UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF ENGINEERING
CONSTRUCTION STUDIES DISCIPLINE
CONSTRUCTION TECHNOLOGY & PROCESSES 2B (ENPD2TB H2)

INTERNAL EXAMINER: MR C SCOTT
MODERATOR: DR N HARINARAIN

TOTAL MARKS : 100 marks
DURATION OF PAPER: 3 hours
OTHER INSTRUCTION: Calculators permitted
NOTE: THIS IS A CLOSED BOOK EXAMINATION AND NO REFERENCE MATERIAL IS PERMITTED.
STUDENTS HAVE TO ANSWER ALL QUESTIONS.
Question 1 – Dewatering (20)

a. What is the purpose of de-watering during the construction phase of a project? (4)

b. Please sketch how you would dewater the excavation in the sketch below without well points. Please label the sketch and indicate the water table before and after the de-watering. Students are to re-draw the sketch on the exam scripts provided. (8)

c. Please sketch how you would de-water the excavation in the sketch below using well points. Please label the sketch and indicate the water table before and after the de-watering. Students are to re-draw the sketch on the exam scripts provided. (8)

Question 2 – Underpinning (20)

a. You have been asked to underpin an existing foundation which is supporting a brick wall using temporary needles. Please sketch a cross section through the foundation and wall indicating the key components. (20)
Question 3 – Joints in Concrete (20)

a. List and explain 4 sources of movement in concrete (8)

During the pouring of a 2nd floor suspended concrete slab there is a break down at your ready-mix concrete supplier and you are forced to create a construction joint.

b. Please sketch the detail of the joint based on best practice (8)

c. Best practice requires that the position of this joint is at a position with minimum stress in the slab, at what position in the span between columns is this? (4)

Question 4 – Screeds (20)

a. What is the average thickness of the screed shown in the sketch below? (10)

![Sketch of a screed with dimensions and slope](image)

b. Name 4 functions of screeds (4)

c. Asphalt (tar) can be used as a screed. List 3 aspects (advantages or disadvantages) to consider when deciding if an asphalt or sand/cement screed should be used (6)

Question 5 – Waterproofing (20)

a. Please sketch the waterproofing components required to waterproof the planter indicated below. Students are to re-draw the sketch on the exam scripts provided (10)
b. Please sketch the waterproofing components required to waterproof the Cavity wall in multi-story construction in coastal areas indicated below. Students are to re-draw the sketch on the exam scripts provided

Question 6 – Bonus Question

Name one de-watering contractor based in Durban.