# MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL (A constituent unit of MAHE, Manipal)

# FOURTH SEMESTER BTECH. (E & C) DEGREE END SEMESTER EXAMINATION JUNE 2022

## SUBJECT: BASICS OF BUILDING AUTOMATION SYSTEMS (ECE - 4301)

### TIME: 3 HOURS

#### MAX. MARKS: 50

**Instructions to candidates** Answer ALL questions. Missing data may be suitably assumed. • **M**\* **C**\* A\* **B**\* Q. No. Questions With appropriate examples explain the different structural and 5 1A. technological components in a smart building. ESG rating is very important for an organisation. Explain its 3 1B. significance and name some rating agencies. What are the major advantages that a smart building can provide 1C. 2 compared to non-intelligent buildings. 5 2A. What is "Communication Protocol"? Explain the OSI model. 2B. 3 With appropriate diagrams, explain the operation of solenoid valve. Capacitive sensor is of non-contact type sensor and is primarily used to measure the linear displacements in the range of 2C. 2 With relevant explain milimeteres. equations, how the measurement is done. Machine Learning can contribute tremendously to the Building 5 3A. Automation process. Give your comments. Explain any two smart systems used in Burj Khaleefa, one of the 3 3B. tallest buildings in the world. Mention any two top selling products of BAS industry and mention 3C. 2 its manufacturers. Explain the purpose of HVAC system and elaborate on the different 5 4A. components of the same. Explain the different intelligent strategies for improving the 4B. 3 efficiency of Lighting system in a building. CII-Sohrabji Godrej Green Business Center (GBC) is a good 2 4C. example for its passive design. Explain.

5A.	Nonlinearity and Hysteresis are two important specifications of a sensor. Explain both with relevant diagrams. Give comment on how it affects sensor performance.	5		
5B.	Discuss on the different strategies for maximising the performance of HVAC system.	3		
5C.	Discuss any two entrepreneurship gaps, you found in the BAS industry.	2		