

**PGIS-223 B-19**  
**M.Sc. I Semester (CBCS) Degree Examination**  
**ELECTRONICS AND INSTRUMENTATION**  
**Fundamentals of Instrumentation**  
**Paper : HCT 1.2**

Time : 3 Hours

Maximum Marks : 80

**Instructions to Candidates:**

- 1) Answer the questions as per the instructions.
- 2) Write question numbers clearly.

**PART - A**

1. Answer any **Eight** of the following. (8×2=16)
- a) Define instrument. Give two examples.
  - b) Define accuracy and precision.
  - c) Define resolution and threshold.
  - d) What is the principle of synchros?
  - e) Define gauge factor. Give its equation.
  - f) Mention any two specifications of LM35.
  - g) What is the difference between transducer and sensor?
  - h) Mention different units of pressure.
  - i) Draw the diagram of first-order band-pass filter.
  - j) What is the principle of LCD?

**PART - B**

- Answer any **Four** of the following. (4×7=28)
2. Discuss the standards of measurements.
  3. With neat diagram, explain the functional elements of measurement system.

4. Discuss the construction and working of platinum resistance thermometer.
5. Explain the operation of Borden tube with diagram.
6. Discuss the principle and working of Piezo-electric pressure transducer.
7. Explain the working of locks in amplifier.

### PART - C

Answer any **Three** of the following.

(3×12=36)

8. Discuss various types of instruments with examples.
9. With neat diagram, explain the principle and working of LVDT. Mention its applications.
10. Explain the principle and working of various opto-electric transducer.
11. With neat diagram, describe the operation of x-y recorder. Mention its applications.
12. Write a short notes on any two. (2×6=12)
  - a) Selection of instrument
  - b) Thermocouples
  - c) Strain gauges
  - d) Low-Pass filter.

**PGIS-224 B-19**  
**M.Sc. I Semester Degree Examination**  
**ELECTRONICS AND INSTRUMENTAION**  
**Control Systems and Automation**  
**Paper : HCT 1.3**

Time : 3 Hours

Maximum Marks : 80

**Instructions to Candidates:***Answer the questions as per instruction.***PART - A**

1. Answer any **Eight** question. (2×8=16)
- a) State the merits of closed loop control system.
  - b) Define Feedback.
  - c) Write the Transfer Function for second order system.
  - d) Write the Laplace Transforms of all standard test signals.
  - e) Write the time response of first order system.
  - f) State the advantages of Bode plots.
  - g) State Nyquist stability criterion
  - h) Define state variables.
  - i) Define controllability.
  - j) Define absolute stability.

**PART - B**

Answer any **Four** questions. (4×7=28)

2. Give a comparative study between open loop and cloud loop control system.
3. Find the transfer function of series R-L network.
4. Find the stability of a system whose characteristic equation is  $Q(S) = S^5 + 2S^4 + 4S^3 + 3S^2 + 5S + 7 = 0$  by using R-H criterion.

5. Draw the Bode plot for  $G(S) = \frac{1}{S}$ .
6. Define frequency domain specification.
7. State the properties of state transition matrix.

### PART - C

Answer any **Three** questions.

(3×12=36)

8. Explain the effects of feedback on gain, stability, sensitivity.
9. Find the time response of 2<sup>nd</sup> order system for step input.
10. Derive the correlation between time and frequency response.
11. Explain the state Model unity canonical variable.

12. Write a short notes on any **Two**.

(2×6=12)

- i) Mason's gain formula
- ii) Static error coefficients.
- iii) Nyquist plots
- iv) Diagonalization.