SHANTILAL SHAH ENGINEERING COLLEGE

INSTRUMENTATION & CONTROL ENGINEERING (17)

PAT Exam Syllabus summer 2019

SUBJECT NAME: BUILDING AUTOMATION
SUBJECT CODE: 2171713

Chapter No	Content
1	**Introduction** Concept and application of Building Management System (BMS) and Automation, requirements and design considerations and its effect on functional efficiency of building automation system, architecture and components of BMS.
2	**Fire Alarm System** Fundamentals: What is Fire? Fire modes, History, Components, and Principles of Operation. FAS Components: Different fire sensors, smoke detectors and their types, Fire control panels, design considerations for the FA system. Field Components, Panel Components, Applications. FAS Architectures: Types of Architectures, Examples. FAS loops: Classification of loops, Examples. Fire Standards: FAS Design procedure in brief, NFPA 72A, BS 5839, IS Concept of IP enabled fire & alarm system, design aspects and components of PA system.
3	**Access control System** **Access Control System:** Access Components, Access control system Design. **CCTV:** Camera: Operation & types, Camera Selection Criteria, Camera Applications, DVR Based system, DVM, Network design, Storage design. Components of CCTV system like cameras, types of lenses, typical types of cables, controlling system. **CCTV Applications:** CCTV Applications.
5	**HVAC system** **Fundamentals:** Introduction to HVAC, HVAC Fundamentals, Basic Processes (Heating ,Cooling etc) **Basic Science:** Air Properties, Psychometric Chart, Heat Transfer mechanisms, Examples. **Human Comfort:** Human comfort zones, Effect of Heat, Humidity, Heat loss. **Processes:** Heating Process & Applications (I.e. Boiler, Heater), Cooling Process & Applications (I.e. Chiller), Ventilation Process & Applications (I.e. Central Fan System, AHU, Exhaust Fans), Unitary Systems (VAV, FCU etc). **Control Theory:** Instrumentation Basics, Field components & use, DDC & applications. **Control Panel:** HVAC Control Panel, MCC Basics, Panel Components **Communication:** Communication Basics, Networks, BACNet, Modbus , LON