



Reg. No. :

Name :

Sixth Semester B.Tech. Degree Examination, May 2011
(2008 Scheme)
08.605 – POWER SYSTEM ENGINEERING – II (E)

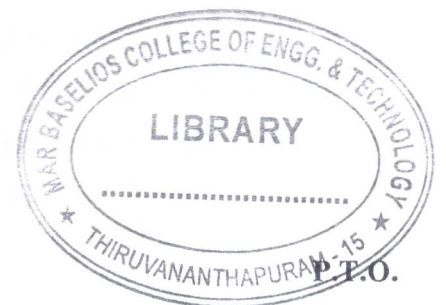
Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks.

1. What is the significance of base kVA in short circuit calculations ?
2. Define :
 - i) Synchronous reactance
 - ii) Transient reactance.
3. What is three phase symmetrical fault ?
4. Distinguish between restriking voltage and recovery voltage of a circuit breaker.
5. Why silver preferred as a fuse element ?
6. Explain the working principle of a relay.
7. Why is current interruption easier in an a.c. circuit than in d.c. circuit ?
8. Why overload protection not necessary for alternators ?
9. What is bus-zone protection ?
10. What is grounding practice in neutral earthing ?





PART – B
Module – I

11. 10 MVA, 6.6 kV, 3 phase star connected alternator having a reactance of 20% is connected through a 5 MVA, 6.6 kV/33 kV transformer of 10% reactance to a transmission line having a resistance and reactance of $0.2\ \Omega$ and $1\ \Omega$ respectively. Fifty kilometer along the line a short circuit occurs between the three conductors. Find the current fed to the fault by the alternator. 20

OR

12. a) What is sequence impedance ? Explain the importance of sequence impedance in power system elements. 10
- b) A 3 phase, 8 MVA, 11 kV generator with a solidly earthed neutral point supplies a feeder. The relevant impedances of the generator and feeder in ohms are

	Impedance		
	Positive Sequence	Negative Sequence	Zero Sequence
Generator	j 2.4	j 1.8	j 0.8
Feeder	j 2.0	j 2.0	j 6.0

If a fault from one phase to earth occurs on the far end of the feeder calculate :

- i) The magnitude of fault current.
- ii) Line to neutral voltage at generator terminal. 10

Module – II

13. a) Explain with essential sketches the working of SF_6 circuit breaker. What are its advantages and limitations ? 10
- b) An 11 kV, 50 Hz alternator is connected to a system which has inductance and capacitance per phase of 10 mH and $0.01\ \mu F$.
- Determine :
- i) The maximum voltage across breaker contacts.
- ii) Frequency of transient oscillation.
- iii) Average RRRV.
- iv) Maximum RRRV. 10

OR



14. a) Explain the working principle of different types of distance relays. 10
- b) Write notes on :
- a) High voltage fuses
 - b) Primary and back up protection. 10

Module – III

15. a) What are the different types of faults which can occur in synchronous machines ? Discuss briefly the protection scheme to protect the synchronous machine against these faults. 10
- b) What is inrush magnetising current in transformer ? Discuss the factors on which inrush magnetising current depends. 10

OR

16. a) Explain about amplitude and phase comparators used in static relays with block diagrams. 10
- b) Explain the features of
- i) Isolated neutral
 - ii) Effectively grounded system
 - iii) Resistance earthing
 - iv) Reactance earthing. 10

