

*University of the Aegean
Dept. of Product and Systems Design Engineering*

EXAMINATION IN ENGLISH

September 2010

LEVEL III

Version A

Name: _____

A.M. : _____

Date : _____

Time : 1 ½ hours

LISTENING

Listen to some workers in the field of Engineering talking about their jobs.

- a) *Match* each extract to the jobs listed below by writing the number of the extract in the order you hear them next to each job. **N.B.:** you will hear more extracts than the jobs listed!!

Machine Tool Development Fitter: _____

Systems Analyst: _____

Foreman: _____

- b) Now listen again and give the **most** indicative *word or phrase* that has helped you identify each worker. **N.B.:** any irrelevant or unnecessary information in your answer will be penalized!

Machine Tool Development Fitter: _____

Systems Analyst: _____

Foreman: _____

6 ps.

- A. Read the text below titled “*The Tricks to MPEG’S Success*” and answer the following *question* **in your own words**, as **briefly** as possible. [N.B.: Mere copying of part(s) of the text will NOT take ANY credits!! Also, any irrelevant or unnecessary information in your answer will be penalized!]

Why is a new I-frame used after a few P-frames?

1 pt.

The Tricks to MPEG'S Success

The most common system for the compression of video is MPEG. It works like this. The single data stream off the CD-ROM is split into video and audio components, which are then decompressed using separate algorithms. The video is processed to produce individual frames as follows. Imagine a sequence of frames depicting a bouncing ball on a plain background. The very first is called an Intra Frame (I-frame). I-frames are compressed using only information in the picture itself just like conventional bitmap compression techniques like JPEG.

Following I-frames will be one or more predicted frames (P-frames). The difference between the P-frame and the I-frame it is based on is the only data that is stored for this P-frame. For example, in the case of a bouncing ball, the P picture is stored simply as a description of how the position of the ball has changed from the previous I-frame. This takes up a fraction of the space that would be used if you stored the P-frame as a picture in its own right. Shape or colour changes are also stored in the P-frame. The next P-frame may also be based on this P-frame and so on. Storing differences between the frames gives the massive reduction in the amount of information needed to reproduce the sequence. Only a few P-frames are allowed before a new I-frame is introduced into the sequence as a new reference point, since a small margin of error creeps in with each P-frame.

Between I and P-frames are bi-directional frames (B-frames), based on the nearest I or P-frames both before and after them. In our bouncing ball example, in a B-frame the picture is stored as the difference between the previous I or P-frame and the B-frame and as the difference between the B-frame and the following I or P-frame. To recreate the B-frame when playing back the sequence, the MPEG algorithm uses a combination of two references. There may be a number of B-frames between I or P-frames. No other frame is ever based on a B-frame so they don't propagate errors like P-frames.

Typically, you will have two or three Bs between Is or Ps, and perhaps three to five P-frames between Is.

[Adapted from "The Tricks to MPEG'S Success", Windows Magazine, March 1994]

B. Fill in the blanks in the following sentences with a suitable word or phrase from the text above in the right form.

1. In research, biases can _____ in extremely subtle ways, and a researcher can, quite unconsciously, favour some groups and disfavour others.
2. Lee's case will be the _____ (= standard) for lawyers in tomorrow's trial.
3. Cleaner fuel has contributed to a(n) _____ in air pollution.
4. Finally the corporation _____ into three smaller companies.

4 ps.

C. Complete the following sentences about some of the main branches of engineering.

a) Where a word is given in brackets use it in the form indicated, adding any necessary words.

b) For some terms the first letter is given.

- Electricity generating [1] [*deal* → *VERB*] _____
[2] _____ stations. On the other hand, cables, switchgear, and connecting up electrical equipment [3] [*concern* → *NOUN*]
_____ [4] e _____
i _____.
- Aeronautical engineering [5] _____ planes.
[*to be*]

5 ps.

D. Read the text that follows in which different jobs within the broader field of engineering are described. According to the descriptions given, who would be employed to:

1. find a cheaper way of manufacturing a crankshaft?
a) _____
b) _____
2. see that a new product is safe to use?
a) _____
b) _____

4 ps.

Jobs in engineering

A

Professional engineers may work as:

Design engineers: They work as part of a team to create new products and extend the life of old products by updating them and finding new applications for them. Their aim is to build quality and reliability into the design and to introduce new components and materials to make the product cheaper, lighter, or stronger.

Installation engineers: They work on the customer's premises to install equipment produced by their company.

Production engineers: They ensure that the production process is efficient, that materials are handled safely and correctly, and that faults which occur in production are corrected. The design and development departments consult with them to ensure that any innovations proposed are practicable and cost-effective.

B

Just below the professional engineers are the *technician engineers*. They require a detailed knowledge of a particular technology – electrical, mechanical, electronic, etc. They may lead teams of engineering technicians. Technician engineers and engineering technicians may work as:

Test/Laboratory technicians: They test samples of the materials and of the product to ensure quality is maintained.

Installation and service technicians: They ensure that equipment sold by the company is installed correctly and carry out preventative maintenance and essential repairs.

Production planning and control technicians: They produce the manufacturing instructions and organize the work of production so that it can be done as quickly, cheaply, and efficiently as possible.

Inspection technicians: They check and ensure that incoming and outgoing components and products meet specifications.

Debug technicians: They fault find, repair, and test equipment and products down to component level.

Draughtsmen/women and designers: They produce the drawings and design documents from which the product is manufactured.

C

The next grade are *craftsmen/women*. Their work is highly skilled and practical. Craftsmen and women may work as:

Toolmakers: They make dies and moulding tools which are used to punch and form metal components and produce plastic components such as car bumpers.

Fitters: They assemble components into larger products.

Maintenance fitters: They repair machinery.

Welders: They do specialized joining, fabricating, and repair work.

Electricians: They wire and install electrical equipment.

Operators require fewer skills. Many operator jobs consist mainly of minding a machine, especially now that more and more processes are automated. However, some operators may have to check components produced by their machines to ensure they are accurate. They may require training in the use of instruments such as micrometers, verniers, or simple 'go/no go' gauges.

Source: Adapted from S. Moss & A.S. Watts, *Careers in Engineering*, 3rd edition

E. Fill in the blanks in the following sentences with a suitable *word or phrase* from the text above in the right form

1. This is an ideal _____ device for clay. It helps you give the desired shape easily and precisely.
2. As of January 2008 all aircraft will have to _____ the strict _____ laid down by the EU in order to be given licence to fly.
3. If the hairdryer doesn't work there, try another plug. I'm afraid this plug is not _____ up properly. I'll call a technician to check it.
4. Because there had been no _____, the college buildings were in a poor state.
5. She based her analysis on data from a representative _____ of women and men aged 18-25.
6. The possible _____ of this invention in industry are limitless.

6 ps.

F. Transcribe the following words *from phonetic script* (they are all in the text above)

1. / 'æ k j u r ə t / : _____
2. / ə 'k ɜ : r / : _____
3. / r i , j a i ə ' b i l i t i / : _____
4. / r i ' k w a i ə (r) / : _____

2 ps.

G. Look at the bold part of each word in the table below and find the word which has the same sound as the *pronunciation symbol* at the top of each column.

N.B.: You should select ONE word only!

/ I /	/ i : /	/ ʃ /	/ s /
she <u>p</u>	sh <u>i</u> p	hou <u>s</u> es	delic <u>i</u> ous
mach <u>i</u> ne	mach <u>i</u> ne	vis <u>i</u> on	juic <u>e</u>
be <u>a</u> t	bi <u>t</u>	lun <u>ch</u>	miss <u>i</u> on
em <u>i</u> ssions	automob <u>i</u> le	juic <u>e</u>	hou <u>s</u> es
mi <u>n</u> or	di <u>d</u>	delic <u>i</u> ous	sug <u>a</u> r

2 ps.