Code No.: 72412

MR17

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

M.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2018

Subject: **FLXIBLE AC TRANSMISION SYSTEMS (FACTS)**

Branch/Specialization: **EEE/Electrical Power Systems**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer ALL questions of the following **5x4Mark=20 Marks**

1. What is the need of transmission interconnection?
2. Explain basic principle of voltage source converter.
3. What is mid-point voltage regulation with respect to shunt compensation?
4. Explain the power oscillation damping in SVC and STATCOM.
5. Draw basic Thyristor-Switched Series Capacitor scheme and represent its parameters

PART-B

Answer ALL questions of the following **5x 8 Marks= 40 Marks**

1. Discuss loading capability limits in a transmission line.

(OR)

2. Explain briefly important controllable parameters that are considered for power flow control.
3. Discuss the basic concept of voltage sourced converter with circuit diagram

(OR)

4. Enumerate the relative merits and demerits of current source converters over voltage source converters.
5. Describe any of the variable impedance type static VAR generators.

(OR)

6. Discuss how to prevent voltage instability at the end of line by using shunt compensation.
7. Explain with a neat block diagram general control scheme of Static Var Compensator (SVC).

(OR)

8. What is transient stability? How attainable enhancement of transient stability can be done by SVC and STATCOM?
9. Explain the operation of basic GTO-controlled series capacitor.

(OR)

10. Discuss the configuration and operation of TCSC.

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M.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2018

Subject: **Programmable Logic Controllers and their Applications**

Branch/Specialization: **EEE / Electrical Power Systems**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer ALL questions of the following **5x4Mark=20 Marks**

1. List out the types of PLC's and state their advantages over conventional controllers?
2. Explain PLC ladder logic for basic GATES?
3. Explain the basic operations of number conversion functions.?
4. What is meant by PLC Data handling functions? Explain?
5. Draw the flow chart for digital PID equation?

PART-B

Answer ALL questions of the following **5x 8 Marks= 40Marks**

1. What are Input-Output devices of PLC? Explain the process of connecting field devices to I/O modules of PLC

(OR)

2. Explain about PLC programming and discuss the difference between legal and illegal Ladder programming layouts?
3. Discuss about PLC programming input instructions, outputs, operational procedures, programming examples using contacts and coils? What is Drill press operation in PLC programming?

(OR)

4. Explain the ladder diagram construction and flow chart for process control application and Ladder diagrams for sequence listings?

5. Discuss the PLC registers and their Characteristics. Explain
   (a) module addressing (b) Holding registers (c) Output Registers

(OR)

6. Explain the counters operation in PLC's? Discuss any one counter function in Industrial Application?
7. Explain the PLC sequencer function with a relevant Industrial Application?

(OR)

8. Describe the controlling of two axes and three axis Robots with PLC with a neat block diagram?
9. With a neat diagram Explain Analog PLC operation, Analog modules and systems, Analog signal processing and multi-bit data processing?

(OR)

10. Discuss with appropriate equations and neat diagrams about PID modules, PID tuning, PID Functions?

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M.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2018

Subject: **POWER SYSTEM DYNAMICS & STABILITY**

Branch/Specialization: **EEE/EPS**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer ALL questions of the following **5x4Mark=20 Marks**

1. What is meant by park transformation? Define power invariant form of park's transformation?
2. What is per unit system? Explain its significance with numerical example?
3. Explain the effect of excitation on power system stability?
4. Explain RH stability criterion for single machine analysis?
5. Differentiate between AVR and PSS?

ART-B

Answer any FIVE Questions of the following **5x8Marks= 40 Marks**

1. Explain the phasor representation and equivalent circuit used in the steady state analysis of synchronous machine in detail?

(OR)

2. Explain the normalized torque equations of synchronous machine?

3. Drive the expression for swing equation describing rotor dynamics of synchronous machine?

(OR)

4. Explain the equivalent circuit of synchronous machine and determine the parameters?

5. Explain classical model of single machine infinite bus system in detail ?

(OR)

6. Deduce the synchronous machine model with field circuit considering the initial conditions?

7. Explain the small signal stability of single machine infinite bus system with classical generator model

(OR)

8. Briefly explain the state space representation in detail?

9. Explain the role of power system stabilizer in stability enhancement?

(OR)

10 Describe the design procedure of a dynamic compensator for a SMIB system?