Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

SEVENTH SEMESTER B.Tech. (E & C) DEGREE END SEMESTER EXAMINATION
NOV 2017
SUBJECT: MEMS (ECE - 4027)

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to candidates

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

1A. Explain a technique to fabricate micro-moulds of macroscopic (1mm) vertical dimension with sub- micron lateral resolution.

1B. Explain a technique to create a sealing over a microfluidic channel taking a silicon substrate and a silicon sealing.

1C. Give six important properties of PDMS to be utilised in soft lithography technique

(4+3+3)

2A. How can we extend the tunability of di-electrowetting? Explain in detail such a phenomenon

2B. Explain a microfluidic device which can be used as a filter of biomolecules basing on their size and chemical activity.

2C. Explain how a fluid be actuated in inhomogeneous electric field situation.

(5+3+2)

3A. Explain how MEMS Varactor is fabricated and its advantages over conventional ones.

3B. Explain the working of the lens which works on binary optics. How it can be fabricated using micro-technology.

3C. What are the properties of PZT materials that are favourable for MEMS applications and in extension for robotics.

(5+3+2)

4A. Explain principle and working of a device based on reflection phenomena for imaging applications.

4B. Describe two CVD techniques for fabricating poly silicon thin films on Si substrates.

4C. Define quality factor of typical inductor and Plot it with respect to frequency.

(4+4+2)

5A. Explain how MEMS technology be utilised to create spherical lens array and explain two important applications.

5B. Explain construction and operation of continuous flow micro-pumps.

(5+5)