

Moderators' Report/  
Principal Moderator Feedback

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Principal Learning Engineering

EG301 Paper 01

Investigating Engineering Business and  
the Environment

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## **Unit EG301\_01**

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

#### **General comments**

The examination consists of three sections, section A which is multiple choice, section B with short answer questions and section C which requires candidates to provide longer responses. Candidate performance tends to be slightly higher in section A than the other two sections for the lower achieving candidates, whereas the spread is more even for the higher achieving candidates.

#### **Section A**

##### **Q(1)**

The majority of candidates were able to answer this question correctly by identifying that a micro business has less than 10 employees.

##### **Q(2)**

As with question 1, the majority of candidates correctly identified contribution as being the amount which the sale of an individual item adds to the overall profit of a business.

##### **Q(3)**

Only a small number of candidates were able to identify that technological change relates to the methods of developing better ways to manufacture products.

##### **Q(4)**

Approximately half of all candidates correctly identified that a not-for-profit organisation would have a board of governors for management purposes.

##### **Q(5)**

Reducing back office overheads was identified by approximately two thirds of candidates as an advantage of outsourcing payroll services.

##### **Q(6)**

Just over half of the candidates correctly identified that an electronics technician would not be a job role within the construction industry. This suggests that a number of candidates did not fully read the question, as this was an example of a 'not' question and it is probable that this was misunderstood by some.

**Q(7)**

The number of candidates who answered this question correctly was surprisingly low, possibly indicating a lack of knowledge of the specific details of the Working Time Regulations. Those who were able to correctly answer may well have experience from work outside of their studies.

**Q(8)**

Approximately half of the candidates identified that a committee would be the correct structure for a business where decisions are made by a group of people. It is likely that a number of the candidates who did not get this correct, answered by giving matrix as a solution.

**Q(9)**

As with question 8, approximately half of all candidates identified that a commissioning engineer would ensure that equipment functions as specified. This suggests that this particular job role is not understood with as much detail as perhaps others.

**Q(10)**

Candidates demonstrated that they had a good understanding of the responsibilities placed upon employers as a result of the Health and Safety at Work act 1974.

**Q(11)**

Only a small proportion of candidates were able to identify the correct definition for marginal costing, which is to calculate the cost of making one more of an item. This has been a trend for a number of series where candidates seem to lack knowledge of costing methods.

**Q(12)**

Candidates did not perform as well with this question as expected, with only half correctly identifying the component in the diagram as a transistor.

**Q(13)**

Again, as with question 11, candidates in general did not have the required knowledge to identify that money paid to buy equipment would be considered expenditure for a fixed asset. Candidates identified repairing machinery as their answer in a number of instances.

**Q(14)**

Despite there being questions in previous series regarding by-products from various sectors, only approximately half of the candidates who sat this paper were able to identify that asphalt is a by-product of the oil industry.

### **Q(15)**

It was rather surprising that the number of candidates identifying that a single phase public electricity supply as being 230V was not higher. In instances where candidates failed to get this correct, they identified the three phase value of 400V.

### **Q(16)**

This is an example of a financial question where candidates did perform slightly better when compared to questions on related topics. Candidates were able to identify gross domestic product as being the total value of all goods and services produced in a country.

### **Q(17)**

Only a small percentage of candidates knew that young people could be exposed to low levels of radiation whilst at work. The legislation does allow for this, whereas all of the other possible responses are prohibited by the Management of Health and Safety at Work Regulations.

### **Q(18)**

Candidates are improving their response to questions which involve calculations. It was clear from the working shown on some scripts that a range of approaches have been taken, with a majority of candidates correctly identifying 5 years.

### **Q(19)**

It was pleasing to see that the vast majority of candidates were able to identify that a product specification sets out the requirements of a component, including materials, dimensions and tolerances.

### **Q(20)**

Candidates were able to show through this question that in general, the understanding of the health and safety requirements of activities related to engineering are good. The majority identified that training would be needed where new equipment, systems or processes are involved.

## **Section B**

### **Q(21)**

In general, candidates responded well to this question. In most instances, responses included statements relating to the fact that a prototype is a scale working model which can either be used for testing purposes, marketing activities or other aspects of product development. There were some very good responses which continued to discuss the use of prototypes being used to determine if tolerances and fits for components were correct.

### **Q(22)**

The awareness of the Control of Noise at Work Regulations was quite variable amongst candidates. In many cases, there was knowledge of limits at which warning should be given and further limits where PPE should be provided. In some cases, candidates made reference to monitoring of noise levels and also health screening for staff, these candidates tended to gain full marks. There was confusion amongst some candidates who thought the regulations referred to noise pollution and made reference to this in their responses.

### **Q(23)**

In many instances, candidates were able to provide three appropriate economic impacts on a local community as a result of the location of an engineering business. In some cases, candidates did not gain all of the marks which they potentially could have done, as they stated environmental impacts rather than economic.

### **Q(24)**

The majority of candidates were able to identify two methods which could be used to ensure the safety of members of the public during a workshop visit. In some instances, candidates would expand one of these to give a reason why, however only a minority of candidates gave reasons for both of their control measures. A typical response which would have gained the marks for a method and reason would be to provide ear defenders to prevent the visitors from getting damaged hearing.

### **Q(25) (a)**

The majority of candidates demonstrated a good understanding of the term make or buy, with most candidates gaining full marks for this question. This indicates that although some financial concepts are not as well known, those related to production tend to be better known.

### **Q(25) (b)**

Candidates' knowledge of standing plans was rather limited in most cases. Some candidates correctly identified that they could be used for repeated activities where a series of processes are undertaken in a specific order for similar activities. Many candidates seemed to be confused with other planning methods such as Gantt charts.

## **Section C**

### **Q(26) (a)**

Most candidates correctly identified the correct locations for the two activities on the Gantt chart. In some instances, where candidates made errors, they did this by either starting an activity early, or by having an

incorrect duration. Very few candidates showed activity C starting at any date after day 6 even though these would have been valid. Activity E only had one correct location on the chart.

### **Q(26)(b)**

It is probably as a result of firsthand experience of using Gantt charts that candidates were able to answer this question well. In many cases, candidates stated that they are easy to understand, can be modified to take account of changeable conditions, and show the current status of a project. Typically an answer such as this would gain full marks.

### **Q(27)**

Candidates tended to score just over half marks on this question by identifying that good relationships would encourage customers to return, they would recommend a supplier to others and customers would be likely to buy different products from a reliable supplier. Some candidates made reference to the negative impact of poor service, which was rewarded appropriately. Candidates who scored the highest marks tended to mention the three previous statements, but also considered that feedback could be provided between the two parties which would be mutually beneficial and bespoke products could be produced as required.

### **Q(28)(a)**

Candidates had a good awareness of the CoSHH regulations, and were able to identify a range of control measures for maintaining a safe workplace. In most cases, candidates stated secure storage, the provision of PPE and correct labelling as common responses. Some candidates also considered restricting access to substances to authorised persons, training and safe disposal in order to gain full marks.

### **Q(28)(b)**

This question required candidates to discuss both the environmental and economic impacts of using nuclear technologies for producing electricity. In some cases, candidates provided reasoned responses, but only considered one aspect. This limited their achievement as they did not fully answer the question. Those candidates who performed well considered both the positive and negative aspects of nuclear energy with regard to the economy and the environment, with many stating the benefits of reduced CO<sub>2</sub> emissions, reduced reliance on imported fuels, the risk of accidents and radiation and the large initial costs of construction. These tended to be common, with higher scoring candidates also considering storage of waste, extraction of materials and the time scales involved for both construction and decommissioning.

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