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BOARD DIPLOMA EXAMINATION, (C-20)

MAY/JUNE—2023

DEEE - FIFTH SEMESTER EXAMINATION

POWER SYSTEMS—III (SWITCH GEAR AND PROTECTION)

Time : 3 Hours]

[Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. State application (a) AB switch, (b) isolator and (c) circuit breaker.
2. State any three properties of sulphur hexa fluoride gas.
3. State the basic requirements of protective relaying.
4. Draw the connection diagram of stator inter turn protection of alternates.
5. What are the different types of faults occurring in a power transformer?
6. State any six methods of protection in alternator.
7. What is pilot relaying?
8. What is combined protection?
9. Define distributed generation.
10. Define wirtricity.

PART—B

8×5=40

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- Instructions :** (1) Answer **all** questions.
(2) Each question carries **eight** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. (a) Explain the working of air break circuit breaker with a neat diagram. 8

(OR)

(b) Explain the different types of reactor schemes with neat sketches. 8

12. (a) Define plug setting multiplier, time setting multiplier and write formula for PSM in terms of CT ratio. 3+3+2

(OR)

(b) Explain the construction and operation principle of directional induction type over current relay. 8

13. (a) How the alternator stator can be protected from overheating and methods to be adopted for detection of overheating? 8

(OR)

(b) What is Buchholz relay? How it protects the transformer? 8

14. (a) Explain the protection of transmission lines. 8

(OR)

(b) Draw the diagram for duplicate bus bar protection scheme by considering two generators and outgoing lines, circuit breakers where is necessary. 8

15. (a) Briefly explain the following : 8

(i) Thermal relay

(ii) Protection of ring main feeders using directional relays

(OR)

(b) Explain the protection of transmission lines using distance and impedance relays with a neat diagram. 8

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PART—C

10×1=10

- Instructions :** (1) Answer the following question.
(2) The question carries **ten** marks.
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 16.** A generating station has two alternators of ratings 4000 kVA and 8000 kVA and of percentage reactances 8% and 4% respectively connected from common bus bars. The load is taken to the feeder through a 15000 kVA transformer of 10% reactance. What should be the approximate rating of circuit breaker in the feeder circuit?

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