

Registration No :

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Total Number of Pages : 02

B.Tech
PEL7J007

7th Semester Regular Examination 2018-19
SWITCH GEAR & PROTECTIVE DEVICES

BRANCH : EEE

Time : 3 Hours

Max Marks : 100

Q.CODE : E169

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right-hand margin indicate marks.

Part- I

Q1 Short Answer Type Questions (Answer All-10) (2 x 10)

- What are the functions of protective relays?
- Give the consequences of short circuit.
- Define resetting time of a relay.
- Mention the short comings of Merz Price scheme of protection applied to a power transformer.
- What are the various faults to which a turbo alternator is likely to be subjected?
- What are the various faults that would affect an alternator?
- What are faults associated with an alternator?
- What are the problems arising in differential protection in power transformer and how are they overcome?
- What is the main problem of the circuit breaker?
- What are the advantages of oil as arc quenching medium?

Part- II

Q2 Focused-Short Answer Type Questions- (Answer Any EIGHT out of TWELVE) (6 x 8)

- Why is it necessary to protect the lines and other equipment of the power system against overvoltage's?
- What is tower-footing resistance? Why is it required to have this resistance as low as economically possible? What are the methods to reduce this resistance?
- How can digital distance relaying algorithm be implemented on the 8086 Micro processor?
- Explain with sketches and their R-X diagrams for the following distance relays. [1] Impedance relay. [2] Mho relay
- Explain the applications of microprocessors in power system protection.
- What are the types of graded used in line of radial relay feeder?
- Explain microprocessor based inverse time over current relay.
- For what voltage range is it used for the protection of transmission line? What are its merits and demerits?
- What is carrier aided distance protection. What are its different types?
- Discuss the field suppression of an alternator?
- For what voltage range is it used for the protection of transmission line? What are its merits and demerits?
- Explain terms: [1] Restriking voltage. [2] Recovery voltage [3] RRRV

Part-III

Long Answer Type Questions (Answer Any TWO out of FOUR)

- Q3** a) What are the requirements of a ground wire for protecting power conductors against direct lightning stroke? Explain how they are achieved in practice. **(8)**
- b) Describe the operating principle, constructional features and area of applications of reverse power or directional relay. **(8)**
- Q4** a) Enumerate the relaying schemes which are employed for the protection of a modern alternator. **(8)**
- b) What type of pilot protection is used for EHV and UHV transmission lines? **(8)**
- Q5** a) What type of a protective device is used for the protection of an alternator against overheating of its (i) stator (ii) rotor? Discuss them in brief. **(8)**
- b) With neat sketch, describe the working principle of an axial air blast type circuit breaker. **(8)**
- Q6** a) Describe construction, operating principle and application of vacuum circuit breaker. For what voltage range is it recommended? **(8)**
- b) What are the different methods of testing of circuit breakers? Discuss their merits and demerits. **(8)**

