Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

V SEMESTER B.TECH. (MECHANICAL / I & P ENGINEERING)

END SEMESTER MAKE UP EXAMINATIONS, DEC 2016/JAN 2017

SUBJECT: THEORY OF INTERNAL COMBUSTION ENGINES AND EMISSIONS [MME 4036]

REVISED CREDIT SYSTEM

(07/01/2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.
- Include figures wherever necessary

1A. With the help of both PV and TS diagram discuss the processes of a diesel cycle. **2**

1B. Define **3**

a. Stoichiometric air fuel ratio
b. Enthalpy of combustion
c. Enthalpy of formation

1C. Describe, with neat figures, the losses that are considered only in an actual cycle. Discuss adiabatic flame temperature. **5**

2A. What is swirl? What is its significance in a CI engine? **2**

2B. Discuss Reid Vapor pressure test with a neat figure. **3**

2C. With a neat figure, describe the ASTM distillation test. Mention two limitations of alcohol over gasoline as a fuel. **5**

3A. What are the stages of combustion in a SI engine? Explain with the help of a neat figure. **4**

3B. Discuss how time factors and temperature factors affect diesel knock. **4**

3C. What are the advantages of using Wankel engine? **2**

4A.	Describe the effect of any three factors on the ignition lag of an SI engine. Include neat figures wherever necessary.	**3**
4B.	Discuss four factors that affect the formation of diesel smoke.	**4**
4C.	Explain the working of a CI dual fuel engine with a neat figure.	**3**
5A.	Discuss the non-exhaust emissions of an engine.	**3**
5B.	Describe four NOx emission control methods.	**4**
5C.	Describe positive crankcase ventilation with a neat figure.	**3**