

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN  
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]  
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.



**Question Paper Code: 8022**

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – DECEMBER 2019

First Semester

Power Systems Engineering

P15PS104 – ADVANCED POWER SYSTEM PROTECTION

(Regulation 2015)

Time : Three Hours

Maximum : 100 Marks

Answer ALL the questions

PART – A

(10 x 2 = 20 Marks)

1. What are the elements that comprises a protection scheme?
2. Draw and discuss the operation of trip circuit of a protection system.
3. How does the digital protection is different from the conventional one?
4. What is the tripping criterion of the digital protection relay used for percentage differential protection of synchronous generator?
5. What are the various form of unit and non-unit type of protection schemes for a bus-bar?
6. Why distance relays are preferred to IDMT over current relays for the protection of transmission lines?
7. What is the application of series reactor in a Power System Protection?
8. What is the role of a capacitor in an interconnected Power System?
9. What do you mean by aliasing? How can aliasing be removed?
10. What do you understand by digital filtering and its need in protection?

PART – B

(5 x 13 = 65 Marks)

11. a) i. Discuss the essential qualities of a protection relay.  
ii. Explain in detail about DSP based relay.

(OR)

- b) Explain the classification and the characteristic functions of various protective relays.

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11/12/19  
12. a) Discuss various relaying schemes which are employed for the protection of a modern alternator.

(OR)

- b) i. What is magnetizing inrush current? What measures are taken to distinguish between the fault current and magnetizing inrush current?  
ii. Discuss the protective scheme which protects the transformer against fault but does not operate in case of magnetizing inrush current.

13. a) i. Discuss the effect of power surges on the performance of different types of distance relays. (5)

- i. Explain why MHO characteristic is preferred for the protection of long lines against phase fault, where as a reactance relay is preferred for ground fault. (8)

(OR)

b) i. With a neat sketch discuss the differential protection scheme for bus-zone? (8)

- ii. What is carrier protection? (5)

14. a) Discuss with a neat sketch for the protection of a reactor. Explain its need.

(OR)

b) Explain the protection of a booster with a neat sketch.

15. a) What is the role of signal conditioner in a data acquisition system? Discuss the functions of various components of the signal conditioner.

(OR)

b) Explain the testing of digital filtering in protection relays.

#### PART – C

(1 x 15 = 15 Marks)

16. a) How a digital relay (consider any type of relay) algorithm can be implemented? Discuss (i) Hardware and (ii) software required for implementation.

(OR)

b) i. Discuss the concepts of modern co-ordinate control. (7)

- ii. Explain development of different relaying schemes. (8)