(d) Mention any two applications of differential relay.
(e) Give the two methods of arc interruption.
(f) What is resistance switching?
(g) What are the advantages of oil as arc quenching medium?
(h) What is RRRV?
(i) List out the types of circuit breakers.
(j) What is the significance of insulation Co-ordination?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) Explain the operating principle and construction of induction Disc type relay with neat sketch.
(b) Derive an expression for the torque produced by an induction relay.

OR

3 Explain the block diagram for over current relays and explain its time current characteristics.

UNIT – II

4 (a) Explain the percentage differential protection with neat block diagram.
(b) With neat sketch, discuss the differential scheme for bus zone protection.

OR

5 Explain the significance for the protection of transformers and explain the Buchholz relay protection with neat block diagram.

UNIT – III

6 What is carrier current protection? With neat sketch, discuss the phase comparison scheme of carrier current protection.

OR

7 (a) With neat sketch, explain the three zone protection using distance relays.
(b) List out the advantages of distance relays in power system protection.

UNIT – IV

8 With neat sketch, describe the working principle of an axial air blast type circuit breaker and explain why resistance switching is used with this type of circuit breaker.

OR

9 Discuss the operating principle of SF6 circuit breaker, what are its advantages over other types of circuit breakers and for what voltage range it is recommended.

UNIT – V

10 Explain the term insulation coordination. Describe the construction of volt-time curve and terminology associated with impulse testing.

OR

11 Describe the protection of stations and sub-stations against direct lighting stokes with neat schematic diagram.