

ENERGY PHYSICS

UNIT – I : Conventional Energy Sources.

World's reserve of commercial energy sources and their availability – various forms of energy – renewable and conventional energy systems – comparison – coal, oil and natural gas – availability – statistical details – applications – merits and demerits.

UNIT – II : Solar Energy.

Renewable energy sources – solar energy – nature of solar radiation – components – solar heaters – crop dryers – space cooling – solar cooling – solar ponds, solar cookers – water desalination – photovoltaic generation basics – merits and demerits of solar energy.

UNIT – III: Other Non – Conventional Energy Sources

Biomass energy – classification – photosynthesis – biomass conversion process – gobar gas plants – wood gasification – ethanol from wood – advantages and disadvantages of biomass as energy source – geothermal energy – wind energy – ocean thermal energy conversion (OTEC) – energy from waves and tides (Basic ideas, nature, applications, merits and demerits of these).

UNIT – IV : Energy Storage.

Conservation of energy – patterns of energy consumption in domestic, Industrial, transportation and agricultural sectors - conservation principles in these sectors.

UNIT –V : Impacts of Non – Conventional Energy

Energy crisis and possible solutions – energy options for the developing countries – energy storage and hydrogen as a fuel (basics) – impacts due to non-conventional energy sources – global warming.

Books for study:

1. G.D.Rai, Solar energy utilization, Ed, V.1995.
2. S.P.Sukhatme, Solar energy, Tata McGraw Hill Publishing Company, Ed., II 1997.

Books for Reference:

1. G.D.Rai, Non Conventional Energy Sources, Ed. IV 1997.
2. S.Rao and Dr.B.B. Parulekar, Energy Technology, Ed. II, 1997.
3. A.K.Wahil, Power Plant Techology, 1993.
4. Godfrey Boyle, Renewable Energy : Power for a sustainable Future, Alden Oess Limited – Oxford 1996.
5. Jyoti Parikh, Energy models for 2000 and beyond, 1997, TATA McGraw Hill Publishing Company, New Delhi.