



College of Engineering, Science and Technology
School of Electrical and Electronics Engineering

Bachelors of Engineering
(Electronics& Instrumentation)
Year 3

EEE713 – Principle of Measurement of Instrumentation

Semester 1, 2016

Date: 13 June 2016 Time: 09:00am to 12:10PM
Duration – 3 h 10 min (Including 10 min reading time)

Total Marks – 100

Instructions to candidates:

- 1) You are allowed 10 minutes extra reading time during which you are NOT allowed to write.
- 2) Begin each answer on a fresh page and use both sides of the sheet.
- 3) Write your candidate number at the top of each attached sheet.
- 4) Insert all written full-scope, graph paper, drawing paper etc. in their correct sequence and secure with string.
- 5) For all sheets of paper on which rough/ draft work has been done, cross it through and you must attach all of them to your answer scripts.
- 6) Write clearly the number(s) of the questions(s) attempted on the top of each sheet.
- 7) There are two sections – both are compulsory.
- 8) There are alternative sub-questions within some questions.
- 9) Start your answer for a new question on new page.
- 10) Use of mobile phones or other programmable electronic gadget/storage device is NOT ALLOWED

- *Total Number of pages – 03 (Three) including this cover page*

SECTION A – SHORT ANSWER QUESTIONS

[Section A - Total 50 Marks]

Note: All questions in this section are compulsory.

- Q.1. Define following terms in detail with unit and formulae. [5 Marks]
- i) Density
 - ii) Specific gravity
 - iii) Viscosity
- Q.2. Classify pressure measurement devices. [5 Marks]
- Q.3. Explain force, torque and velocity, with one suitable example of each type of measurement device. [5 Marks]
- Q.4. What is the need of measurement of rotational motion? Suggest three measurement systems used in rotational motion. [5 Marks]
- Q.5. Write notes on Gauge factor and, types of strain gauge. [5 Marks]
- Q.6. Enlist and draw two types elastic-pressure sensing devices. [5 Marks]
- Q.7. Draw LVDT and state its measurement range. [5 Marks]
- Q.8. Draw Manometer and state its applications. [5 Marks]
- Q.9. Classify temperature measurement sensors and its applications. [5 Marks]
- Q.10. What is a seismic measurement? Enlist such measurement device. [5 Marks]

*** End of Section A ***

SECTION B – LONG ANSWER QUESTIONS

[Section B - Total 50 Marks]

Note: Attempt any FIVE out of the following SEVEN questions from this section.

- Q.11. With the help of circuit diagram explain thermocouple principle of measurement. State its types and applications. [10 Marks]
- Q.12. Explain the output response curve of LVDT. Discuss its important operating parameters of selection. [10 Marks]
- Q.13. Draw and explain Radiation Pyrometer with its applications. [10 Marks]
- Q.14. State the need of stroboscope. Draw and explain tachometer. [10 Marks]
- Q.15. With a proper circuit selection, draw and explain strain gauge measurements as pressure sensor. [10 Marks]
- Q.16. Describe piezo-electric transducer, its working and applications. [10 Marks]
- Q.17. What is the need of calibration? Explain cold junction compensation method used in temperature measurement. [10Marks]

*** End of Section B ***

***** End of Question Paper *****