Reg. No. : ……..
Name : ……..

M-Tech Degree Examination

First Semester

Model question paper I
Branch: Mechanical Engineering
Specialization: Thermal Power Engineering

MMETP 105-2 Combustion & Emission in I C Engines

(Regular -2013 Admission)

Answer *ANY* 4 questions by choosing at least *ONE* question from each module.

Time: 3 hrs **Max. Marks: 100**

1. a) Explain the dissociation effect during combustion. **5 Marks**
   b) Explain Lamninar and Turbulent flame propogation in engines **15 Marks**
   c) Define flammability limits with suitable sketches. **5 Marks**

OR

2. a) Write the basics of pre flame reactions **10 Marks**
   b) Write the combustion equation for a general fuel of $C_x H_y$ type **15 Marks**

3. a) Differentiate the terms pre ignition and knocking **5 Marks**
   b) What are the major factors to be considered for the design of SI engine combustion chamber**.** **10 Marks**
   c) Which are the major after treatment devices for SI engine. **10 Marks**

OR

4. a) Define the terms flame development and flame propagation in engines. **10 Marks**
   b) What are the advantages and disadvantages of
      1) Lean burn combustion and
      2) Stratified charged engine. **15 Marks**

5. a) Explain the stages of fuel vapourisation in detail **10 Marks**
   b) What are the factors affecting knocking and pre ignition in CI engine and explain the effects of variation in these factors in knocking and pre ignition. **15 Marks**

OR

6. a) What is the effect of EGR in emissions from CI engine. **10 Marks**

   b) Compare DI and IDI engines. **10 Marks**

   c) What is the effect of injection pressure on combustion **5 Marks**

7. a) List the major pollutants from SI engines. How can we measure and control each of them. **15 Marks**

   b) What are major sources of HC emissions from SI engines. **10 Marks**

OR

8. a) What are the effects of pollutants from CI engines on environment and human beings. How can these be controlled to certain extent. **15 Marks**

   b) Write short notes on soot and particulate traps. **10 Marks**