

RO8011 INDUSTRIAL NETWORKING

DETAILED SYLLABUS

OBJECTIVES:

The student should be made to:

- Basic knowledge about networking in industries.
- Understand the evolution of computer networks using the layered network architecture.
- Understand the concepts of data communications.
- Be familiar with the Transmission media and Tools.
- Design computer networks using sub-netting and routing concepts.

UNIT I INTRODUCTION

Modern instrumentation and control systems – OSI model – Protocols – Standards – Common problems and solutions – Grounding/shielding and noise - EIA-232 interface standard – EIA-485 interface standard – Current loop and EIA-485 converters. FIBRE OPTICS: Introduction – Fibre optic cable components and parameters – Basic cable types – Connection fibres – troubleshooting.

UNIT II MODBUS

Overview – Protocol structure – Function codes – Modbus plus protocol –Data Highway – AS interface (AS-i) –Device Net: Physical layer – Topology – Device taps – Profibus PA/DP/FMS: Protocol stack – System operation.

UNIT III ETHERNET SYSTEMS

IEEE/ISO standards – Medium access control – frames – Reducing collisions – Auto negotiation – LAN system components – Structured cabling – Industrial Ethernet – Troubleshooting Ethernet. CAN BUS: Concepts of bus access and arbitration – CAN: Protocol-Errors: Properties – detection – processing – Introduction to CAN 2.0B

UNIT IV WIRELESS COMMUNICATIONS

Radio spectrum – Frequency allocation – Radio modem – Intermodulation – Implementing a radio link – RFID: Basic principles of radio frequency identification – Transponders – Interrogators

UNIT V APPLICATIONS

Automotive communication technologies – Design of automotive X-by-Wire systems, - The LIN standard – The IEC/IEEE Train communication network: Applying train communication network for data communications in electrical substations.

TEXT BOOKS:

1. Steve Mackay, Edwin Wright, Deon Reynders and John Park, "Practical Industrial Data Networks: Design, Installation and Troubleshooting", Newnes (Elsevier), 2004
2. "Practical Filebus, DeviceNet and Ethernet for Industry", IDC Technology, 2006

Diploma, Anna Univ UG & PG Courses

Notes
Syllabus
Question Papers
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www.AllAbtEngg.com

REFERENCES:

1. Richard Zurawski, "The Industrial Communication Technology Handbook", Taylor and Francis, 2005
2. Dominique Paret, "Multiplexed Networks for Embedded Systems", John Wiley & Sons, 2007
3. Albert Lozano-Nieto, "RFID Design Fundamentals and Applications", CRC Press, 2011