

IV B.Tech II Semester Supplementary Examinations, Apr/May 2006
NON-CONVENTIONAL SOURCES OF ENERGY
(Mechanical Engineering)

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Calculate daylength at location (latitude $28^{\circ}35'N$, longitude $77^{\circ}12'E$) on December 1.
(b) Assuming the earth' solar constant to be $4871 KJ/Cm^2hr$, calculate the equivalent surface temperature of the sun, if the sun is assumed to be block body radiator. [8+8]
2. (a) Classify and describe in brief the solar air heaters.
(b) Sketch the various solar drier designs. [8+8]
3. (a) With neat sketch, explain the suitability of solar dryer for food grains.
(b) With a neat sketch, explain the working of solar distillation plant. [4+12]
4. With neat sketches discuss about the following:
(a) Horizontal axis wind mills
(b) Vertical axis wind mills. [8+8]
5. Explain in detail about the factors which affect the bio-digestion. [16]
6. (a) Explain the working of liquid dominated total flow system. Draw a neat diagram showing different components of this system.
(b) Give the comparison of flashed system and total flow concept. [6+10]
7. (a) With a schematic diagram, explain briefly the working of open cycle OTEC plant.
(b) With reference to typical examples, explain the nature and magnitude of energy possessed by ocean tides. [8+8]
8. (a) Discuss the direct and indirect energy conversion systems emphasizing on the advantages and limitations of each.
(b) How is the operation of thermoelectric generator different from that of conventional generators? [12+4]
