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 photoelectric smoke detectors and Inductive proximity sensors used in BAS.

1B. A ventilating fan at a fiberglass boat manufacturing company has a standard efficiency 20 HP motor that runs at full load two shifts a day, or 4032 hours per year. . When this motor wears out, the company will have an ECO of using a high efficiency motor. A high efficiency 20HP motor costs around $1100 more to purchase than the standard efficiency motor. The standard motor is 83% efficient and the high efficiency model is 88.5% efficient. Evaluate and suggest whether the solution is cost effective or not.(Given 1kW=1.34102hp and cost per kWh=0.075$)

1C. What are the core features of Intelligent Buildings?

(5+3+2)

2A. What is a SCADA system? With relevant diagram explain its architecture and message format.

2B. Draw Manchester, NRZ-L and NRZ-I coding schemes for the message:11000110

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. With relevant block diagram explain communication between two BACnet Annex J networks connected via the Internet.

3C. Differentiate serial communication standards RS232,RS485and RS422 based on its capacity and features

(5+3+2)

4A. What is DALI Interface? Write the conceptual architecture of light control system using DALI protocol and also list the basic characteristics of DALI interface.

4B. Write a note on demand controlled ventilation designed in BAS.

4C. Compare performance parameter of Wi-Fi, Bluetooth and ZigBee Wireless Technology.

(5+3+2)

5A. What is Inter Integrated Circuit? Explain the protocol with respect to signalling and data transfer.

5B. With an example explain the Token passing multiple access technique used in BAS.

5C. What is the advantage of MQTT protocol over HTTP in mobile application development?

<div align="right">(5+3+2)</div>