



- Notes :
1. All questions carry equal marks.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Assume suitable data wherever necessary.
  4. Illustrate your answers wherever necessary with the help of neat sketches.
  5. 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.

1. a) State indirect methods of utilizing solar energy and discuss any one method in detail. **8**  
b) What are the conclusions of alternate energy strategy? **8**

**OR**

2. a) State applications of solar energy and discuss any one application in detail. **8**  
b) Discuss energy consumption as the measure of prosperity and state energy and population sharing between developed and developing nations. **8**

3. a) Describe Greenhouse effect and the carbon cycle. **8**  
b) State principle pollutants and describe any three of them in detail. **8**

**OR**

4. a) Discuss acidification from SO<sub>2</sub> and NO<sub>x</sub>. And state effects of acid rain. **8**  
b) Describe energy consumption and its impact on environmental climatic change. **8**

5. a) Describe renewable energy sources including bio-fuels in India. **8**  
b) Discuss energy and environmental policies in detail. **8**

**OR**

6. a) Describe in detail commercial and non-commercial form of energy sources. **8**  
b) Discuss bio-fuels utilization pattern in past, present and future. **8**

7. a) Describe energy conservation in detail and state its importance. **8**  
b) State features of Energy Conservation Act 2001. **8**

**OR**

8. a) State features of Electricity Act- 2003 and role of Bureau of Energy efficiency. **8**  
b) Discuss powers and functions of Central and State government under Energy Conservation Act 2001. **8**

9. a) Discuss Energy security with respect to India. **8**  
b) Discuss National and State level energy issues in detail. **8**

**OR**

10. a) Discuss Energy Vision with respect to India. **8**  
b) Discuss Industrial energy policy in detail. **8**

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