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| AR 222 Intelligent Buildings  | **L-T-P** **3-0-0** **3 credit**  |
| 1. Intelligent buildings: concepts, definitions of intelligent buildings, intelligent architecture and structure, evolution of intelligent buildings, IB assessment criteria. 2. Building Automation System (BAS): binary data, digital controller, input and output units, sensors and actuators; architecture and configuration of BAS, BAS outstation and central station, programming environment and platform, monitoring interface and development platform, building energy management functions. 3. Local Area Network (LAN) and BAS communications tandards: Local Area Network (LAN), protocol standards and OSI model, medium access schemes, LAN standards, Ethernet, ARCnet, LonTalk, wireless technologies, ZigBee, application s of wireless technologies in BAS. 4. Applications of internet technologies in BMS: Internet and Internet protocols, convergence networks and total integration Central air-conditioningsystemcontrolandoptimisation:VAV and CAVsystem control and optimization, ventilation control and optimization, chillerperformanceand optimal control, optimal control of heat rejection systems,sequence control of multiple chiller plants, pump speed and sequence controlof chilled water systems. 5. Lightingcontrolsystems:purpose of lighting control, basic components oflighting and lighting control systems, analogue control and digital control,DXM512-A, digital addressable lighting interface (DALI), systems based oncommon automation protocols, energy management and lighting controlstrategies. 6. Security andsafetycontrolsystems:CCTV systems, analogue CCTVsystems and IP-surveillance systems; Access control system, different typesof access control, intelligent readers andsystem topologies; Burglar alarmsystem, functions of burglar alarm systems; Fire alarm systems, typical firedetectors, conventional fire panels, addressable fire panels  |