Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

A Constituent Institute of Manipal University, Manipal

V SEMESTER B.TECH (IP ENGG.) END SEMESTER

MAKE-UP EXAMINATIONS, DECEMBER 2017

SUBJECT: PNEUMATICS & HYDRAULICS [MME 3111]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A.	Draw the schematic of a piston compressor (single acting). Explain its working.	**3**
1B.	Describe the components used in different stages of air treatment with a neat sketch.	**3**
1C.	The pressing of two push buttons simultaneously can start the forward movement of a double acting cylinder. The idle stroke, also started by a push button, can only take place when the double acting cylinder has reached its forward end position. Draw the pneumatic circuit along with explanation.	**4**
2A.	The forward stroke is triggered by means of a push button. The return stroke is not initiated until the forward end position has been acknowledged. Restarting is only possible when the retracted end position has been reached and a time of t = 2 seconds has elapsed. Draw the pneumatic circuit along with explanation.	**5**
2B.	The cycle is to start when a start button is pressed. Cylinder B can extend only after cylinder A has fully extended. The piston rod of the cylinder A may only retract once the cylinder B has retracted. Draw the circuit using idle roller lever valve to avoid signal overlap.	**5**
3A.	Briefly explain the working of changeover contact with a sketch and symbol.	**2**
3B.	Describe the principle of reflective light barrier and ultrasonic proximity sensors with schematic diagram and symbol.	**3**
3C.	Draw the electro pneumatic circuit for double acting cylinder indirect actuation with oscillating motion of the piston rod.	**5**
4A.	Enumerate any four disadvantages of high viscosity fluid in hydraulic system.	**2**
4B.	Differentiate between return line and pressure line filters.	**2**
4C.	With a neat sketch explain the working of hydraulic vane pump.	**3**
4D.	Describe the construction and working principle of End-position cushioning.	**3**
5A.	What are the characteristics of Tandem centered 3 /4 DCV. Draw the symbol.	**2**
5B.	Explain the construction and working of a compound relief valve.	**3**
5C.	Construct the following hydraulic circuits. (i) Meter in (ii) Bleed off	**5**