Code No.: **82405**

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 (MR18) REGULAR END EXAMINATIONS, MAY-2019
Subject: **Digital Protection of Power System**
Branch: **Electrical Power Systems**

Time: **3 hours**   Max. Marks: 70
PART – A
Answer **ALL** questions of the following   5x4Marks=20 Marks

1. What are level detectors? Explain their need in protective relays.

2. Draw the block diagram of definite time over current relay.

3. Distinguish between unit type and non-unit type protection.

4. Explain the effect of source impedance on distance relays.

5. Explain the principle of digital computer relaying.

PART-B

Answer **ALL** questions of the following   5x10Marks=50Marks

1. a) Derive general equation for phase comparator.
   b) With relevant diagrams, describe the operation of instantaneous comparator.
                                      (OR)
2. a) Write a note on direct comparators.
   b) Discuss the operation of circulating current type amplitude comparator.
3. a) Explain the operation of block spike type phase comparator.
   b) With the help of block diagram explain the operation of static IDMT relay.
                                      (OR)
4. a) Explain the operation of definite over current relay.
   b) Discuss the operation of Hall-effect type comparator.
5. a) How differential characteristics can be obtained using static relay.
   b) Explain how distance relay can be realized in static relays.
                                      (OR)
6. What is harmonic restraint relay? For which device it is used to provide protection? Explain its working principle with a neat circuit diagram.
7. a) Explain the effect of line length on distance relays.
   b) What are switched schemes? State their advantages.
                                      (OR)
8. a) What is power swing? Explain its effect on the performance of distance relays.
   b) How conic section characteristics are obtained? Discuss.

9. a) Explain with the help of a block diagram, how reactance characteristics are obtained.
   b) How MHO characteristics are realized using microprocessor.
                                      (OR)
10. a) With suitable flow chat explain the operation of microprocessor based impedance relay.
    b) Obtain the generalized mathematical expression for distance relays.

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 (MR18) REGULAR END EXAMINATIONS, MAY-2019
Subject: <u>EHV AC Transmission</u>
Branch: **Electrical Power Systems**

Time: 3 hours   Max. Marks: 70

PART – A

Answer **ALL** questions of the following   5x4Marks=20 Marks

1. What are the standard ac and dc transmission line voltages and their classification?

2. Explain what is meant by voltage gradient.

3. What is meant by compensation?

4. What is corona? Why does it cause audible noise?

5. What are steady state and transient limits of lines?

PART-B

Answer **ALL** questions of the following   5x10Marks=50Marks

1. What are the different modes of propagation and how are their parameters estimated?

(OR)

2. Discuss standard transmission line voltages and estimation of line and ground parameters.

3. Explain the calculation of electrostatic field of ac transmission lines.

(OR)

4. Explain voltage gradient and how it is calculated for subconductors.

5. Explain electrostatic induction in unenergized lines.

(OR)

6. Explain the measurement of field and voltage gradients for three phase single and double circuit lines

7. Explain radio noise, its generation, frequency spectrum and measurement.

(OR)

8. Derive tbe corona loss formulae and attenuation of travelling waves.

9. Explain design of EHV lines based on steady state and transient limits

(OR)

10. Describe the construction of EHV cables and their characteristics

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 (MR18) REGULAR END EXAMINATIONS, MAY-2019
Subject: **Power System Dynamics**
Branch: **Electrical Power Systems**

Time: 3 hours   Max. Marks: 70

PART – A

Answer **ALL** questions of the following   5x4Marks=20 Marks

1. Define the following terms
   a) Steady state stability   b) Transient stability   c) Dynamic stability
2. Derive the EMF equation of synchronous machine.
3. Write a short note on excitation system.
4. Write a short note on system model.
5. Draw and explain the block diagram of PSS.

PART-B

Answer **ALL** questions of the following   5x10Marks=50Marks

1. a) Derive the Swing equation.
   b) Write the analysis of steady state stability.
   (OR)
2. Explain the power system dynamic problems.
3. Write the transformations of stator voltage equations Parks transformation.
   (OR)
4. Explain direct axis equivalent circuit of synchronous machine.
5. Explain about inclusion of limits in system representation.
   (OR)
6. Explain about the excitation system modeling.
7. Derive all the necessary equations for small signal stability system with block diagram.
   (OR)
8. Derive an expression for damping torque analysis.
9. Explain the basic concept in applying PSS.
   (OR)
10. Discuss about dynamic compensator.

Code No.: **82422**

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 (MR18) REGULAR END EXAMINATIONS, MAY-2019
Subject: **AI Techniques in Power Systems**
Branch: **Electrical Power Systems**

Time: 3 hours   Max. Marks: 70

PART – A
Answer **ALL** questions of the following   **5x4Marks=20 Marks**

1. Define Artificial Neural Network?

2. Draw the model for multilayer perception.

3. Name some of the properties of fuzzy sets.

4. What do you mean by two point cross over?

5. What are the various areas where Artificial Intelligence can be used?

PART-B

Answer **ALL** questions of the following   **5x10Marks=50Marks**

1. a). Illustrate the characteristics of Neural Networks.

   b). what are the different learning processes? Explain briefly?

(OR)

2. Compare the biological and artificial neuron models?

3. a). Explain the back propagation training algorithm.

   b). Discuss in detail the steps followed and the terminology used.

(OR)

4. Distinguish between Hopfield continuous and discrete models

5. Describe about various membership functions in fuzzy systems.

(OR)

6. a). Discuss Fuzzy Cartesian product.

   b). Explain the operations on fuzzy relations.

7. a). How genetic algorithm is different from traditional algorithms?

   b). Explain the fitness function in Genetic Algorithm

(OR)

8. a). Define Crossover. Distinguish Uniform Crossover and Matrix Crossover

   b). Discuss the convergence of Genetic Algorithm

9. Describe the role of Economic load dispatch problem using AI technique.

(OR)

10. Explain the load frequency control using AI technique.