Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
Manipal University

FOURTH SEMESTER B.Tech. (E & C) DEGREE END SEMESTER EXAMINATION
MAY/JUNE 2016
SUBJECT: BUILDING AUTOMATION SYSTEM (ECE - 3288)

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to candidates
- Answer **ALL** questions.
- Missing data may be suitably assumed.

1A. Describe the working principle of RFID and photoelectric smoke detectors used in BAS.

1B. If there are two lamps with below specifications

1.Mecrury Vapor Lamp:400W,cost=10$

2.Multi Vapor Lamp:325W,cost=20$

If the lamp operates for 4000 hours per year and electric energy costs $0.075/kWh. Evaluate and comment switching from Mercury vapor lamp to multi vapor lamp is cost effective or not.

1C. Write the range of IP addresses in each block for Class C.

(5+3+2)

2A. With relevant block diagram explain two BACnet networks connected via the Internet using BACnet Annex H.3 PAD devices.

2B. Draw Manchester, NRZ-L and NRZ-I coding schemes for the message: 01011100

2C. Write the advantages and disadvantages of OPC and web services.

(5+3+2)

3A. Discuss BACnet protocol with an example for BACnet object.

3B. Write and explain conceptual block diagram of single duct and variable air volume system in air conditioning.

3C. What is DDC controllers? Write the different signal flow in DDC controller used in BAS.

(5+3+2)

4A. What is a SCADA system? Explain with its function, application and message format.

4B. Explain the core features of Intelligent Buildings.

4C. Differentiate different generation of BAS based on its feature.

(5+3+2)

5A. Explain controller area network protocols with its features, node, signal and data frame.

5B. With relevant diagram explain the select and poll functions in polling based multiple-access method.

5C. What is MQTT protocol? And what are its features

(5+3+2)