

Higher National Diploma in Construction Technology

NVQ Level 06 – Semester I

Temporary Structures

F45C001M18

Three Hours

Answer any five (05) questions.

Q1:

The definition for temporary structures given in the British Standards 5975 states as ‘parts of the works that allow or enable construction of, protect, support or provide access to, the permanent works and which might or might not remain in place at the completion of works.’

- (a) Provide minimum eight (08) examples for the temporary structures which might be essentially required for the construction site of a road bridge across a natural stream. (08 marks)
- (b) “There are additional loading and safety conditions may have to be considered than the loadings relevant to the permanent works in the design of temporary structures”.
As a subject expert, you are invited to provide good explanations to prove the above statement with necessary examples. Provide your explanations in this connection. (08 marks)
- (c) What are the temporary structures, which might be necessary for facilitating labour and staff attached to a construction site? Give a minimum of four (04) such structures with relevant explanations relating to their necessity. (04 marks)

Q2:

- (a) Describe, any three of the following scaffolding types with the help of necessary diagrams.
 - (i) Single scaffolding
 - (ii) Double scaffolding
 - (iii) Cantilever scaffolding
 - (iv) Suspended scaffolding (15 marks)
- (b) What are the legal frameworks which cover the safety and health requirements relating to construction sites in Sri Lanka? (05 marks)

Q3:

- (a) Explain the meaning of ‘cofferdam’ and why those dams are required in construction sites? (02 marks)
- (b) Name four different types of cofferdams that you might be using at the construction works, and describe any three of such types, indicating the selection criteria for each type. (12 marks)
- (c) The main risks associated specifically with temporary structures are collapse or structural failure. Give a minimum of six (06) possible reasons for such collapse or structural failure. (06 marks)



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Q4:

- (a) How do you describe formwork for concrete? State minimum eight (08) basic requirements of good formwork. (02+08 = 10 marks)
- (b) Mention the removal time of formwork of following components of concrete structures.
- (a) Vertical sides of beams and lintels
 - (b) Column and wall formworks
 - (c) Vertical sides (edges) of floor slabs
 - (d) Kickers of columns in floor slabs
 - (e) Soffits (underside) of beams
 - (f) Soffits (under side) of floor slabs
- (06 marks)
- (c) Haul roads, as a part of temporary works play a vital role in a construction site. Mention the important points you have to consider in planning, laying out and maintaining haul roads in a construction site.

(04 marks)

Q5:

- (a) Safety should be the first priority in all construction sites, as there is a high probability of causing fatal accidents in construction sites. When temporary structures required for the construction operations are established, it should be carried out giving top priority for the safety precautions. These safety arrangements are described under eight topics as mentioned below.
- (i) Awareness
 - (ii) Training
 - (iii) Communication
 - (iv) Use of proper equipment
 - (v) Personal protective equipment
 - (vi) Restrictions
 - (vii) Supervision
 - (viii) First aid

Briefly explain the importance of exercising any five of the above and requirements in order to avoid or minimize the accidents in construction sites. (15 marks)

- (b) What do you understand by the term ‘shoring’? Why shoring is necessary in construction sites? Name the shoring methods used in construction sites, and the materials used for such works.

(05 marks)

Q6:

- (a) What do you understand by the term ‘underpinning’? (03 marks)
- (b) What are the reasons for underpinning may become necessary to be carried out in an existing building or a structure? (12 marks)
- (c) Why reuse capability of temporary structures is important? State the advantages and disadvantages of using temporary structures with more reuse capability. (05 marks)