

UNIVERSITY OF SOUTH AUSTRALIA

FACULTY OF ENGINEERING AND THE ENVIRONMENT

School of Geoinformatics, Planning and Building

Semester 1, 1998

Surveying Science 1 : 09103
Surveying Science 1A : (Surveying Stream) 10241
(Francis Tan students)

Time Allowed : 2 hours + 10 minutes reading time

General Instructions to Candidates

Total Marks = 100

Attempt ANY THREE questions.

All questions are of equal value.

Please ensure front of answer book is completed with your name, student I.D. number, course and section of the examination (if applicable).

QUESTION 1

Describe, with the aid of diagrams, two (2) different applications of levelling in engineering works.

QUESTION 2

In the context of EDM, write short notes on :

- a) measuring waves;
- b) carrier waves; and
- c) principles of phase comparison.

QUESTION 3

Describe, with the aid of diagrams, any three (3) corrections that may be required during distance measurement with a steel band.

QUESTION 4

Derive the following expressions for the reduction of stadia observations with a conventional theodolite with fixed crosshairs :

$$d = 100 s \cos^2 \alpha$$
$$h = 100 s \sin \alpha \cos \alpha$$

where d is the horizontal distance from the trunnion axis of the theodolite to the vertical staff
 h is the vertical distance between the trunnion axis of the theodolite and the centre hair reading
 s is the staff intercept
 α is the angle of slope of the line of collimation of the theodolite telescope