

Examiners' Report/  
Principal Examiner Feedback

Summer 2014

Pearson Edexcel Principal Learning in  
Engineering  
EG301 Paper 01

Investigating Engineering Business  
and the Environment

## **Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at [www.edexcel.com](http://www.edexcel.com) or [www.btec.co.uk](http://www.btec.co.uk). Alternatively, you can get in touch with us using the details on our contact us page at [www.edexcel.com/contactus](http://www.edexcel.com/contactus).

## **Pearson: helping people progress, everywhere**

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: [www.pearson.com/uk](http://www.pearson.com/uk)

Summer 2014

Publications Code DP038645

All the material in this publication is copyright

© Pearson Education Ltd 2014

## **EG301\_01**

### **Investigating Engineering Business and the Environment**

#### **General Comments**

A wide spread of achievement was seen during this series. From the performance on some parts of the paper, it is clear that there are some areas of the specification which students feel more comfortable with and have been able to perform well on.

#### **Section A**

##### **Question 1**

This question was answered correctly by approximately half of the students who knew that traffic lights would be commissioned by an engineer from the electrical sector. Students who did not answer this question correctly tended to select either civil or automotive engineering as their responses.

##### **Question 2**

This question tested an area of the specification which tends to be less well answered than others. This again proved to be the case during the June 2014 series, with only a small proportion of students correctly identifying that an established company will have been operating for two years.

##### **Question 3**

It was pleasing to note that the majority of students correctly identified the symbol as representing that the material is hazardous to the environment, indicating a good working knowledge of the safety signage.

##### **Question 4**

Rather surprisingly, only half of the students were able to identify that plywood was the only material from the options which is not produced from finite resources.

##### **Question 5**

Whilst there have been questions in previous series regarding the various engineering sectors, and these have been attempted with varying degrees of success, there was only a small proportion of students who correctly identified construction as being a tertiary engineering sector despite these sectors being explicitly grouped in the specification.

##### **Question 6**

Just over half of the students who sat this examination were correctly able to identify that demographics is the consideration of factors such as income, gender and age.

##### **Question 7**

It was encouraging to see that the majority of students demonstrated a good understanding of the hierarchical structure of a business and correctly

identified that directors, managers and operatives were absent from the diagram.

#### **Question 8**

Once again students struggled when questioned about specific aspects of the listed legislations in the specification. In this case only a small percentage of students correctly identified that mines are exempt from the Confined Spaces Regulations (1997) as specific legislation applies to mines.

#### **Question 9**

Questions regarding the various differing costing techniques tend to be less well answered than others, however in this instance the majority of students correctly identified that process costing is the most appropriate method for continuous production methods.

#### **Question 10**

This question tested the knowledge of the remit of the Health and Safety Executive, which has often proven to be troublesome for students. Surprisingly the majority of students continue to believe that the HSE is responsible for producing risk assessments for businesses.

#### **Question 11**

Students struggled with the interpretation of the network diagram when identifying the activity with the greatest amount of float. From the options available to students, it is likely the reason for this is a lack of understanding of the term 'float' hence the relatively small number of students selecting the correct answer.

#### **Question 12**

There was some misunderstanding regarding the remit of the Research and Development function of an engineering business, with a little over a third of all students correctly identifying that they would be involved with devising improvements to the manufacturing process.

#### **Question 13**

As stated above, students often find questions relating to legislation to be troublesome. This was again indicated by the responses to this question where only a small proportion of students were able to identify the zone where the smallest load value becomes the trigger for a lifting assessment to be completed.

#### **Question 14**

Students demonstrated a better understanding of design capability than in previous series which is encouraging, and shows a greater depth of knowledge of this particular area of the specification.

#### **Question 15**

Students once again performed well on the calculation question, with a significant majority interpreting both variables in order to obtain the correct answer.

**Question 16**

As has been reported in previous series, students do not often have a good understanding of the various different variables which contribute to either direct or indirect costs. This is again evident, with less than half of all students correctly identifying oils and lubricants as an example of an indirect cost.

**Question 17**

Despite this topic having been tested during a previous series, only a small minority of students were correctly able to identify that the right to parental leave is a feature of the Employment Act (2002).

**Question 18**

The majority of students correctly identified that a public company is one which has shares sold on the stock market.

**Question 19**

As with previous costing questions there was some misunderstanding of marginal costing. Approximately half of the entry for the examination correctly identified marginal costing as the cost of making one more of a product.

**Question 20**

The final question in section A again makes reference to costing methods, and as such again was an area where students did not perform as well in comparison to other areas of the specification.

**Section B****Question 21**

The majority of students were able to score a mark on this question by identifying that one training opportunity for an apprentice would be a day-release college course. A small number of higher achieving students also made reference to on-the-job training, shadowing other staff or distance/communication courses. These were rewarded appropriately. In a number of instances, students stated areas in which training could be offered such as using a lathe, first aid or general health and safety. Responses such as this gained no marks as they were generic, and did not address the question asked.

**Question 22**

Many students were able to identify one or two benefits of using computer based systems for planning. In the majority of cases, reference was made to the ease of changing the plan to account for different circumstances, or the ability of software to perform calculations.

**Question 23a**

The majority of students gained full marks for this question. In most instances the responses would name specific items of PPE and training for two marks. Where students did not gain both marks, this was as a result of either naming two forms of PPE such as goggles, safety boots, face masks etc or stating two forms of training.

**Question 23b**

Most students gained some marks for stating that control measures should be identified. Where students failed to achieve marks this was generally as a result of confusing risks with hazards and failing to indicate that the process should be repeated as a review measure.

**Question 24**

Students generally scored well on this question. They were able to state that a company should consider if it is cheaper to buy a product rather than make it, whether there is capacity to produce the product and whether it is available to buy. These were the common responses and showed an improvement in understanding from previous series.

**Question 25**

Students generally struggled with this question, with many being confused between quality assurance and quality control. Where students gained marks, this was generally as a result of stating that products would be checked against set criteria.

**Section C****Question 26a**

Questions have been asked previously about standing plans, and it appears from the responses offered this series that the level of understanding amongst students has not significantly improved. Those students who gained marks did so for stating that the plan could either be used over and over again, or that they are used for repeated processes. Many students were under the impression that a standing plan is one which is used for a company which is starting up and is modified over time.

**Question 26b**

Most students were able to score marks on this question, often for responses which made reference to the company being able to concentrate on its core activities, or as a method of reducing costs. A large number of students were also able to state that one disadvantage of outsourcing is the lack of control over activities which are being undertaken by a third party, and therefore the quality of the product or service may be lower than desired.

In general, students responded well to this question and marks were awarded across the entire mark range.

**Question 27**

Due to the nature of this question, most students were able to gain several marks for explaining why guards are used with machinery in a work environment. Many responses made reference to specific processes which the students were familiar with such as drilling, milling and turning. In some cases, students expanded upon their answers by stating specific risks such as entanglement or prevention of flying debris. The higher achieving students also considered the use of interlock mechanisms or the use of sensors.

**Question 28**

Students generally scored well on this question, indicating that there is a better understanding of the practical engineering aspects of the specification than the business aspects. Students were able to identify the main features of both batch and mass production, then expand upon these through the use of specific points such as the use of jigs for batch production rather than automated machinery for mass production.

## **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>



