

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER- V EXAMINATION – SUMMER 2026

Subject Code:3152412

Date:09-06-2026

Subject Name:Industrial Communication Systems

Time:02:30 PM TO 05:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Clearly define each of the following terms: **03**
Communication, Modulation, Modulation Index, Baud rate
- (b) With Neat Sketches explain the block diagram of Communication System. **04**
- (c) With the necessary Mathematical Analysis Show the Power Relation of the A.M. wave. **07**
- Q.2** (a) Write a brief note on UART. **03**
- (b) Explain in details about Communication Modes. **04**
- (c) Make a Comparisons chart for ASK, FSK, PSK. **07**
- OR**
- (c) Compare AM, FM and PM in Tabular forms. **07**
- Q.3** (a) Explain in brief PWM. **03**
- (b) Differentiate Balanced and Unbalanced transmission lines. **04**
- (c) Explain the troubleshooting Serial data Communication Circuits. **07**
Also explain troubleshooting and testing with RS-485.
- OR**
- Q.3** (a) Explain in brief USB. **03**
- (b) Define Channel Capacity. Explain in brief PAM. **04**
- (c) Explain the RS-422 Interface Standard. **07**
- Q.4** (a) List the advantages of Field bus and Device net system. **03**
- (b) Explain CSMA/CA with necessary flowchart. **04**
- (c) List MODBUS functions. Explain message format, synchronization and memory notation of MODBUS Protocol. **07**
- OR**
- Q.4** (a) List the benefits of HART protocol. **03**
- (b) Write a note on: Satellite Communication. **04**
- (c) What do you mean by Protocol? Explain TCP/IP Protocol. **07**
- Q.5** (a) Explain in brief PPM. **03**
- (b) Explain Earthing and Grounding requirement w.r.t. Cabling and Interference. **04**
- (c) Write a detailed note on Suppression techniques. **07**
- OR**
- Q.5** (a) Define Noise Figure and Noise Temperature. **03**
- (b) Compare Coaxial cable and Fiber Optic Cable in tabular forms. **04**
- (c) Draw and explain the block diagram of Fiber Optics Communication (FOC) system. Also list down the benefits of FOC. **07**