RGPV ME 7 SEM CBGS SYLLABUS
Elective –IV ME- 7005 (2) Power Technology

1. Nuclear reactions and artificial radioactivity, introduction, energy and world, nuclear heat energy, nuclear fission and fusion and nuclear reactors, carbon dating, particle accelerators, International Thermonuclear Experimental Reactor, ITER, Large hadron collider, LHC, Radiation and materials, Biological effects of radiation, Nuclear propulsion, Radiation protection, Waste disposal
2. Solar energy, Introduction, an overview of thermal applications, Sun and geographic availability, Solar radiation, Thermal energy storage and utilisation, Solar pond, Solar heaters, Solar collectors, Solar systems design, Passive heating systems, Economic analysis.
3. Wind technology- Introduction, Nature of wind, Place and direction, Energy in wind,wind data, Multi blade propeller type wind mill units and power calculations, Standardization, Conversion effectiveness to electrical and Mechanical Energy, Connectivity with grid, Wind machines classifications and applications, Turbines-Design and performance.
4. Biomass technology, Introduction, Direct and indirect methods of bio mass resource utilisation, Energy plantation, Biomass classification, Biomass general chemical thermodynamics, Combustion.
5. Hydrogen energy-Introduction, Collection and safety, Comparison with other power sources and effectiveness, Reforming and collection of hydrogen from water and hydrocarbons, Hydrogen fuel cells, Fuel cell efficiencies.

References:

1. Arthur Beiser, Concepts of modern Physics, TMH
2. R.L. Murray, Nuclear Energy, Pergamon Press.
3. S. P. Sukhatme, Solar Energy, TMH
4. J. F. Kreider- The solar heating design process, Mc Graw-Hill.
5. Philipp Kiameh-Power generation Handbook.
6. Wiley, Engineering Chemistry, Wiley.