

## Metrology Plus Sample examination paper 2020

### Examination length 1.5 Hours

Q1 You are required to answer all questions in this section by defining the statements below and stating when it is applicable with examples: **(20 Marks)**

- The concept of shared risk
- Air buoyancy correction
- En Ratio in excess of 1
- Magnetic susceptibility
- Standard Gravity

Q2 A client disbelieves a stated value for a mass on one of your issued calibration certificates and makes a formal complaint. Describe the processes you would follow to determine whether the client has a valid complaint and what internal quality control checks you would instigate to prove your stated value. **(30 Marks)**

Q3 A client would like to have stainless steel disks calibrated to F2 level. These disks are used with a deadweight tester to calibrate pressure gauges (not for oxygen) and the nominal values are stated in psi not mass units. Your quality manual does not have a validated procedure for such calibrations. Explain the procedure for conducting such a calibration and how you would ensure the validity of your method. **(20 Marks)**

Q4 Interlaboratory comparisons (ILC) are a necessary quality requirement with accredited organisations. Outline any problems that you perceive when conducting an ILC for Non-automatic weighing machines, especially in the procedures and comparing the results and the preparation of the associated uncertainty budgets. **(20 Marks)**

Q5 Accurately setting the meniscus in volume determinations is crucial to the stated result. Outline the procedure to be followed to allow this and explain how this is allowed for when preparing an uncertainty budget for gravimetric calibrations. **(10 Marks)**