The exam03 $\LaTeX\,2_\varepsilon$ style file

This year's examination papers are being produced using a style file `exam03.sty`. Copies of this file are available:

- On Korky, as `/u1/IMSweb/teaching/exams/sources/2003/texinputs/exam03.sty`.
- On some IMS PCs running MiKTeX, as `C:\texmf\tex\latex\etc\exam03.sty`.
- On the Web, as `http://www.kent.ac.uk/ims/teaching/exams/sources/2003/texinputs/exam03.sty`

This document provides some information on the facilities provided. For further details see comments in the file itself, and for examples of its use see the source files for last year's papers, which may be found

- On Korky, in `/u1/IMSweb/teaching/exams/sources/2002`
- On the Web, as `http://www.kent.ac.uk/ims/teaching/exams/sources/2002/`

See also the companion document *Using $\LaTeX\,2_\varepsilon$ to Produce IMS Examination Papers.*

The use of the style file is specified in the usual way

```
\documentclass[11pt,twoside,a4paper]{article}
\usepackage{exam03}
```

If graphics are to be inserted from Encapsulated PostScript files the `graphics` option should be specified:

```
\usepackage[graphics]{exam03}
```

Further information about the insertion of graphics is given in the companion document.

A few changes are made to 'standard' LaTeX. The division of questions into sections and subsections is based on redefined versions of the `\section` command and the `enumerate` environment. Two further changes are intended to improve the legibility of papers. The first is to redefine `\bar` so that it has the effect of `\overline`. A `\realbar` command is provided in case the usual—rather lightweight—bar is required. The second change is to insert `\everymath\displaystyle`, so that in-line mathematics will, by default, be set in `\displaystyle` rather than `\textstyle`.

Most of the new features introduced by the style file are described briefly on the following pages.

`\printstyle`

Syntax is `\printstyle` n, where n is one of

0: temporary question codes, no title page or paper code, pagebreaks anywhere;
1: temporary question codes, no title page or paper code, one question per page;
2: temporary question codes, title page and paper code, one question per page;
3: final question numbers (generated automatically), title page and paper code, *Turn over* instructions, pagebreaks between questions.

`\finaltrue`, `\finalfalse`, `\titletrue`, `\titlefalse`, `\nobreaks`, `\softbreaks`, `\hardbreaks`

May be used to produce print styles not catered for by `\printstyle`. The four standard print styles are equivalent to

```
\finalfalse\titlefalse\nobreaks
\finalfalse\titlefalse\hardbreaks
\finalfalse\titletrue\hardbreaks
```

and

```
\finaltrue\titletrue\softbreaks
```

respectively. Note that the use of `\printstyle` overrides any page style specification using these commands.

`\iffinal`, `\iftitle`

Associated with the above.

`\papercode`

Sets paper code (printed at top of every page).

`\ifpg`, `\pgtrue`, `\pgfalse`, `\ifug`, `\ugtrue`, `\ugfalse`

Defined by `\newif` to allow different versions of papers for undergraduates and postgraduates.

`\question`

Begins new question.

`\section`

Begins new section. Subsections and other indented numbered lists are produced by a modified `enumerate` environment.

`\alphasections`, `\romansections`

To give sections (a), (b), … (`\alphasections`) or (i), (ii), … (`\romansections`); default is `\alphasections`. The reverse convention is used for lists within sections produced using `\enumerate`.

`\breakpoint` — Ensures (`\printstyle 3`) that page breaks fall between questions, and (`\printstyle 1` and `\printstyle 2`) that questions are printed on separate pages. Generally used as follows:

```
\breakpoint\vspace{2ex}\input xxx
```

where `xxx.tex` is the source file for the question with temporary code `XXX` (starting `\question XXX`).

`\marks` — Used to indicate marks for questions or parts of questions. Related commands: `\onemark` (for those who feel the need), `\marktext` (defines the text associated with numerical marks).

`IPlist` — A list-type environment that mimics the hanging paragraphs produced by the *troff/ms* .IP macro. Introduced by `\begin{IPlist}{text to set width of indent}` (*cf.* the `Ventry` environment described in *The LaTeX Companion*).

`\leftitem` — A modified version of `\item`, which sets its text flush with the left margin. Intended mainly for people who want to insert 'and' between items in a list.

`\speclist` — A special list-type environment to allow section and subsection numbers on the same line. The input

```
\begin{speclist}\addtocounter{section}{1}
\item [(a)\hfill(i)]
A continuous function $f_1(x)$ is \ldots
\item [(ii)]
Another function $f_2(x)$ is related \ldots
\end{speclist}
```

produces the output

(a) (i) A continuous function $f_1(x)$ is $\ldots$

(ii) Another function $f_2(x)$ is related $\ldots$

Notes: `\addtocounter{section}{1}` is necessary only if `\section` is to be used later in the same question.

People who want question, section and subsection numbers on the same line are a nuisance! See the style file itself for details of how to deal with them.

`\numtable`	A collection of bits and pieces to make the production of nicely aligned numerical tables easier. Should precede `\begin{tabular}`, and should have its effect localised by enclosing it in a block; usually the table will be within a `center` environment, which will do the trick. In some circumstances it may be preferable to specify only one or two of the three components which compose `\numtable`; descriptions of these follow.
`\maketildedigitspace`	Causes `~` (in input) to be transformed to a digit-width space (in output).
`\makehyphenminus`	Causes a hyphen (in input) to be transformed to a minus sign (in output). For alignment purposes the minus sign is treated as having the width of a digit.
`\makedotpoint`	Causes a dot (in input) to be transformed to a decimal point (in output).
`\ldot`, `\hyphen`, `\minus`, `\tie`	These may be used to give the effect of *real* full stops, hyphens, minus signs and tildes (`~`) if their normal meanings have been altered by the use of `\numtable`.
`\squeezein`	Makes it possible to insert an additional row half-way between two adjacent rows in a table. See the style file for an indication of how to use this.
`\regarray`	(Regression array.) `\regarray{4\point76}{1\point27}` produces (in maths mode) the following: $\begin{array}{c} 4{\cdot}76 \\ (1{\cdot}27) \end{array}$. Note that the 'width' of the array is that of the upper figure. Useful for regression estimates and standard errors/t-values.
`\realbar`	The `\bar` command produces a rather 'light-weight' bar, which may not reproduce clearly when the examination papers are printed. The style file therefore redefines `\bar` to have the same effect as `\overline`, and renames the standard command `\realbar` in case it's needed.
`\slantfrac`	`\slantfrac{22}{7}` produces ${}^{22}/_{7}$.
`\ignore`	Provides a simple way of temporarily deleting part of a document. There are better ways of doing this, but this will do for the time being.

`\E`, `\V`, `\Var`, `\Cov`, `\Vec`, `\ecirc`, `\corner`, `\BbbC`, `\BbbE`, `\BbbR`, `\doteqdot`, `\point`, `\phd`, `\dwm`, `\zwm`, `\blvec`, `\brvec`, `\dddot`	Various minor definitions. See the style file itself for details.
`\chatty`	This may be useful if you're inserting something nonstandard, which may have to be removed later, and wish to be reminded (using `\typeout`) when processing the file. Possible uses include `\chatty\newpage`, `\chatty{\enlargethispage{3ex}}`, `\chatty{\rfoot{\textit{Continued \ldots}}}`.

Mike Bremner