

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2018-19 Examination

Semester: 6
Subject Code: 03112353
Subject Name: Industrial Data Communication- I

Date: 04/05/2019
Time: 10:30am To 1:00pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (All are compulsory) (Each of one mark) (15)

1. Ringing in the signal is observed by _____ device.

| | |
|-----------------------|------------------|
| A) CRO (Oscilloscope) | B) Multimeter |
| C) Loopback tester | D) None of above |
2. Software handshaking use XON character by _____ ASCII character to control the serial communication.

| | |
|-------|-------|
| A) 11 | B) 13 |
| C) 14 | D) 10 |
3. Maximum cable length for RS 232 is _____ m.

| | |
|---------|---------|
| A) 15 | B) 1200 |
| C) 1100 | D) 120 |
4. Physical and data link layers of OSI comprises into _____ layer of TCP/IP.

| | |
|----------------|-------------------|
| A) Application | B) Network Access |
| C) Transport | D) None of above |
5. Write serial interface converters available in market.
6. Which are the two methods supported by MODBUS to check errors in data communication?
7. _____ is used to suppress the noise in AC circuit.
8. CCITT stands for _____.
9. Write the equation of field strength to calculate the effects of electromagnetic radiation.
10. What is the typical value for terminating resistor?
11. Explain method to reduce the ringing effect.
12. Write the function of CTS.
13. Explain V.24.
14. What is half duplex communication?
15. Write the names of protocols used in application layer.

Q.2 Answer the following questions. (Attempt any three) (15)

- A) Explain the noise suppression techniques for AC & DC circuits.
- B) Give the comparison of: RS 232, RS 422, RS 485.
- C) Illustrate handshaking signal and its types with proper example.
- D) Write query and response to request the (digital) output with following data for modbus protocol.

The (digital) input states 4 to 16 of device 17. These are 13 states, which can be mapped within 2 data bytes. Function 02H : READ INPUT STATUS

- Q.3** A) Explain the effects of impedance coupling on signal and give its solution with proper sketch. (07)
 B) What are the facilities to check communication errors in MODBUS? Calculate CRC for 06 and give the result. (08)

OR

- B) Explain specific method for troubleshooting communication network. (08)

- Q.4** A) Explain with necessary diagram: HART protocol and its functionality. (07)

OR

- A) Explain Common mode noise voltage. (07)

- B) (i) Draw detailed diagram of four wire RS 485 configuration. (08)

(ii) Why parity bit is required in protocol frame structure? Explain even parity, odd parity and no parity with examples.