

# B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

## September / October 2023 Supplementary Examinations

**Programme: B.E.**

**Branch: Electronics and Instrumentation Engineering**

**Course Code: 19EI6PCIDN**

**Course: INDUSTRIAL DATA NETWORKS**

**Semester: VI**

**Duration: 3 hrs.**

**Max Marks: 100**

**Date: 22.09.2023**

**Instructions:** 1. Answer any FIVE full questions, choosing one full question from each unit.  
2. Missing data, if any, may be suitably assumed.

### UNIT - I

- 1 a) Describe the different layers of Open System Interconnection (OSI) model of ISO. **10**
- b) Explain HDLC Protocol frame format and HDLC transfer modes. **10**

### UNIT - II

- 2 a) Discuss Ethernet standards IEEE 802 LANs in detail. **10**
- b) Define ARCNET. Also discuss the characteristics features, advantages and disadvantages of ARCnet with respect to Industrial data networks. **10**

### OR

- 3 a) Illustrate with suitable diagrams how Network connects to other networks through repeaters, bridges, and routers. **10**
- b) Illustrate with an example, a Routing table with the number of hops for communicating with neighboring routers. **10**

### UNIT - III

- 4 a) Illustrate the message format in HART protocol. Also list the HART commands and describe HART protocol implementation of OSI layer model. **12**
- b) Enlist the salient features and specification of Controller area network CAN protocol. **08**

### UNIT - IV

- 5 a) Design frame format for request and response of the function code Read coil code (01) status and Read digital input code (02) in MODBUS. **10**
- b) Explain PA, DP and FMS versions of Profibus. **10**

### OR

- 6 a) Explain the frame format and advantages of MODBUS. **10**
- b) Describe about Profibus communication model and communication objects. **10**

**Important Note:** Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

## **UNIT - V**

- |   |  |           |
|---|--|-----------|
| 7 | a) Describe the components of Radio links.                                       | <b>08</b> |
|   | b) Discuss functions of Modems. Name the modes of radio modems and its features. | <b>08</b> |
|   | c) Describe the need for Industrial Ethernet?                                    | <b>04</b> |

\*\*\*\*\*

SUPPLEMENTARY EXAMS 2023