

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

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