

Roll No.

3237

**B. Tech. 5th Semester (EE)
Examination – March, 2021**

POWER SYSTEM – I

Paper : PCC-EE-301-G

Time : Three Hours] [Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*.

All questions carry equal marks. Use of non-programmable calculator is allowed.

1. (a) Define function of relay.
- (b) What is per unit (PU) system ?
- (c) What is theory of interruption ?
- (d) What is Ferranti effect ?

- (e) Explain induction generator.
- (f) Enlist applications of DC transmission. $2.5 \times 6 = 15$

SECTION - A

2. Draw and explain the single-line and impedance diagram of power systems. 15
3. (a) Explain constant power, constant current and constant impedance representation of load. 7.5
- (b) Explain complex power for single phase load, for parallel loads and three phase load in details. 7.5

SECTION - B

4. Explain the symmetrical component transformation. Prove that symmetrical component transformation is power invariant. 15
5. Explain sequence impedances and networks of synchronous machine. 15

SECTION - C

6. Discuss the principle of operation of an air blast circuit breaker. What are the advantages and disadvantages of using air as an arc quenching medium? 15

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7. Distinguish between primary and back up protection. Explain the role of back up protection. List the various methods of providing back up protection. 15

SECTION - D

8. Explain in details types of DC links. 15
9. (a) Explain wind energy generation systems. 7.5
- (b) Write notes on permanent magnet synchronous generators. 7.5

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