

**EEPE35**

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M S RAMAIAH INSTITUTE OF TECHNOLOGY

(AUTONOMOUS INSTITUTE, AFFILIATED TO VTU)

BANGALORE - 560 054

SEMESTER END EXAMINATIONS - JUNE 2015

Course & Branch : **B.E.- Electrical & Electronics Engg.** Semester : **VI**
Subject : **Advanced Industrial Automation -II** Max. Marks : **100**
Subject Code : **EEPE35** Duration : **3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit

UNIT - I

- Discuss about the characteristics of pure HMI (06)
 - Discuss about the different types of trend and reports. (08)
 - Illustrate how navigation and displays are incorporated in a HMI. (06)
- Illustrate the concepts of alarms as used in automation industry. (10)
 - Draw a neat HMI for a traffic management system and elaborate it. (10)

UNIT - II

- Illustrate, with neat frame format, how the communication between two devices takes place in Industry if it is implemented with MODBUS. (10)
 - Show how the communication between the two devices takes place with the usage of ISO OSI reference model. Describe the layers with its functionalities in detail. (10)
- Justify the need for error detection and correction with any one technique. (08)
 - Mention the importance of network security. (06)
 - Explore the differences between the RS232 and RS485. (06)

UNIT - III

- With a neat diagram describe the architecture of Database Management Systems. (10)
 - Illustrate with examples how JDBC and ODBC is implemented in real time environment. (10)
- A university registrar's office maintains data about the following entities: (10)
(a) courses, including number, title, credits, syllabus, and prerequisites; (b) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom; (c) students, including student-id, name, and program; and (d) instructors, including identification number, name, department, and title. Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for, must be appropriately modelled. Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints
 - Discuss about the requirement of data security and data availability as in Automation Industries. (10)



UNIT - IV

7. a) Illustrate the concept of building management system with its neat block diagram. (10)
b) Describe the objective of Video Surveillance in Building Management System (10)
8. a) With a neat diagram elaborate the BACnet architecture. (10)
b) Mention the benefits of BMS system. (06)
c) Justify the need for HVAC system. (04)

UNIT - V

9. a) What is required to determine the target Safety Integrity Level? (06)
b) How SIL verification is performed? Provide details. (06)
c) In detail discuss about the safety lifecycle. (08)
10. a) Choose the best answer: (04)
i) SIL is quantitative measure of Risk and Risk is a function of
a. Frequency
b. Consequences
c. Frequency & Consequences
d. None of the above
ii) SFF (Safe Failure fraction) is ratio of
a. Safe Failures / Dangerous Failures
b. Safe Failures / Total Failures
c. Dangerous Detected Failures / Total Failures
d. All Failures except Dangerous Undetected Failures / Total Failures
b) List out the seven parts of IEC 61508 standard. (08)
c) Draw the table describing Risk level factors based on Frequency of Occurrence. (08)
