

**Model Question Paper**  
**ANURAG Engineering College**  
 (An Autonomous Institution)  
 III B.Tech. II Semester Regular Examinations, June -2025  
**POWER SYSTEM OPERATION AND CONTROL**  
**(ELECTRICAL AND ELECTRONICS ENGINEERING)**

Time: 3 Hours

Max.Marks:60

<b>Section – A (Short Answer type questions)</b>		<b>(10 Marks)</b>		
<b>Answer All Questions</b>		<b>Course Outcome</b>	<b>B.T Level</b>	<b>Marks</b>
<b>1.</b>	What is the need for load flow studies?	CO1	L1	1M
<b>2.</b>	Write down any two merits of Gauss-Seidal Method	CO1	L1	1M
<b>3.</b>	What is incremental fuel cost?	CO2	L1	1M
<b>4.</b>	Write down the expression for penalty factor.	CO2	L1	1M
<b>5.</b>	What is load frequency control?	CO3	L1	1M
<b>6.</b>	What are the main parts of speed governing system?	CO3	L1	1M
<b>7.</b>	What is steady state stability?	CO4	L1	1M
<b>8.</b>	What is voltage stability?	CO4	L1	1M
<b>9.</b>	What is load forecasting?	CO5	L1	1M
<b>10.</b>	What is SCADA system?	CO5	L1	1M
<b>Section B (Essay Questions)</b>				
<b>Answer all questions, each question carries equal marks.</b>		<b>(5 X10M = 50M)</b>		
<b>11.</b>	With a neat flow chart, explain the load flow solution by Newton-Raphson method	CO1	L3	10M
<b>OR</b>				
<b>12.</b>	Explain the necessity of a load flow solution. Derive the necessary equations for the load flow problem.	CO1	L2	10M
<b>13.</b>	Derive the transmission line loss formula for a system consisting of n- generating plants supplying several loads interconnected through a transmission network	CO2	L3	10M
<b>OR</b>				
<b>14.</b>	In a two plant system, the entire load is located at plant 2, which is connected to plant 1 by a transmission line. Plant 1 supplies 100 MW of power with a corresponding transmission loss of 5MW. Calculate the penalty factors for the two plants.	CO2	L3	10M
<b>15.</b>	Derive the model of a speed governing system and represent it by a block diagram.	CO3	L2	10M
<b>OR</b>				
<b>16.</b>	Two alternators rated for 110 MW and 210 MW have a governor droop characteristic of 5% from no load to full load. They are connected in parallel to share a load of 250MW. Determine the load shared by them. Assume free governor operation.	CO3	L3	10M
<b>17.</b>	State and explain equal area criterion?	CO4	L2	10M
<b>OR</b>				
<b>18.</b>	Discuss the step by step solution of a swing equation.	CO4	L3	10M

<b>19.</b>	What is the importance of load forecasting? Explain any two techniques of load forecasting.	CO5	L3	10M
<b>OR</b>				
<b>20.</b>	Explain the hardware components and functional aspects of SCADA system using a fundamental block diagram.	CO5	L2	10M