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January 2013

Principal Learning Engineering

EG208 Paper 01

Exploring Engineering Innovation, Enterprise and Technological Advancements

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General comments

Overall, the paper produced a good range of responses. Lower ability Candidates often gave simplistic responses to questions and gained limited marks. The more demanding questions at the end of the paper provided candidates with an opportunity to expand and apply their knowledge and it was pleasing to see some very good responses. As in previous series, candidates 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 candidates correctly associated the description for the term trademark.

Q1(b): Many candidates were unable to identify Patent as the correct intellectual property used to protect the laser sensor system of the PodRide.

Q1(c): Many candidates were able to achieve some marks for this question with responses that centered on contacting the Intellectual Property Office. However, a typical incorrect response focused on looking at existing products in the market place.

Q1(d): The majority of candidates were unable to correctly identify the Registered Trademark symbol.

Q1(e): It was clear that the candidates who knew about each of the Intellectual Properties were able to score full marks here. However, most candidates were able to achieve some marks picking up on common aspects for Patent such as 'a new inventive step to improve car manufacture' and 'the locking mechanism of a child's car seat'.

Question 2

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

Q2(a): This proved to be quite a challenging question. Many candidates did not read the question and responded with generic research activities such as 'look at existing products' rather than outcomes that would limit development of the PodRide. Good responses examined the public's need for such a device and whether it would be a success or cost implications associated with building the system.

Q2(b): The majority of candidates were able to score reasonably well here as many are familiar with testing procedures. Correct responses focused on operational and safety testing and this was very pleasing to see.

Q2(c)(i): Many candidates correctly identified the Shareholder as one of the Fund Providers but there were very limited correct responses for the Venture Capitalist.

Q2(c)(ii): This question attracted the full range of marks with many candidates giving simplistic responses for both the Bank and the Private Funding. However, a significant number of candidates gave detailed responses that involved the need to pay back a loan with interest.

Question 3

This was aimed at testing knowledge of modern materials. The first parts of the question were set in the context of the pre-release.

Q3(a): This proved to be quite a good differentiated question. The majority of candidates were able to correctly identify a specific metal and composite material. However, it was surprising to see that many candidates were unable to identify Glass as the Ceramic and ABS as the polymer.

Q3(b): Likewise, those that had researched the process of vacuum forming were clearly aware of the characteristics that makes a polymer suitable for such a process. Many candidates simply misread the question and stated two different polymers.

Q3(c)(i) & (ii): This aspect of the course still proves problematic for a number of candidates. Smart materials have been with us for many series now and yet many candidates fail to define the term Smart Material correctly. Many candidates simply refer to a material having the ability to return to its original shape with reference to thermoplastic materials. While some smart materials do this it is usually as a result of an external stimuli such as heat or light. Also, many candidates simply gave incorrect examples of such materials. It is clear that centres still need to do more work with this type of material.

Question 4

This question was aimed at the power source of the PodRide. It examined candidates' knowledge of different battery types and the environmental impact of using hydrogen fuel cells.

Q4(a): Again this question allowed candidates to access the full range of marks. The majority of candidates centered their answers on the reduced weight of such batteries and their ability to last longer as they have a slower loss of charge. Generally this question was answered quite well.

Q4(b): The majority of candidates who had researched hydrogen fuel cells gave very good responses relating to a lower carbon footprint and identifying the only by-products as being water and heat. However, it was clear that some candidates had not researched this type of fuel cell as this question was left blank or statements relating to increased emissions contributing to global warming.

Question 5

This question was centered on the process of vacuum forming.

It was very pleasing to see many candidates produce a very detailed account of the vacuum forming process supported by clear diagrams. However, a number of candidates scored poorly here as they simply gave a description of the injection moulding process. This was very surprising considering that this process is widely used for projects at many centres.

Question 6

This question tested the social impact and environmental benefits of this transport system.

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

Q6(a): Most candidates were able to identify the interaction with others in the pod in a relaxed environment but many candidates referred to environmental impact which is not what the question asked. Candidates need to be encouraged to read the questions thoroughly to ensure they give appropriate responses. However, there was evidence of detailed coherent response that attracted the full marks for this question.

Q6(b): The majority of candidates scored better here and it was clear that they had researched the environmental benefits of this type of transport system. Coherent responses centered on almost zero carbon emissions and reduced congestion in the immediate vicinity of the airport.

Overall, this seemed to be a similar paper to past series with continually improving responses for Q5.

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