

Engineering preparation Assignment Hand in when returned

The presentation can be of your choosing but please annotate all diagrams, structure your answers, take pride in your presented work and provide references of your sources used. (please do not only provide cut and paste answers directly from the internet, it must be your work that has resulted from your research)

To prepare you for unit 1 complete the following tasks:

- 1) Explain the process of tensile destructive testing and produce an annotated graph of a ferrous material that has undergone this testing procedure describing the features of the resultant graph.
- 2) Explain the process of non-destructive testing including dye penetrant, x-ray, magnetic resonance and ultra sound. When would this type of testing and not destructive testing be used and why. When would destructive testing be used and provide an example.
- 3) Select two materials from each group (ferrous, non-ferrous, thermosetting polymers, thermoplastic polymers, natural polymers and engineering ceramics) and explain: the typical properties of that category, the individual properties of the two chosen materials and finally the source of the materials and the primary processing techniques.
- 4) Using a railway line identify: category of material, material properties, how it is manufactured and why this process.