FIJI NATIONAL UNIVERSITY

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

Trade Diploma in Electrical Engineering
(Electronic & Instrumentation)
Year 2

EEE583 – Control System Engineering

Trimester 1, 2016

Date: 29 April 2016 Time: 02:00PM to 05:10PM
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-scapes, 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 the following terms in detail **[5 Marks]**

i) Accuracy
ii) Uncertainty
iii) Reproducibility
iv) Precision
v) Error

Q.2. Distinguish between open loop and close loop control systems. **[5 Marks]**

Q.3. Explain the need of frequency response analysis of control system. **[5 Marks]**

Q.4. What is the need of amplification in signal conditioning? Draw an amplifier circuit. **[5 Marks]**

Q.5. Write notes on calibration and standards **[5 Marks]**

Q.6. Define actuators and enlist types of actuators with one application each. **[5 Marks]**

Q.7. Explain measurement system with true and conventional true value with disturbance. **[5 Marks]**

Q.8. Explain an open loop control system with its advantages and applications. **[5 Marks]**

Q.9. State the concept and types of modulation. **[5 Marks]**

Q.10. Define the transfer function of an open loop control system and state its importance. **[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 block schematic explain measurement control systems operation. **[10 Marks]**

Q.12. State types of ADC and DAC. Explain one of the method of conversion considering 2^N states for N bit conversion. **[10 Marks]**

Q.13. Draw and explain sample and hold circuit. List circuit applications. **[10 Marks]**

Q.14. Discuss transient response and steady state accuracy with help of neatly labeled response curve **[10 Marks]**

Q.15. With a proper circuit selection. Draw and explain strain gauge measurement as a pressure sensor. **[10 Marks]**

Q.16. Describe different types of errors with suitable example and measures used for reduction of errors. **[10 Marks]**

Q.17. What is the need of PID control system. State its limitations and applications **[10 Marks]**

***** End of Section B *****

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