

Examiners' Report/  
Principal Examiner Feedback

Summer 2013

Principal Learning

Engineering  
EG208 Paper 01

Exploring Engineering Innovation,  
Enterprise and Technological  
Advancements

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## **Unit EG208\_01**

### **Exploring Engineering Innovation, Enterprise and Technological Advancements**

Overall, the paper produced a good range of responses. Lower ability students often gave simplistic responses to questions and gained limited marks. The more demanding questions at the end of the paper provided students with an opportunity to expand and apply their knowledge and it was pleasing to see some very good responses. As in previous series, students would benefit from being taught examination skills and techniques as often they did not read the questions properly and questions were not answered using the 'state, describe, explain' method.

#### **Question 1**

This question was aimed at a range of aspects relating to intellectual property.

##### **Q1(a)**

The majority of students correctly identified the intellectual property that would protect the visual appearance of the SolRsurf as being 'Design'.

##### **Q1(b)**

Many students were unable to identify Trademark as the correct intellectual property used to protect the 'SolRsurf' name.

##### **Q1(c)**

Many students were able to achieve some marks for this question with responses that centered around contacting the Intellectual Property Office. There were very few correct responses where the product could have been checked by design number, design class or by owner. A typical incorrect response focused on looking at existing products in the market place.

##### **Q1(d)**

The majority of students were clearly able to identify four types of literary work that copyright protects. Typical responses included books, song lyrics, poems and computer programmes.

##### **Q1(e)**

It was clear that the students who knew about each of the Intellectual Properties were able to score full marks here. However, most students were able to achieve some marks for defining Intellectual Property Infringement. Typical responses focused around some using an existing product design, name or invention.

### **Q1(f)**

It was also pleasing to see that students that had researched this aspect of the paper were clearly able to give examples of Trademark Infringement where someone uses an established name or logo of an existing company.

### **Question 2**

This question was aimed at (a) development, (b) research and (c) finance.

#### **Q2(a)**

Many students were able to score at least half marks here with responses that centered around the need to test for electrical safety and the need to reduce sharp edges.

#### **Q2(b)**

The majority of students were able to score reasonably well here as many are familiar with research methods. However many responses focused on specific examples of research rather than stating the specific technique used but both were acceptable responses. Typical responses included 'the use of questionnaires/surveys to gather people's opinion about the SolRsurf' and 'Primary' and 'Secondary' research techniques.

#### **Q2(c) (i) (ii)**

Many students were able to give detailed responses about financial advantages of family and friends by discussing issues such as 'no/low interest rate charged' and 'longer time to pay money back' and also they were able to identify a financial disadvantage with responses centring around 'friends and family not being able to give as much money as a bank'.

### **Question 3**

This was aimed at testing knowledge of modern materials, including properties, definitions and forms of supply.

#### **Q3(a)**

This proved to be quite a good differentiated question. Most students were able to link the property of Strength and Brittleness to their appropriate descriptions. However, Plasticity and Toughness proved a little more challenging for some students.

#### **Q3(b)**

Many students were again able to score well here and it is clear that centres are teaching students a good range of 'forms of supply' of materials. Typical correct responses were 'round bar', 'sheet' and 'channel'. Many students simply misread the question and stated two different metals.

### **Q3(c)(i) & (ii)**

The majority of students responded well to this question and can clear define a non-ferrous material as one that does not contain iron. These students they went on to give good examples such as 'aluminium' or 'copper'. Incorrect responses included 'a material that does not corrode' and examples such as 'iron' and 'stainless steel'.

### **Q3(d)**

Most students scored at least one mark here with responses that related to the ability of the material to stretch and return to its original shape.

## **Question 4**

This question was aimed at renewable forms of energy and the injection moulding process.

### **Q4(a)**

Again this question allowed students to access the full range of marks. The majority of students were able to give 'wind energy' and 'wave/tidal power' as the different forms of renewable energy and then continue to provide descriptions of the use of wind and water to turn turbines to generate electricity.

### **Q4(b)**

The majority of students found this question quite challenging. Many incorrect responses focused around generic material characteristics rather than their suitability for injection moulding. Where students scored well there was consideration of ejector pin positions and appropriate draft angles on the mould itself.

## **Question 5**

This question was centered around the process of surface mount technology. This type of question appeared one of the previous series and there hasn't been much improvement in the students ability to produce good responses. There are still far too many students describing the manual process of soldering. However, where students had clearly done some research there were some very good responses including the use of pick and place robots and reflow soldering accompanied by some good sketches. However, it was pleasing to see that most students had attempted this question even if they were only able to identify the advantages of this process such as 'increase speed and accuracy of manufacture' and 'the use of smaller components making smaller circuit boards'.

## **Question 6**

This question tested the social impact and environmental impacts of the SolRsurf.

The majority of students sitting the examination paper attempted the final questions. This is pleasing as it is good exam technique for students to attempt all questions.

### **Q6(a)**

Most students gave coherent responses detailing the use of recyclable/biodegradable materials for the protective packaging and then discussing the need to remove/cut down the assembly documentation and uploading to the Internet or removing the range of booklets with languages that didn't apply to their country. This was high order thinking and deserved good marks for this.

### **Q6(b)**

The majority of students scored better here and it was clear that they had researched the environmental impacts of distribution to the end user. Most students gave coherent responses that dealt with not only the use of green transport methods but the need to have distribution centres across the country and worldwide to reduce the environmental impact of carbon emissions. These answers were well thought out and it was pleasing to see students looking at the pros and cons of their final responses.

## **Grade Boundaries**

Grade boundaries for this, and all other papers, can be found on the website on this link:

<http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx>

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