

AE 242 Aerospace Measurements Laboratory

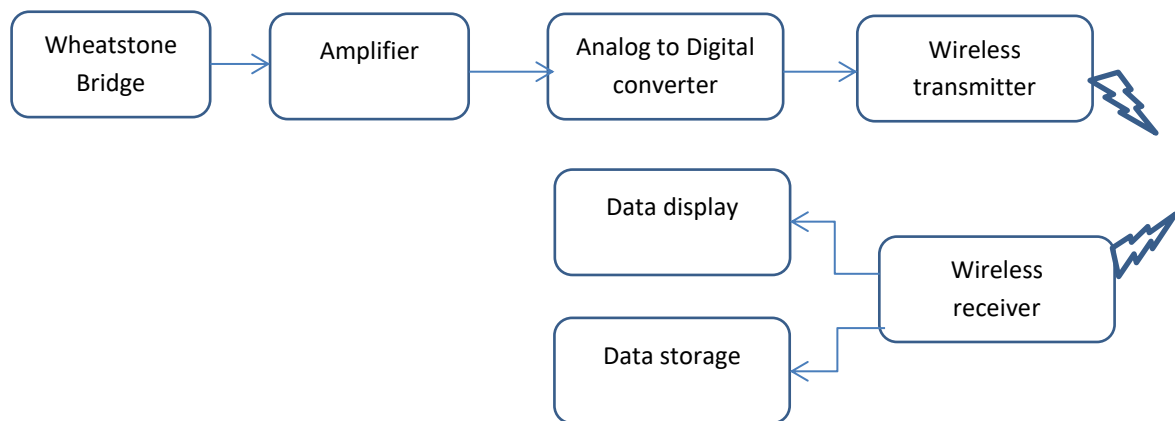
Quiz 1 (Total Marks 20) 31st Jan 2022 14:30-14:55

Instructions:

- 1) Use ruled paper for the exam
- 2) Write roll number, course code AE242 at top of each sheet.
- 3) Put page number on each sheet at top right corner.
- 4) Use blue or black ink pen for the exam.
- 5) If you use pencil, before completion of exam, rewrite with pen.
- 6) On first sheet, write this "I shall maintain the Honor code. I shall not make and attend phone call while writing the exam. I shall not send and attend any message while writing the exam. I shall inform instructor if someone contacts me during exam" Put your signature with date below this.
- 7) I (instructor) will be available during the full duration of exam on our regular MS Teams.
- 8) After downloading question paper. Send following message on chat "Roll No. Paper downloaded". This information will be used as attendance. Do not miss this.
- 9) You can start writing your answers. During the exam if you have any doubt, first send me a chat message. If required we will have an audio call. Keep your video on for TAs to observe you and your surroundings.
- 10) After completion. Scan your answer sheets. Use adequate light and avoid (minimise) any shadow while taking picture for scanning. Make sure that scan is clear. Save it as pdf. Name your file as rollnumber.pdf
- 11) Submit your scanned pdf on moodle interface. Do not submit images. It will close at 15:00 hrs
- 12) Portal for paper submission will close at 15:00 hrs. Keep adequate time for scanning. If you are unable to submit on moodle, please e-mail to arya@aero.iitb.ac.in immediately.
- 13) Keep your written answer sheets safe.

Instructions: 1) If required you can give reference to lecture title and slide number in your answers 2) Mere giving slide number and copying from slides will not fetch marks.

Q1) Figure given below shows various component of a strain measurement system. Identify equivalent functional elements explained during the lecture. Also provide adequate explanation for selection of particular functional element. (4)



Q2) Ramesh is planning to measure tensile strain due to axial load using quarter bridge circuit. 1) Advise him what type of errors he is likely to encounter while using quarter bridge measurement scheme. 2) Also suggest him what are the mitigation methods to overcome the errors encountered during quarter bridge circuit. (8)

Q3) Give one example of combinational digital circuit. (2)

Q4) Figure given below shows two methods to determine the weight of the object. 1) Classify which is deflection and null balance respectively, justify your answer. 2) What are sources of error in each of these methods? (6)



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