Reg. No	•
---------	---

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2014

Sixth Semester

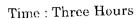
Branch: Electronics and Communication Engineering

ELECTRONIC INSTRUMENTATION (L)

(Old Scheme-Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Maximum: 100 Marks



Part A

Answer all questions briefly. Each question carries 4 marks.

- 1. State the three types of systematic errors, giving examples of each.
- 2. Explain the differences between analog and digital signal.
- 3. What are the advantages of using a foil type strain gauge?
- 4. What are the differences between photoemissive, photoconductive and photovoltaic transducers?
- 5. What is frequency modulation telemetry system?
- 6. What are the limitations of landline telemetry?
- 7. Define the term null as it applies to bridge measurement. What are the advantages of this method?
- 8. What are the objectives and requirements of recording data?
- 9. List out and explain general features of differential pressure type flow meters.
- Explain the operation of a pressure switch.

 $(10 \times 4 = 40 \text{ marks})$

Part B

Answer all questions.

Each full question carries 12 marks.

11. Derive the expression for the time response of a second order underdamped system when subjected to unit ramp input. Show that the nature of the response of the system is same as that for a unit step input.

Or

12. Explain the following sources of errors:

(i) Noise.

(ii) Response time.

(iii) Design limitations.

(iv) Energy exchanged by interaction.

(v) Transmission.

(vi) Deterioration of measuring system.

 $(6 \times 2 = 12 \text{ marks})$

13. (a) Explain the operation of a photo-multiplier.

(6 marks)

(b) Under what conditions is a dummy strain gauge used? What are the functions of strain gauges? (6 marks)

Or

14. (a) With neat diagrams, describe the operation of a piezoelectric transducer.

(6 marks)

- (b) What are the differences between self generating non-self generating and passive inductive transducers? Explain.
- 15. With a neat block schematics, describe a complete telemetry scheme which uses FDM and demultiplexing with PCM/FM modulation.

Or

- 16. With neat sketches, explain the complete system of a force balance, current telemetry. Compare its performance with RF telemetering system.
- 17. (a) Explain the measurement of capacitance using low voltage Schering bridge. (6 marks)
 - (b) What are the limitations of Wheatstone bridge? Explain how a guarded Wheatstone bridge is used.

Or

- 18. With a neat block diagram, explain the working of a spectrum analyser. What are its applications?
- 19. How does the resistance change with temperature for resistance thermometers? Which is the best material for such a thermometer? Compare its properties with two possible materials and describe the characteristics of any *one* of them.

Or

20. Explain the principle of torque measurement. With a block schematics, explain the practical set up for torque measurement.

 $[5 \times 12 = 60 \text{ marks}]$

