Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

IV SEMESTER B.TECH. (MECHANICAL ENGINEERING)

END SEMESTER EXAMINATIONS, APRIL/MAY 2017

SUBJECT: INTERNAL COMBUSTION ENGINES [MME 3284] [OE-I]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A. Give a comparison of air standard cycles and actual cycles **4**

1B. With suitable sketches explain the disintegration of products of combustion. **4**

1C. How is a six stroke cycle different from four stroke cycle? Explain with sketches wherever necessary **2**

2A. Two moles of Benzene are burnt completely with theoretical amount of air, find: **4**

(i) A/F of reaction on volume basis
(ii) The partial pressure of constituents of combustion
(iii) Dew point temperature of products of combustion
(iv) Volumetric analysis of dry products.

Assume air to be perfect gas.

2B. With a neat sketch explain the method used to volumetrically analyze the three components of exhaust gasses from an IC engine. **4**

2C. Define: **2**

i) Adiabatic flame temperature
ii) Ignition limits

3A. What are the variables affecting diesel knock? Explain. **4**

3B. A certain kind of engine uses fuel injection at the cylinder port for combustion. With a neat sketch explain the stages in its combustion. **4**

3C.	What is the difference between SI engine knock and CI engine knock	**2**
4A.	Using pressure and specific volume graphs explain the differences in naturally aspirated and supercharged engines.	**4**
4B.	What are the disadvantages of single point injection system over multi- port injection system? Draw neat sketches for both.	**4**
4C.	Can a wankel engine be used as a compressor? Give reasons.	**2**
5A.	With a neat sketch explain the working of BOSCH motronic system.	**4**
5B.	How do strain gauge sensors function? Explain the use of strain gauge sensor in an IC engine.	**4**
5C.	How is the combustion of air fuel mixture, analyzed using the oxygen sensor in an IC engine.	**2**