MMAN2130 – Design and Manufacture

Engineering Standards & Engineering Drawings Test

Date: 09/10/2020, Weighting 20%

IMPORTANT: Part A and Part B are each worth 10% of your course mark. You have two hours to complete the test and upload your files. The submission boxes will lock at exactly 1pm. Ensure you leave enough time to submit, this is your responsibility. Late submissions under 5 minutes will be penalised 50%. Late submissions after 5 minutes will receive a zero grade.

What to do if you have trouble submitting your files?

Immediately let us know in the test chat on Teams. This provides us a timestamp of your intent to submit. You must then immediately email your files to d.eggler@unsw.edu.au.

What to do if you have a question during the test?

Simply type "I have a question" into the test chat on Teams and one of our invigilators will video call you to answer.

INSTRUCTIONS

Short Answers

1. Download the Word document titled "Engineering Standards and Engineering Drawings Test".
2. Answer the questions in the provided word document template (download from Moodle) titled "zID_ShortAnswers_template.docx".
3. Save as a PDF file and rename the file "zID_ShortAnswers". E.g. z5734996_ShortAnswers
4. Upload to "Turnitin Submission Box".

Engineering Drawings

1. Download the 3D Cad part titled "Week 4 Test CAD Part".
2. Carefully read the instruction in Part B: Engineering Drawings in the Word document titled "Engineering Standards and Engineering Drawings Test".
3. Create an engineering drawing from this part file.
4. Save the drawing as a .pdf file.**
5. Rename the drawing file as "zID_EngDrawings". E.g. z5734996_EngDrawings
6. Upload to "Drawings File Submission Box

**** If you are using myAccess, please check out the "MMAN2130 - myAccess Solidworks Drawing Instructions" document for detailed instructions.**

Part A: Short Answer (30 marks)

Answer the following questions on Engineering Standards and Engineering Drawings.

Q1. As a graduate engineer with a few years of industry experience, you have been asked to mentor an undergraduate student that is doing industrial training at your company. By chance, this student is currently doing MMAN2130. Remembering how much fun you had in this course, you immediately get them working on creating an engineering drawing for an automated bean bag filling machine. However, the drawing that they give you has lots of "chain dimensioning".

a) What are chain dimensions? (1 mark)
b) What are the real-world issues that chain dimensions could cause? (3 marks)
c) What must be done to correct this issue? Provide some helpful tips to your new mentee. (3 marks)

Q2. One of your closest friends has decided to enter into the lucrative bean bag market and start up his own company, Beanzgineered™. You, being a great friend, remind him that any product he creates must meet a mandatory bean bag safety standard. After years of design work, he returns to you for advice on how to prove compliance to this requirement in the standard.

> (1) Every bean bag and bean bag cover shall have a child-resistant slide-fastener fitted to every opening through which bean bag filling can be inserted or removed.

He reveals that his current plan is to provide detailed engineering drawings to prove compliance. What do you think of his plan? (3 marks)

Q3. Your friend has recently bought a DMC DeLorean and she has been steadily customising it. Her plan is to one day attempt the Australian land speed record of 802.6 km/h with a road legal vehicle. Her attention has now turned to the wheel guards (see Figure 1) which she is concerned is creating too much drag which will slow her down. She is thinking about removing them or possibly modifying them but isn't sure if this would cause issues with compliance. She has asked for your assistance in interpreting the following standard and making a decision.

> General Requirements
>
> The vehicle must be provided with wheel guards (parts of the bodywork, mudguards, etc.) which must be so designed as to protect other road users, as far as practicable, against thrown-up stones, mud, ice, snow and water and to reduce for those users the dangers due to contact with the moving wheels.

Figure 1. Wheel guard/mud guard. Not pictured: DMC DeLorean

a) Do you think this is a well written standard? (2 marks)
b) If you have concerns with this standard, explain what you think the issue is? Give an example of how it may cause a problem. (4 marks)
c) In your opinion, will your friend be compliant if she proceeds as planned? Why? (2 marks)

Q4. One of your brilliant engineering friends has an amazing idea that they want to use to create a start up to make all the money. However, they are frustrated because they need to comply with various Australian Standards. They feel such stringent rules stifle innovation and make it difficult to be truly competitive. You couldn't disagree more! What are the reasons you give to convince your friend to the importance and/or benefits of complying with various Australian Standards? (12 marks)

Part B: Engineering Drawings (35 marks)

Create an engineering drawing from the CAD part in the Moodle section "Test- Engineering Standards and Engineering Drawings". The component is made from brass and there are no specific requirements for the surface finish. The general tolerance to be applied to linear dimensions is ± 0.05 mm. Use an A4 size drawing sheet. Unless specified otherwise all fillets are 6mm.