

**Industrial Communication Systems**

**Time : 3 hrs**

**Full Mark – 70**

(Answer any six questions including question no. 1 which is compulsory)

The figure in the right hand margin indicate marks

1. Answer the following (2X10)
  - a. Differentiate between serial and parallel interface.
  - b. Define a frame.
  - c. What do you mean by Baud Rate.
  - d. Write two application of SCI.
  - e. Sketch the output of the number '45' in hex if it is to be transmitted in an 8 bit asynchronous format with odd parity.
  - f. Write down the goals of Instrumentation design.
  - g. What are the types of redundancy?
  - h. Differentiate between LAN and WAN.
  - i. Draw the HART frequency band.
  - j. The cable length is dependent on which parameter.
2. (a) Describe serial data transmission with its standards. (5X2)  
(b) Describe parallel data transmission. Write its advantages and disadvantages.
3. (a) Write a brief description of design and installation of field bus. (5X2)  
(b) Define the key words:  
(i) Start bit (ii) Stop bit (iii) Parity bit (iv) Half duplex (v) Full duplex
4. (a) Discuss the performance of field bus. (5X2)  
(b) Discuss the advantages and disadvantages of Field bus.
5. (a) Write the function of different layers of OSI Model. (5X2)  
(b) What do you mean by Topology? Explain different types of Topologies.
6. (a) Describe Hart device and network. (5X2)  
(b) Write and explain different applications of HART.
7. With neat diagram explain Field bus architecture. (10)
8. Write short notes on: (any two) (5X2)
  - (a) PROFIBUS-PA Basics
  - (b) PROFIBUS-PA System Architecture
  - (c) PROFIBUS-PA Block Model

