

Engineering Studies

Section II

70 marks

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.

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- aerodynamics - is how the fuel ~~is~~ ~~from the~~ being
burn with an air and come out to the exhaust
- fluid mechanics - is to keep a balance air speed.....
- engineering materials - is ~~an~~ a material to use to make
a plane. (alluminium.)
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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

- the load carried by structure. as it is improving now it can get more load to lift or to carry.

- the height of the structures. now if we need to build a tall building, it is more easier for the builder engineer to build more faster because it can reach to the max height of the building.

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

because the improvement to materials over the past 200 years have changed, they can build a building everywhere they want and it cause noise, dust and of course loss of jobs.

End of Question 11