



- Notes :
1. Attempt **any five** questions.
 2. All questions carry equal marks.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Illustrate your answers wherever necessary with the help of neat sketches.
 6. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.
 7. Use of non-programmable calculator is permitted.

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| 1. | a) Explain the concept of smart grid with suitable application. | 7 |
| | b) Explain the present international scenario for smart grid. | 7 |
| 2. | a) What is Geographic Information System (GIS) and given their application in monitoring and protection. | 7 |
| | b) Explain the enabling technologies to be developed and implemented for fulfilling the different requirements of smart grid. | 7 |
| 3. | a) Discuss the overview of the hardware used in smart meters. | 7 |
| | b) List different smart appliances & describe an integration of smart appliances into grid for Home & Building Automation. | 7 |
| 4. | a) What is the need and application of microgrid? | 7 |
| | b) What are the environmental impact and climate change due to renewable energy technologies? | 7 |
| 5. | a) Explain the reactive power control in smart grid. | 7 |
| | b) Comment on “International Economical Issues about Smart grid”. | 7 |
| 6. | a) What are various power quality issues of grid connected renewable energy sources. | 7 |
| | b) Explain cloud computing & its need. | 7 |
| 7. | a) Explain how automatic meter reading can make the system smarter. | 7 |
| | b) Explain Load Frequency Control (LFC) in microgrid systems. | 7 |
| 8. | a) Write a short note on: | 7 |
| | i) Synchro Phaser Measurement Units (PMU) | |
| | ii) Wide Area Measurement Systems (WAMS) | |
| | b) Discuss Ethernet and WiMax. | 7 |
