

Register No.: ..... Name: .....

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

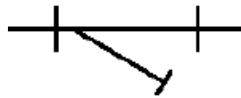
**THIRD SEMESTER M.TECH DEGREE EXAMINATION (Regular), FEBRUARY 2022****ROBOTICS AND AUTOMATION****(2020 Scheme)****Course Code : 20ECRAT263****Course Name: Process and Building Automation Systems****Max. Marks : 60****Duration: 3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. List any three specifications of a typical BMS.
2. State the basic types of sensors used in fire alarm systems.
3. Enlist the basic functions of a video surveillance system.
4. Discuss about RFID enabled access control system.
5. Explain PMV/PPD method to access thermal comfort.
6. Discuss the working of a variable air volume system.
7. Demonstrate the concept of a green building.
8. Identify the following ASHRAE symbols

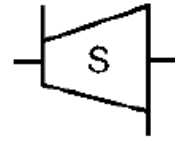
a)



b)



c)

**PART B***(Answer one full question from each module, each question carries 6 marks)***MODULE I**

9. a) With a neat diagram, demonstrate the architecture of a BMS system (with levels). (4)
- b) State the concept of building automation. (2)

**OR**

10. a) Develop a functional block diagram for a porch light system based on brightness sensor inputs. Also explain the design considerations for improving the efficiency of the system. (4)
- b) Draw the block diagram of DDC system. (2)

**MODULE II**

11. a) Write short note on smoke detector. (3)
- b) Discuss about the different phases of fire. (3)

**OR**

12. a) Explain the different types of FAS with suitable diagrams. (3)  
b) Explain the use of a manual call point in a Fire Alarm System. (3)

**MODULE III**

13. a) Draw the system architecture of the CCTV system. Explain it in brief. (3)  
b) Discuss about the camera selection criteria for CCTV systems. (3)

**OR**

14. a) Give a short comparison between DVR and NVR technologies. (3)  
b) Detail the architecture of IP based CCTV system. (3)

**MODULE IV**

15. a) Differentiate various access control models used in BMS. (3)  
b) Discuss about the various components of physical security controls. (3)

**OR**

16. a) Explain in detail about a biometric security system. (3)  
b) Discuss about the security system design for verticals. (3)

**MODULE V**

17. a) Explain the routine maintenance activities to be done by a technician for improving the efficiency of HVAC system. (3)  
b) With a neat block diagram, explain the working of a AHU. (3)

**OR**

18. a) Explain chiller system in HVAC with neat schematic. Suggest the possible unsafe conditions that could occur during its working. (3)  
b) Discuss about the various strategies for maximizing HVAC efficiency. (3)

**MODULE VI**

19. a) With a neat block diagram, explain relay panels in a lighting control system. (4)  
b) Explain how dimmers are used for lighting control. (2)

**OR**

20. a) Brief about Energy saving concept and methods. (4)  
b) Discuss about the advantages of BMS in designing verticals. (2)

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