



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Engineering & Technology

DEPARTMENT OF CIVIL AND BUILDING ENGINEERING

**DIPLOMA IN ARCHITECTURE – STAGE III
DIPLOMA IN CIVIL ENGINEERING – STAGE III**

CIVIL ENGINEERING CONSTRUCTION

END OF SEMESTER I EXAMINATION

APRIL/MAY 2010 SERIES

TIME: 2 HOURS

Instructions to Candidates

This paper consists of **FIVE** Questions.

Answer Question **ONE** (which is **COMPULSORY**)

And any other **TWO** Questions.

Maximum marks for each part of a question are shown

SECTION A

Question ONE (COMPULSORY)

- (a). A flexible design is required for a road intended to carry 550 commercial vehicles per day in each direction at the time of construction with a growth rate of 3%. The soil is silty clay, with a liquid limit of 50% and plastic limit of 20% and the water table is more than 1.5m below final road level. The design life is to be 25 years. Use Tables 2 & 3; Figures 1, 6, 7, 8, 9 and 10.
(14½ Marks)
- (b). State **FIVE** precautions to be observed while constructing subgrade.
(7½ Marks)
- (c). With the aid of a labeled sketch, define the following terms in relation to bridges:
(i). Deck
(ii). Portal
(ii). Catenary
(8 Marks)

Question TWO

- (a). Briefly describe the distributor for a surface dressing, outlining its operation.
(7½ Marks)
- (b). With the aid of sketches, distinguish between flexible and rigid pavement.
(10 Marks)
- (c). Sketch and label a tongue and groove longitudinal warping joint.
(2½ Marks)

SECTION B

CONSTRUCTION (WATER) - Answer TWO Questions only.

Question THREE

- (a). With the aid of a sketch, outline the working of a biological filter.
(10 Marks)
- (b). Differentiate the following:
(i). Separate system from combined system.
(ii). French drains from lagoons.
(iii). Influent from effluent.
(iv). Sewage from sewers.
(v). Seeding from sludge.
(10 Marks)

Question FOUR

- (a). State **FOUR** factors to consider when locating a site for a Dam. **(14 Marks)**
- (b). Sketch the following:
- (i). Ogee spill way
 - (ii). Siphon spill way
 - (iii). Spill way gate
- (6 Marks)**
- (c). With the aid of a sketch, outline the direct rotary drilling method. **(10 Marks)**

Question FIVE

- (a). With the aid of a sketch outline the BREAK POINT in reference to chlorination. **(10 Marks)**
- (b). With the aid of a sketch outline the operation of a slow sand filter. **(10 Marks)**