

2006 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY**IV B.TECH III SEMESTER SUPPLEMENTARY EXAMINATIONS
NON-CONVENTIONAL SOURCES OF ENERGY
(MECHANICAL ENGINEERING)**

APRIL/MAY 2006

TIME 3 HOURS
MARKS: 80

Answer any **FIVE** Questions
All Questions carry equal marks

1. (a) Calculate daylength at location (latitude 28°35'N, longitude 77°12'E) on December 1.
(b) Assuming the earth' solar constant to be 4871KJ/Cm²hr, calculate the equivalent surface temperature of the sun, if the sun is assumed to be block body radiator.
2. (a) Classify and describe in brief the solar air heaters.
(b) Sketch the various solar drier designs.
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. With neat sketches discuss about the following:
 - (a) Horizontal axis wind mills
 - (b) Vertical axis wind mills.
5. Explain in detail about the factors which affect the bio digestion.
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.
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. (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?