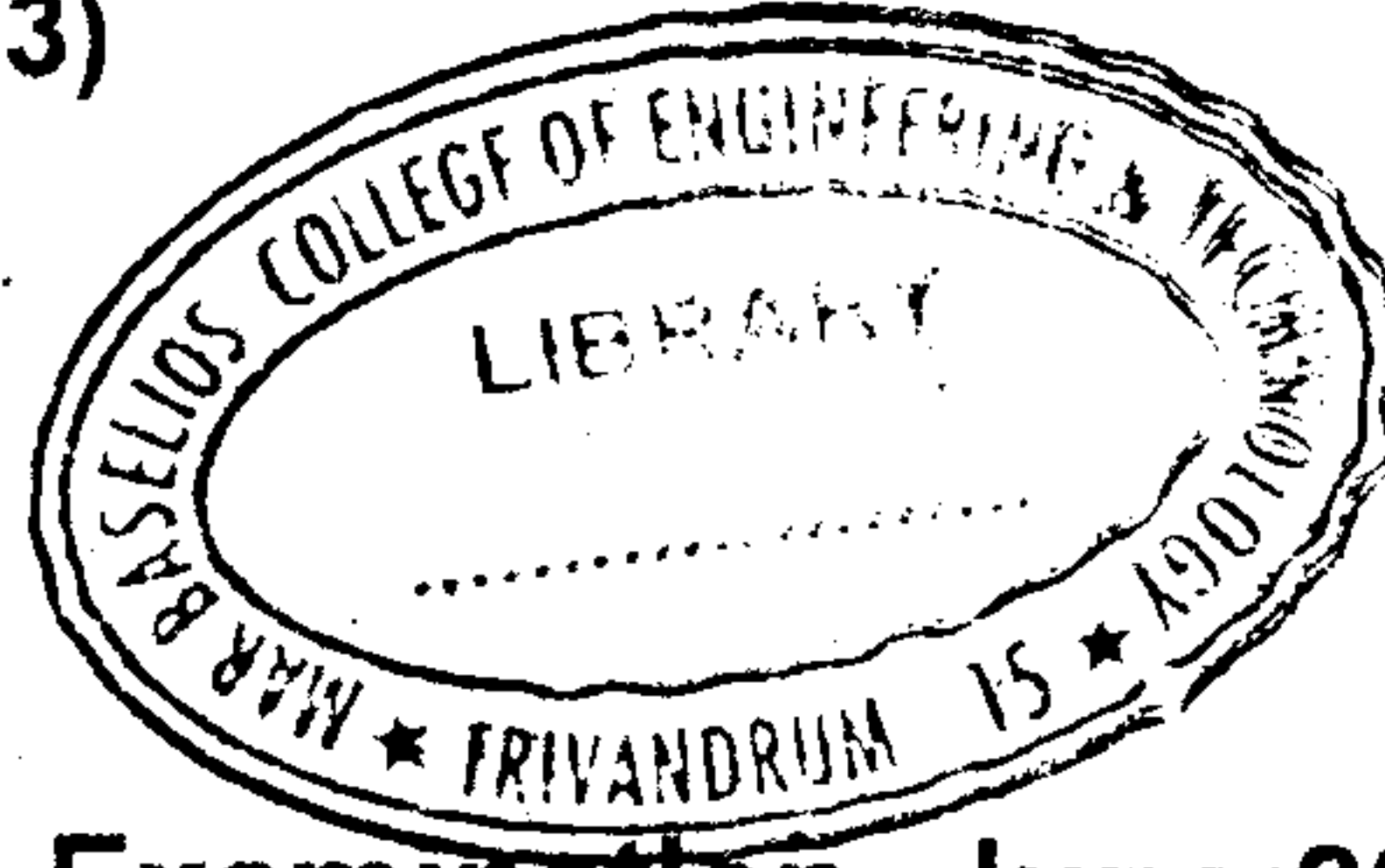


Reg. No. :

Name :



Sixth Semester B.Tech. Degree Examination, June 2019

(2008 Scheme)

08.605 : POWER SYSTEM ENGINEERING II (E)

Time : 3 Hours

Max. Marks : 100

Instructions :

Answer **all** questions from Part A and three questions from Part B, choosing not more than One questions from each module.

PART – A

1. What is the importance of short circuit calculations? Why do we choose a base kVA for short circuit calculations?
2. Establish that symmetrical component transformation is power invariant.
3. What are the different high voltage fuses? Describe any one in detail with necessary diagram.
4. Discuss the problems associated with capacitive current chopping.
5. Describe the principle of relay coordination.
6. What are the different types of electromagnetic relays?
7. Point out the merits and demerits of static relays.
8. How is earth fault protection of an alternator implemented?

9. Explain the terms – step voltage and touch voltage in relation to power system earthing. State also the tolerable and actual values of these voltages.
10. What are the different neutral earthing methods?

(10 × 4 = 40 Marks)

PART – B

Module – I

11. (a) Derive the current equations and draw the sequence network for a LLG fault. **10**
- (b) A 3-phase, 20 MVA, 10 kV alternator has an internal reactance of 5% and negligible resistance. Find the external reactance per phase to be connected in series with the alternator so that steady current on short-circuit does not exceed 8 times the full load current. **10**
12. (a) What do you understand by a short circuit? Discuss the various methods of connecting short-circuit current limiting reactors in the power system. **10**
- (b) A 50 MVA, 11 kV, three phase alternator was subjected to different types of faults as given: 3 phase fault 2000A, Line-to-line fault = 2600A and Line-to-ground fault – 4200A. The generator neutral is solidly grounded. Find the values of three sequence reactances of the alternator. Neglect resistances. **10**

Module – II

13. (a) What are the different types of circuit breakers? Discuss the operational features of oil circuit breakers with necessary diagrams. **10**
- (b) With respect to transmission line protection, define zone of protection. Comment on the time setting of back up relays compared to that of primary relays. **10**

14. (a) Elaborate on the constructional and operational features of SF_6 circuit breaker. Comment on its merits and demerits. **10**
- (b) What is meant by distance protection? Explain the concept of pilot relaying scheme used in distance protection. **10**

Module – III

15. (a) Describe the operation of a microprocessor based over – current relay with the aid of block diagram and flow chart. **10**
- (b) What factors cause difficulty in applying circulating current principle to a power transformer? **10**
16. (a) Clarify the term duality in terms of amplitude and phase comparators, by proper illustration. **10**
- (b) Elaborate on the stator inter-turn fault protection scheme for an alternator. **10**

(3 × 20 = 60 Marks)

