Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

DEPARTMENT OF MECHATRONICS

V SEMESTER B.TECH. (MECHATRONICS)

END SEMESTER EXAMINATIONS, [Dec] [2021]

SUBJECT: ROBOT PATH PLANNING AND MOBILE ROBOTS

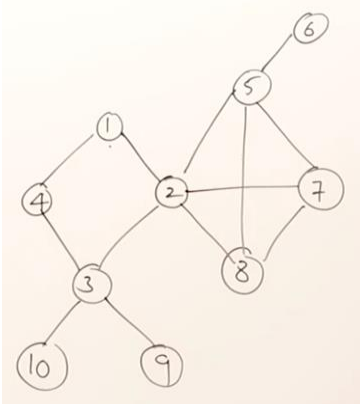
SUBJECT CODE: MTE 4061 **DATE:24/12/2021**

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

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data if any can be suitably assumed.

Part B

Q. No	Question	M	CO/CLO	PO	LO	BL
1A.	Analyze and examine the following terms in the context of mobile robots with neat sketches: a. Model b. Kinematic Model c. Degrees of Freedom Assignment of coordinate frames for a mobile robot	**5**	**1**	**1,2**	**1**	**4**
1B.	Illustrate the essential characteristic features of any mobile robot?	**3**	**1**	**1**	**1**	**3**
1C.	Inspect the principle working of a probabilistic road map technique in the delivering path of a mobile robot.	**2**	**4**	**1,2**	**3**	**4**
2A.	Evaluate Artificial Potential function fields to project this technique as a method for solving the search problem and illustrate the limitations in this procedure as well.	**5**	**4**	**2,3**	**2,3,4**	**5**
2B.	Analyze breadth fast search algorithm for the below figure 2B:  **Figure 2B**	**3**	**4**	**2,3**	**2,3**	**5**

2C.	Illustrate the trapezoidal decomposition technique for obtaining the planned path.	**2**	**4**	**1,2**	**2, 3**	**4**