UNIVERSITY OF SOUTH AUSTRALIA

SCHOOL OF GEOINFORMATICS PLANNING AND BUILDING

CONSTRUCTION AND FIRE ENGINEERING 1N – FIRE COMPONENT
(FIRE TECHNOLOGY 1 – Internal /External Examination)

Date of examination: **June 21st 1999 at 6.00pm**

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)
Lecture notes and text books are permitted references.
Reading time is 10 minutes before commencing the paper.
Time for examination is 2 hours.

Question 1 **(20 marks)**

Thoughtful use of walls and partitions made from ordinary building materials can result in a building which will resist the spread of fire.

Discuss this statement and indicate how you would use ordinary building materials and components to restrict the spread of fire in a building of two storeys used as a backpackers hostel.

Question 2 **(20 marks)**

If a100mm thick reinforced concrete floor slab spanned 4 metres by 4 metres and it was required to have a FRL of 120/120/120 and the Standard Fire Test using modelling techniques gave the following results, what could you conclude about the floor and what might you recommend to your client ?

Results:

Structural deflection at 120 minutes = 75 mm
Rate of deflection = 10 mm/min
Non fire side average temperature =130 degrees K above ambient after 120 minutes
No cracks or fissures evident at 120 minutes.

Question 3

(a) Would you have complete faith in a fire door which has achieved the required FRL in the Standard Fire Test ?

Give the reasons for your answer **(10 marks)**

(b) A fire window has a FRL of -/60/-.
Would this window prevent fire from -
Impinging on a neighboring area ?

Igniting combustible goods immediately on the other side ? Explain your answers**. (10 marks)**

Question 4 **(20 marks)**

Access for people with disabilities can cause problems in the event of a fire in a high rise building because normal lifts cannot be used for evacuation and the people with disabilities are not able to use the stairways.

Discuss ways by which you could ensure reasonable safety for such people in the event of a fire in a high rise building and suggest how they could be evacuated from the building.

Question 5 **(20 marks)**

The process of combustion depends on several factors.

a) Explain how these are inter-related and how a material will burn when they are all present (10 marks)

b) Explain how fire extinguishment methods make use of this information. (10 marks)