

**SCHOOL OF GEOINFORMATICS PLANNING AND BUILDING**  
**(FIRE TECHNOLOGY 1 – EXTERNAL EXAMINATION - 2001 )**

**Examiner:                    Graham Brown**

**General instructions to candidates :**

**Write your name on the examination booklet.**

**You must answer all questions.**

**All questions have marks indicated in brackets e.g. ( 20 marks )**

**Maximum marks : 100**

**Lecture notes and text books and Australian Standards are permitted references.**

**Reading time is 10 minutes before commencing the paper.**

**Time for examination is 2 hours.**

**Question 1.**

**(40 marks )**

Write short answers to any ten (10) of the following questions. (i.e. one paragraph of three or four sentences.) Use diagrams where appropriate.

- (a) Why is smoke from a building fire dangerous to the occupants ?
- (b) What factors must be present for a material to burn ?
- (c) “Flashover” and “backdraft” are terms used to describe fire behaviour in a building.  
Explain the difference between the two.
- (d) How does fire spread within a room ?
- (e) How can you estimate the volume of smoke produced by a building fire ?
- (f) If a material is non-combustible what does this mean ?
- (g) Does timber have some advantages over steel in a fire situation ? If so, what are these ?
- (h) How would you determine the fire resistance level of a timber beam without subjecting it to the Standard Fire Test ?
- (i) How do ceramic materials such as concrete and clay bricks behave in a building fire ?
- (j) Some materials which are deemed to be non-combustible in the Building Code of Australia fail the test for non-combustibility. Why is this ? Give three examples of these materials.
- (k) Explain why some plastic materials can be very hazardous in a building fire.
- (l) Explain the term “fire load” as used in a building.
- (m) What is meant by the term “fire severity”?

(n) What is meant by the term “fire resistance level” or “FRL” in building regulations ?

(o) How would a concrete slab be tested for fire resistance in the Standard Fire Test ?

**Question 2.** ( 20 marks )

What factors would you consider in the design of exits for a large shopping centre ?

**Question 3.** ( 20 marks )

Fire can spread between buildings unless appropriate precautions are taken.

Explain what these precautions are and how they achieve the purpose.

Use diagrams to illustrate your answer.

**Question 4.** ( 20 marks )

What are methods which can be used to protect steel members from collapse in a building fire and how do these achieve the desired result ?

Use diagrams to illustrate your answer.