

Code No.: 82415

MR18

**MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)**

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

**M. Tech. I SEMESTER (MR18) SUPPLEMENTARY END EXAMINATIONS, MAY-2019**

Subject: Renewable Energy Systems

Branch: **Electrical Power Systems**

**Time: 3 hours**

**Max. Marks: 70**

**PART – A**

Answer **ALL** questions of the following

**5x4Marks=20 Marks**

1. Define solar constant and terrestrial radiations.
2. Draw the block diagram of wind electric system mentioning its basic components
3. The basin area of a tidal power plant is  $20 \times 106\text{m}^2$ . The tidal range is 8m, calculate the energy generated in kWh.
4. What are the environment impacts of geothermal energy?
5. Classify fuel cells and differentiate between Fuel Cell and Battery

**PART-B**

Answer **ALL** questions of the following

**5x10Marks=50Marks**

1. a) List out various methods to track Maximum Power Point of solar PV systems and explain about P&O technique.  
b) Write a short note on sizing of PV system and its storage.  
(OR)
2. Describe different methods of sun tracking.
3. Describe the electrical layout of a typical wind farm by means of single line diagram. State the essential equipment.  
(OR)
4. Discuss in detail the operation and control of a wind turbine. How the variations of wind velocity and its directions are taken care?
5. State the basic principle of tidal energy production and write major components of tidal power plant.  
(OR)
6. Derive the expression for energy and power in single basin tidal system.
7. What are biomass conversion technologies? Draw a schematic diagram to explain various conversion technologies and products.  
(OR)
8. a) List out various types of Geothermal resources.  
b) Discuss the energy analysis of a hot Aquifer type Geothermal resource.
9. In mention the application of fuel cells and explain anyone application.  
(OR)
10. Describe the principle of working of a fuel cell with reference to  $\text{H}_2 - \text{O}_2$  cell.

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**M. Tech. I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2019**Subject: Advanced Power System AnalysisBranch: **Electrical Power Systems****Time: 3 hours****Max. Marks: 70****PART – A**Answer **ALL** questions of the following**5x4Marks=20 Marks**

1. Explain sparsity?
2. Explain Bus admittance matrices?
3. Explain the importance of load flows?
4. Explain contingency analysis?
5. Explain about unsymmetrical faults?

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

1. Explain Node elimination and Triangular Factorization?

**(OR)**

2. Explain formation of bus admittance matrix?
3. Write the algorithm for building Z bus system?

**(OR)**

4. Write the procedure to Calculate zbus elements from Ybus elements?
5. Explain with neat flow chart about the Gauss seidel method of power flow solution?

**(OR)**

6. Explain the fast decoupled method with neat diagram?
7. Explain analysis of single contingencies?

**(OR)**

8. Explain contingency analysis of DC model?
9. Explain the procedure for selection of circuit breaker?

**(OR)**

10. Explain about symmetrical and unsymmetrical faults?

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad**M. Tech. I SEMESTER SUPPLEMENTARY END EXAMINATIONS, MAY-2019**Subject: Economic Operation of Power SystemsBranch: Electrical Power Systems

Time: 3 hours

Max. Marks: 70

**PART – A**

Answer ALL questions of the following

5x4Marks=20 Marks

1. What is an Incremental fuel Cost?
2. Write the condition for optimality in an optimal scheduling problem of a short range hydro-thermal system with approximate penalty factors.
3. Represent speed governor with block diagram and write its transfer function.
4. What is the need for integral controller in ALFC?
5. What is the need of reactive power control in a power system?

**PART-B**

Answer ALL questions of the following

5x10Marks=50Marks

1. a) Write step by step procedure for computing economic allocation of generation in a thermal station.  
b) A system consisting of two plants connected by a tie line and load is located at plant-2. When 100MW is transmitted from plant-1, a loss of 10MW takes place on the tie line. Determine the generation schedule at both the plants and the power received by load when  $\lambda$  of the system is 25Rs/MWh and IFC are given by  $\frac{dc_1}{dp_1} = 0.03P_1 + 17Rs/MWh$ ,  $\frac{dc_2}{dp_2} = 0.06P_2 + 19Rs/MWh$ .  
(OR)
2. a) Explain various uses of general loss formula and state the assumptions made for the Calculations of Bm coefficients.  
b) The fuel inputs per hour of plants 1 and 2 are given as  
 $F_1 = 120 + 40P_1 + 0.2P_1^2$  Rs/hr       $F_2 = 150 + 30P_2 + 0.25P_2^2$  Rs/hr  
Determine the economic operating schedule and the corresponding cost of generation if the maximum and minimum loading on each unit is 100MW and 25MW, the demand is 180MW, and transmission losses are neglected. If the load is equally shared by both the units, determine the saving obtained by loading the units as per equal incremental production cost.
3. Explain the mathematical formulation of long-term hydro-thermal scheduling.  
(OR)
4. a) What are the factors on which economic operation of a combined hydro-thermal system depends?  
b) What are the important methods of hydro-thermal co-ordination? Explain them in brief.
5. Obtain the transfer function and block diagram representation of First order turbine model.  
(OR)
6. a) Describe the fundamental characteristics of an excitation system  
b) Draw and explain the block diagram representation of IEEE Type-1 excitation system model.
7. a) Show that the steady change in frequency in load frequency control of an isolated power can be reduced to zero if the change in controlling force applied to the speed changer is equal to the change in load demand.  
b) Distinguish between load frequency control and economic dispatch control.  
(OR)
8. Draw the block diagram of load frequency control in two area control system and explain.
9. a) Name the reasons for variation of voltages in power systems and explain any one method to improve voltage profile.  
b) A 440V, 3-Ø distribution feeder has a load of 100 KW at lagging p.f. with the load current of 200A. If the p.f. is to be improved, determine the following: i)Uncorrected p.f & reactive load ii)New corrected p.f. after installing a shunt capacitor of 75 KVAR.  
(OR)
10. (a) Compare the different types of compensating equipment for transmission system?  
(b) Explain the uncompensated and compensated transmission lines.

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**M. Tech. I SEMESTER SUPPLEMENTARY END EXAMINATIONS, MAY-2019**

Subject: **Research Methodology and IPR**

Branch: **Electrical Power Systems**

**Time: 3 hours**

**Max. Marks: 70**

**PART – A**

Answer **ALL** questions of the following

**5x4Marks=20 Marks**

1. Distinguish “primary vs secondary data collection methods”.
2. What is plagiarism? Explain its role in research.
3. List the objectives of IP law.
4. Give a brief note on international patent law.
5. Write short notes on Anti-cyber squatting.

**PART-B**

Answer **ALL** questions of the following

**5x10Marks=50Marks**

1. “Editing, coding, classification and tabulation are the significant steps in data processing” Explain the statement critically.

**(OR)**

2. What is a good research problem and explain its characteristics.
3. What is review of literature and explain its approaches in research.

**(OR)**

4. Discuss in brief the various methods of sampling.
5. Explain the different types of international cooperation on intellectual property.

**(OR)**

6. Explain the registration process of a patent & Write about its evolution process & development.
7. Elaborate the new development in patent law.

**(OR)**

8. Describe the geographical indications in domain of IP.
9. What are the new developments in Intellectual property rights?

**(OR)**

10. Explain the administration of patent system in IPR.