

Engineering Studies

--	--	--	--	--

Centre Number

Section II

--	--	--	--	--	--	--	--	--

70 marks

Student Number

Attempt Questions 11–16

Allow about 2 hours for this section

Answer the questions in the spaces provided.

Marks

Question 11 — Historical and Societal Influences, and the Scope of the Profession (10 marks)

(a) The range of knowledge in which an aeronautical engineer is trained includes: **4**

- aerodynamics
- fluid mechanics
- engineering materials
- legal and ethical implications.

Demonstrate how each of these four knowledge areas may be appropriately applied to the design or construction of an aircraft or its components.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Question 11 continues on page 10

Question 11 (continued)

(b) Improvements to materials over the past 200 years have changed the significant design features of civil structures. These features include:

- the height of the structures
- the length of unsupported spans
- the load carried by structures
- the stiffness of structures
- the expected lifespan of structures.

(i) Outline how the improvements to materials have affected any TWO of these features. 3

.....

.....

.....

.....

.....

.....

.....

.....

.....

(ii) Discuss how society has been affected by the changes to any TWO of these features. 3

.....

.....

.....

.....

.....

.....

.....

.....

.....

End of Question 11