

# RRRB - JE

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# ELECTRONICS

**Railway Recruitment Board**

**Volume - 5**

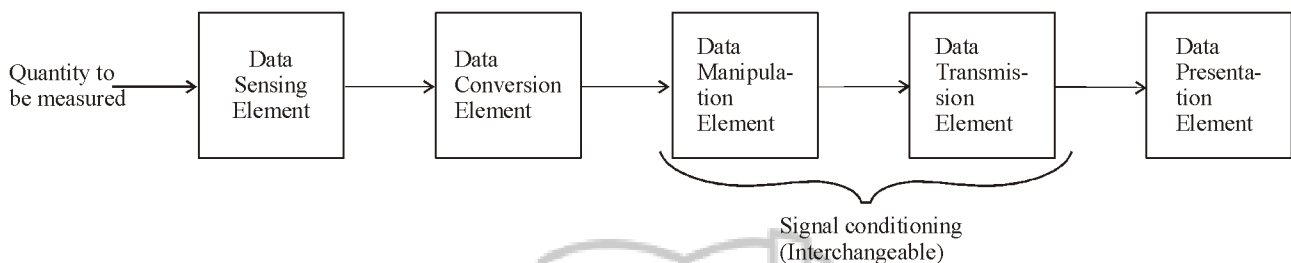
**Measurement**



# GENERALIZED MEASURING SYSTEMS

## THEORY

### 1.1 BLOCK DIAGRAM



#### 1.1.1 Data Sensing Element

This stage is in direct contact with quantity under measurement. This element senses the quantity under measurement and produces some output suitable for the next stage. Output of sensing element or may not be an electrical signal.

*Example* : Transducer and sensors.

#### 1.1.2 Data Conversion Element

This element converts one form of the signal to another form. The nature of the signal gets changed at output of this element.

*Examples* : A/D converter, D/A converter, V to I and I to V converter, V to f converter.

#### 1.1.3 Data Manipulation Element

This element modifies or changes the level of the input signal without changing the nature of the signal.

*Examples* : Amplifiers, Modulators and Attenuators etc.

#### 1.1.4 Data Transmission Element

This element provides the medium for transmission of data from the process to control panel.

*Examples* : All transmission channels like optical fiber, two wire line Co-axial cable.

#### 1.1.5 Data Presentation Element

This element is used to display or store the data for future analysis.

*Examples* : Display devices, like-CRO, Recorders, Plotters ect.

**PRACTICE SHEET****OBJECTIVE QUESTIONS**

1. Some of the functional building blocks of a measurement system are:
- Primary sensing element (PSE)
  - Variable conversion element (VCE), or transducer
  - Data transmission element (DTE)
  - Variable Manipulation element (VME)
  - Data presentation element (DPE)
- The correct sequential connection of the functional building blocks for an electronic pressure gauge will be
- (a) PSE, VME, VCE, DPE, DTE
  - (b) PSE, VCE, VME, DTE, DPE
  - (c) DTE, DPE, VCE, PSE, VME
  - (d) PSE, VED, DTE, DPE, VME
2. Which of the following are data representation elements in a generalized measurement system?
- 1. Analog indicator
  - 2. Amplifier
  - 3. A/D converter
  - 4. Digital display
- Select the correct answer using the codes given below:
- (a) 1 and 2
  - (b) 1 and 4
  - (c) 2 and 4
  - (d) 3 and 4

□□□

**ANSWERS AND EXPLANATIONS**

1. *Ans.(b)*

The correct sequential connection of the functional building blocks for an electronic pressure gauge will be:

PSE, VCE, VME, DTE, DPE

2. *Ans.(b)*

Data representation elements in a generalized measurement system are

1. Analog indicators
2. Digital displays
3. Magnetic tapes
4. High speed camera

□□□

