Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

IV SEMESTER B.TECH (Open Elective)

END SEMESTER EXAMINATIONS, JUNE/JULY 2016

SUBJECT: Energy Engineering (MME 3282)

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitably assumed.

1A) Explain the features of high and super critical pressure boilers. **(03)**

1B) Explain the steps involved in coal and ash handling process in Steam power plant. **(03)**

1C) Explain the different methods of starting the diesel engine in diesel engine power plant. **(04)**

2A) With neat sketch of the nuclear reactor explain the different components used in it for power generation application. **(03)**

2B) A nuclear reactor consumes 12 kg of U^{235} per day. Calculate its power output if the average energy released per U^{235} fission is 200 MeV. **(03)**

2C) With neat sketch of the layout explain the different component of the hydroelectric power plant. **(04)**

3A) With a neat sketch explain the working principle of Solar pond. **(03)**

3B) With the neat sketch explain the working of wind electric generation unit. **(03)**

3C) With a neat sketch explain the working principle of Solar flat plate collector. **(04)**

4A) Write a note on (a)Super charging (b)Turbo charging **(03)**

4B) With neat sketch explain the working of the open cycle OTEC power plant. **(03)**

4C) Write a note on (a) Dry steam geothermal power plant. **(04)**

(b) Thermochemical conversion of biomass.

5A) Derive the equation for estimation of power in a simple single basin tidal system in terms of range of the tides.($P_{av}/A = 0.225R^2$) **(03)**

5B) With the neat sketch explain the working of Floating drum type biogas plant. **(03)**

5C) At particular site the mean monthly average discharge is as mentioned in the below table. **(04)**

Month	**Discharge(m^3/s)**		**Month**	**Discharge (m^3/s)**
January	100		July	1000
February	225		August	1200
March	300		September	900
April	600		October	600
May	750		November	400
June	800		December	200

(i) Draw the hydrograph and find the average discharge available for the whole period.

(ii) Draw the flow duration curve.