Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
A Constituent Institution of Manipal University

VII SEMESTER B.TECH. (MECHANICAL ENGINEERING)

END SEMESTER MAKE UP EXAMINATIONS, DEC 2016/JAN 2017

SUBJECT: PNEUMATICS AND HYDRAULICS [MME 443]

REVISED CREDIT SYSTEM
(30/12/2016)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Sketches should be drawn neatly using scales (Strictly no free hand diagrams)
- Labelling is mandatory in sketches
- Answer **ANY FIVE FULL** questions.

1A.	Explain the structure of pneumatic control system.	**5**
1B.	Sketch and explain the working of following types of pneumatic cylinders. i) Tandem cylinder and ii) Double rod cylinder	**5**
2A.	Sketch and explain the working of time delay valve.	**4**
2B.	Draw the neat sketch of counter balance valve and explain its working.	**4**
2C.	What is the advantage of variable displacement pump over fixed displacement pump?	**2**
3A.	What is signal overlapping in pneumatics? List the various methods of avoiding signal overlap. Also, draw the circuit diagram for avoiding signal overlapping for the sequence A+B+B-A- using any method.	**6**
3B.	Sketch and explain the working of balanced vane pump.	**4**
4A.	Sketch and explain the working of 3/2 push button valve used in pneumatics.	**4**
4B.	Write a note on cylinder force, velocity and power developed with related equations.	**4**
4C.	Draw the circuit for dominant off relay latching.	**2**
5A.	Explain the working of hydraulic sequencing circuit for two cylinder application	**4**
5B.	What are the functions of a hydraulic accumulator? List the different types of hydraulic accumulators and explain any two.	**6**
6 A.	A station is to be used to check whether the lids of cans are present. If a can without a lid is encountered, this must be pushed one side by a pneumatic cylinder. The lids and cans are interrogated by means of sensors. Draw suitable electro pneumatic circuit.	**4**
6 B.	With suitable circuits explain the concept of meter-in and meter-out control in hydraulics.	**4**
6 C.	Draw the neat sketch of one-way variable flow control valve used in hydraulics.	**2**