ENGINEERING STUDIES

Accuracy makes the difference

Being familiar with past examinations, taking comprehensive notes and showing your methods can all contribute to a great result.

The Engineering Studies HSC course comprises five compulsory modules. For each module you should prepare comprehensive summary notes. This will give you more time closer to the final exam to review and practise responding to sample HSC questions.

NSW HSC Online (hsc.csu.edu.au/engineering_studies) is an excellent source of information and resources. The website includes teacher-developed tutorials and resources, as well as links to other sites to support your learning in each of the Engineering Studies modules.

The HSC Engineering Studies Examination

This examination is a three-hour written paper plus five minutes reading time. All questions are compulsory. Make yourself familiar with the format of the examination by downloading past papers and Notes from the Marking Centre from the Board of Studies NSW website (boardofstudies.nsw.edu.au/hsc_exams/hsc2009exams/index2.html#e).

The paper will consist of three sections:
▶ Section I: Application modules (10 marks) – objective-response questions.
▶ Section II: Application and focus modules (70 marks) – six short-answer questions.
▶ Section III: Engineering and the Engineering Report (20 marks) – two short-answer questions worth 10 marks each.

Consider the following points when preparing for your examination:
▶ There is a formulae sheet attached to the back of the examination. It is recommended that you detach this page and refer to it as necessary during the examination. Before the examination you should review the formulae sheet so you are aware of how each formula is presented and what each symbol means. If you are not familiar with any aspect you should consult your teacher.
▶ Much of the materials component of this course involves learning about the structure, properties, uses and forming processes of various materials such as metals, ceramics, polymers and composite materials. Understand the difference between service and manufacturing properties.
▶ The mechanics component involves understanding mechanics concepts and applying these concepts to solve problems. Be familiar with SI prefixes and engineering notations, such as: $k = 10^3$, $M = 10^6$ and $G = 10^9$.
▶ Understand the roles of various types of engineers. Be aware of the safety, environmental, legal and ethical issues that confront engineers and the effects of these issues on society.
▶ Know how to complete an orthogonal drawing, including the use of a sectional view. Be aware of the correct drawing standards that apply to threads, nuts and bolts.
▶ Know how to draw a pictorial drawing from an orthogonal drawing.
▶ Practise answering past HSC examination papers so you are familiar with the format of the examination and can confidently respond to a range of questions.

During the examination

▶ Allocate your time to reduce the risk of not finishing the paper.
▶ Read all questions carefully, underlining key words in the question. Write legibly and check your response addresses the keywords. Common keywords used in past examinations include "discuss", "explain", "describe", "outline", "identify", "calculate", "compare" and "justify". Become familiar with the glossary of keywords, available on the Board of Studies NSW website (boardofstudies.nsw.edu.au/syllabus_hsc/glossary_keywords.html).
▶ Use subject-specific terminology, such as "good tensile strength", "corrosion resistant", "ductile" etc. Avoid simplistic terms such as "strong", "tough" and "cheap".
▶ Label diagrams clearly.
▶ Set out your mechanics solutions clearly, starting with the formula and necessary data. You may need to rearrange the formula to make the missing value the subject. Marks are gained by the correct substitution into the appropriate formula, leading to the solution. By showing your working, you may receive part marks.
▶ Assume gravity to be $10 \, m/s^2$. To calculate the force applied by a mass, just multiply by 10.
▶ Make sure units are consistent, e.g. if elongation is in millimetres and length in metres, one of these values needs to be converted so they both have the same units.
▶ Look at the units specified in the answer space if you are unsure of which formula to use.
▶ Draw to scale unless otherwise stated.
▶ Use a graphical solution when referring to concurrent forces, including the 3-force rule. It is generally quicker to apply than an analytical response.
▶ Respond to a question fully, for example, providing two or more examples or reasons when a plural term is used in a question.

Writer: George Gazy is the Engineering Studies Co-ordinator at Sydney Distance Education High School.

Solid principles … the partly completed extension to Brisbane's Gateway bridge. Photo: Glenn Hunt

EXAM DETAILS

Date: Tuesday, November 2
Time: 1.55pm-5pm
Duration: 3 hours and 5 minutes (including reading time).
For the composition of the exam go to HSC Syllabuses on the Board of Studies website.