Exam. Code: 0943 Sub. Code: 7070

1129

B.E. (Mechanical Engineering) Seventh Semester Elective – I

MEC-705 (c): Renewable Energy Sources

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt <u>five</u> questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

- I. Attempt the following:
 - a) What is pyrolysis in biofuels?
 - b) DRAW the neat sketch of solar furnace.
 - c) Relate solar thermal system with respect to space heating.
 - d) Write one combustion characteristic of biofuels.
 - e) Classify biomass plant. Write names only.
 - f) Write two uses of OTEC system.
 - g) What are two main applications of wind energy?
 - h) Define tidal head and duration.
 - i) What is the nature of geothermal resources?
 - j) List the advantages of renewable energy resources.

(10x1)

UNIT - I

- II. Describe the pumping and direct heating application of wind power. (10)
- III. Compare the working and construction features of fixed bed gasifiers and fluidized bed gasifiers. (10)
- IV. Draw neat sketch of domestic biogas plant, and explain it. (6,4)

UNIT-II

- V. a) Explain thermochemical and bio chemical conversions technology for biomass.
 - b) Explain the different types of bio fuels.

(6.4)

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- VI. a) Calculate the angle made by beam radiation with the normal to flat collector, pointing due south location in New Delhi (28° 38' N, 77° 17' E) at 9:00 hour, solar time on December 1. The collector is tilted at angle of 36° with the horizontal.
 - b) What are the main advantages of flat plate solar system? (6,4)
- VII. What is the source of tidal energy? What is the minimum tidal range required for practical tidal plant? What are the main hurdles in the development of tidal energy?

 (10)

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b) DRAW the neat skeller of some

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