

Examiners' Report/ Principal Examiner Feedback

June 2011

GCE Engineering

Unit 6931_01

Engineering Materials, Processes and
Techniques

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Unit 6931

Engineering Materials, Processes and Techniques

Question 1

This question was answered reasonably well. The majority of candidates were able to state a material for the given class. However, when it came to stating a significant property for that material, many of the responses were rather generic and as a consequence, a fair number of candidates were marked down on this section. Any relevant property for the given material was accepted by the examiners.

Question 2

This question was answered reasonably well apart from the misinterpretation of hazards and risks by some candidates. Candidates put down precautions instead of identifying risks and in some cases risks for hazards.

Question 3(a)(i)

This question was on the whole answered successfully. Most candidates were able to give satisfactory responses to the advantages and disadvantages of galvanisation. Many candidates described the process as "cheap" and a good number gave unsubstantiated statements.

Question 3(a)(ii)

This question was well answered by the vast majority of candidates. They were able to give sound pros and cons for using paint a finishing technique.

Question 3(a)(iii)

The responses to this question were very generic. They tended to be answered in relation to the finishing of a piece of work using plastic coating in the school workshop and not necessarily in an industrial situation. Many candidates believed that plastic coating was a very cheap process. A good number referred to effect of UV light and the majority were more concerned with the aesthetics of the work and the fact that the process gave the work a pleasing finish. Very few discussed the protective nature of the process when applied to steels.

Question 3(b)

The examiners were pleased with the responses to this question. The vast majority of candidates were able to explain the stages of galvanisation in a logical manner. Some chose to describe the dip process whilst others described the electrolytic process. Both were deemed as correct.

Question 4(a)

The majority of candidates were able to produce a reasonably acceptable graph in this question. Most produced the correct axis but very few included the units. The shape of the curve, including the initial straight line was produced correctly. Many candidates did not get the trough correct and therefore lost marks. On the whole this was a successfully completed section.

Question 4(b)(i, ii, iii)

There was a vast difference in the positioning of the various elements on the graph produced in question Q04a. The majority were able to indicate the elastic range and most were able to point out the ultimate tensile strength. However, a good number of candidates had issues with the yield point. This may be due to the fact that many had left out the dip in the graph and were therefore unable to pinpoint it.

Question 4(c)(i, ii)

Generally well answered but some elementary mistakes were made in calculations.

Question 4(c)(iii, iv)

Generally well answered but some elementary mistakes were made in calculations. A significant number of candidates confused stress with strain.

Question 5(a)

Good answers generally, however some candidates put down the same properties for both polymers.

Question 5(b)(i, ii)

Good answers generally, however some candidates confused the structure and many answers were for the wrong polymer.

Question 6(a)

There was a vast difference in the responses to this question. The more successful candidates looked at the requirements of the question and as they covered those points they were ticked off thus ensuring that all the issues had been covered. This approach is to be recommended. The less successful candidate drifted away from the question and, in some instances, the responses went well away from the requirements. The examiner was expecting to see suggestions of how the light would be attached to the frame, how the light would be switched on and off, with perhaps a dimming device for the lamp, how the lamp could be adjusted and how it could be stored. Many candidates completed the first parts but very few suggested satisfactory methods of storing the lamp when not in use.

Question 7(a) and Question 7(b)

Many of the candidates were able to describe, with illustrations, one of the standard methods of testing hardness. There were some fanciful suggestions, with scratching devices, but on the whole this question was reasonably well undertaken by the majority of candidates.

They were able also to explain how hardness is established although the use of the formula $HV-F/A$ was few and far between.

Question 7(c)

Some candidates described the injection moulding process rather than explain its suitability for manufacturing the feet. Otherwise, the answers showed an appreciation of the benefits of mass production.

Question 7(d)

This question was reasonably well attempted. The majority of candidates were able to discuss the pros and cons of using aluminium alloys and low carbon steel. Most responses outlined the various good points of each material but many candidates were unable to give sufficiently sound disadvantages of the material.

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