Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

DEPARTMENT OF MECHATRONICS

VII SEMESTER B.TECH. (MECHATRONICS)

END SEMESTER EXAMINATION, December 2021

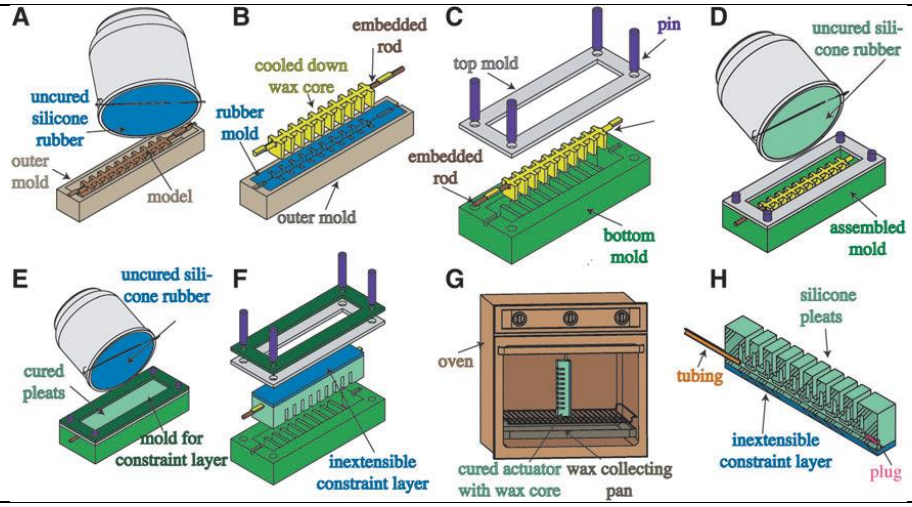
SUBJECT: SOFT ROBOTICS [MTE 4062]

SUBJECT CODE: MTE 4062 **Date: 27/12/2021**

Time: 75+10 MINUTES **MAX. MARKS: 20**

Instructions to Candidates:

- Answer **ALL** the questions.
- MISSING DATA MAY BE SUITABLY ASSUMED AND JUSTIFIED.
- Write your Name, Registration Number at top of every page of the answer sheet.
- Sign on every page of the answer sheet.
- Answers should be handwritten, and scanned copy of the answer should be uploaded (PDF Format).

Q. No	PART B	M	CO /C LO	PO	LO	BL
1A.	Design and explain soft pneumatic actuators for wearable assistive devices with the help of a neat sketch.	5	1	1,2	1,2	3
1B.		3	1	1,2	1,2	3

	The above figure represents the fabrication process for the pleated actuator morphology. Explain the fabrication process for each of the above step involved in the fabrication.					
1C.	Classify thermal and chemical actuators used in soft robots in terms of various actuation techniques, materials used for their construction and applications.	**2**	**1**	**3,4**	**1,2**	**3**
2A.	Explain the principle of operation, the material used for fabrication, application for a multi-gait soft robot.	**5**	**4**	**1,2**	**4,6**	**3**
2B.	Illustrate with an example of Soft Fluidic Actuation and how it is implemented in soft robots.	**3**	**4**	**1,2**	**1,2**	**3**
2C.	With specific examples analyze the relevance of Magnetic 3-D-printed structures used in soft robots.	**2**	**4**	**1,2**	**1,2**	**3**