Hall Ticket Number :										

R-19

Code: 19B211T

M.Tech. I Semester Regular Examinations February 2020

Advanced Power System Analysis

(Electrical Power Systems)

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60 Marks)

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UNIT–I

1. a) Explain the factorization method using Gauss elimination method. 6M

   b) Briefly explain the π-representation of off-nominal tap transformer. 6M

OR

2. a) Write short note on optimal ordering schemes 6M

   b) Define sparse matrix. Explain brief various schemes of optimal ordering. 6M

UNIT–II

3. Explain clearly the Newton-Raphson method of load flow analysis using Y_{BUS} and derive relevant equations. 12M

OR

4. a) Write the load flow equation of Gauss - Seidel method with acceleration factor. 6M

   b) Compare the different types of load flow methods. 6M

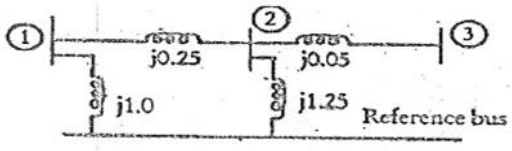
UNIT–III

5. Explain the algorithm for the formation of Z_{BUS} from addition of a branch and addition of a link. 12M

OR

6. a) Explain the step by step procedure for symmetrical fault analysis using bus impedance matrix. 6M

   b) Find the bus impedance matrix for the system whose reactance diagram is shown in the figure all the impedances given are in p.u.



6M

UNIT–IV

7. Define Optimal power flow. Explain the problems in detail. 12M

OR

8. Define methods of Optimal Power Flow solution. Explain any one method in detail. 12M

UNIT–V

9. a) Explain about the fourth order Runge-Kutta method of transient stability analysis 8M

   b) What are the various factors influencing the transient stability? 4M

OR

10. a) Write short notes on modified Euler method 6M

    b) Write an algorithm for simulation of S M I B 6M

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Hall Ticket Number :										

R-19

Code: 19B212T

M.Tech. I Semester Regular Examinations February 2020

Advanced Power System Protection

(Electrical Power Systems)

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60 Marks)

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UNIT–I

1. a) Explain the basic construction of static relays. 6M

   b) Explain the operation of opposed voltage type amplitude comparator with neat diagram. 6M

OR

2. a) Derive the general equation for two input amplitude comparators. 6M

   b) Explain the operation of rectifier bridge type amplitude comparator with neat diagram. 6M

UNIT–II

3. Explain the different techniques to measure the period of coincidence in phase comparators. 12M

OR

4. a) Explain the operation of integrating type phase comparator with neat diagram. 6M

   b) Explain the operation of definite time over current relays with neat diagram. 6M

UNIT–III

5. a) What are magnetic inrush currents? How the transformer is protected from magnetic inrush currents? Explain with neat diagram. 6M

   b) Explain the realization of MHO relay using sampling comparator. 6M

OR

6. a) Discuss the static relay schemes in detail. 6M

   b) Explain the operation of angle impedance relay with neat diagram. 6M

UNIT–IV

7. a) Explain in detail the combined and ground fault schemes. 6M

   b) Explain the principle of out of step tripping relays in power swing analysis. 6M

OR

8. a) Explain in detail the phase fault scheme. 6M

   b) Explain the principle of blocking relays in power swing analysis. 6M

UNIT–V

9. a) Explain the directional relay with neat block diagram and flow chart. 6M

   b) Explain the basic principle of digital computer relaying. 6M

OR

10. a) Explain the reactance relay with neat block diagram and flow chart. 6M

    b) Explain the measurement of resistance with neat diagram. 6M

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Hall Ticket Number :										

R-19

Code: 19BE11T

M.Tech. I Semester Regular Examinations February 2020

Research Methodology and IPR

(Common to All Branches)

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60 Marks)

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UNIT–I

1. Explain the characteristics of a good research problem?

OR

2. Elucidate the different types of Data collection process.

UNIT–II

3. Explain the various types of research reports.

OR

4. Elucidate the format of writing a good research report.

UNIT–III

5. Elucidate the Patent Process.

OR

6. Explain the procedure for grants of Patents.

UNIT–IV

7. Elucidate the patent information and databases.

OR

8. Elucidate the scope of patent rights.

UNIT–V

9. Elucidate the IPR of Biological systems and Computer software.

OR

10. How to administrating patent system.

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Hall Ticket Number :										

Code: 19B21FT

R-19

M.Tech. I Semester Regular Examinations February 2020

Reactive Power Compensation & Management

(Electrical Power Systems)

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60 Marks)

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UNIT–I

1. a) Explain the method of phase balancing and power factor correction of unsymmetrical loads. 6M

   b) What are reactive characteristics of ideal load compensator? Discuss its objectives? 6M

OR

2. Draw the reactive power characteristics and also explain with neat figures and circuit diagrams? 12M

UNIT–II

3. Discuss the passive shunt compensation in detail. 12M

OR

4. a) Explain how shunt compensation is obtained by means of Mid-point shunt reactor or capacitor in transmission lines 6M

   b) Discuss about the four characteristic time periods of a transient state in a compensated transmission line. 6M

UNIT–III

5. a) Explain the advantages and disadvantages of flicker compensation techniques. 6M

   b) Explain the different types of Power Tariffs. 6M

OR

6. a) Explain the load patterns in demand side management. 6M

   b) Explain the effects of radio frequency and electromagnetic interference. 6M

UNIT–IV

7. a) What are the deciding factors for the selection of capacitors? 6M

   b) Explain the remedial measures for voltage flicker. 6M

OR

8. a) Explain kVAR requirements for domestic appliances in User side reactive power management. 6M

   b) List the types of capacitors available. Explain their characteristics and limitations. 6M

UNIT–V

9. What are the reactive power control requirements for electric traction systems? 12M

OR

10. a) Explain about the reactive power control requirements for distribution transformer. 6M

    b) Draw the typical layout of traction system. 6M

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Hall Ticket Number :										

R-19

Code: 19B21BT

M.Tech. I Semester Regular Examinations February 2020

Wind and Solar Systems

(Electrical Power Systems)

Max. Marks: 60 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 12 = 60 Marks)

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UNIT–I

1. a) Discuss about the historical background of wind power generation. 6M

   b) What are various network integration issues for wind power? 6M

OR

2. a) Explain about the current status of the wind power generation worldwide. 6M

   b) Discuss about the impact of aggregation of wind power production. 6M

UNIT–II

3. What are the various power electronic converters used in wind power generation? Explain them briefly. 12M

OR

4. Discuss about the following power quality characteristics of wind turbines:
   i. Rated Data
   ii. Emission of Voltage fluctuations and flicker
   iii. Active and reactive power capabilities and control 12M

UNIT–III

5. a) Discuss about the basic considerations and constraints for Wind–Diesel power stations. 6M

   b) What is the role of storage in wind–diesel power stations? 6M

OR

6. Explain about the reactive power capability of a wind turbine. 12M

UNIT–IV

7. a) Explain the merits and demerits of solar energy. 4M

   b) Explain about the following :
   i. latent heat storage
   ii. Thermo chemical storage 8M

OR

8. Explain about the construction and principle of working of solar pond. 12M

UNIT–V

9. a) Explain about the working of solar with the help of neat diagram. 6M

   b) Discuss about the battery chargers used is solar powered applications. 6M

OR

10. a) Explain about the following solar thermal applications:
    i. Heating
    ii. Cooling 6M

    b) Explain about the various power electronic circuits used in solar energy applications. 6M

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