Seat No.: _____                                     Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY
## BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2020
**Subject Code:3151711**                              **Date:22/01/2021**
**Subject Name:Building Automation**
**Time:10:30 AM TO 12:30 PM**                          **Total Marks: 56**
**Instructions:**
    1. **Attempt any FOUR questions out of EIGHT questions.**
    2. **Make suitable assumptions wherever necessary.**
    3. **Figures to the right indicate full marks.**

|       |      |                                                                                                           | MARKS |
|-------|------|-----------------------------------------------------------------------------------------------------------|-------|
| Q.1   | (a)  | Explain Concept and application of Building Management System.                                             | 03    |
|       | (b)  | State similarities and differences between smart building and green building.                             | 04    |
|       | (c)  | Explain working principle of HVAC system and explain its architecture with all components.               | 07    |
| Q.2   | (a)  | What are the different phases of fire? Draw a block diagram of fire detection and alarm system.           | 03    |
|       | (b)  | Write short note on: Energy Saving concepts & methods.                                                    | 04    |
|       | (c)  | Classify different fire detectors & Explain any two detectors in detail.                                  | 07    |
| Q.3   | (a)  | Give the comparison between NVR and DVR.                                                                   | 03    |
|       | (b)  | Write down advantages of IP access control with POE.                                                      | 04    |
|       | (c)  | Draw typical CCTV based surveillance system. State the component of analog CCTV system and IP based CCTV system. | 07    |
| Q.4   | (a)  | Explain following terms in context of camera: Auto Iris, WDR and Vari-focal.                              | 03    |
|       | (b)  | Explain operations and types of camera.                                                                   | 04    |
|       | (c)  | Compare DAC, MAC and RBAC in context of computer system access control.                                   | 07    |
| Q.5   | (a)  | What is ASHRAE? Explain symbols associated with it.                                                       | 03    |
|       | (b)  | Justify the use of people counter in access control system.                                               | 04    |
|       | (c)  | Discuss RFID in access control. Explain Lightning control for Building Efficiency improvement.            | 07    |
| Q.6   | (a)  | Explain the advantages and limitations of biometric systems.                                              | 03    |
|       | (b)  | Compare different cables which are used in camera system.                                                 | 04    |
|       | (c)  | Discuss DDC in HVAC. How different types of hazard and their level are identified using NFPA rating?     | 07    |
| Q.7   | (a)  | Draw architecture of IBMS and explain the same.                                                           | 03    |
|       | (b)  | Differentiate between VAV and CAV.                                                                        | 04    |
|       | (c)  | State the different way of authentication process carried out in access control system.                   | 07    |

**Q.8** **(a)** Write short note on BMS controller. **03**
    **(b)** How Smart cards differs from Proximity cards? **04**
    **(c)** Explain typical Air Handling Unit with basic operation. **07**
        Also brief about Chillers.

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