T140(E)(M26)T
APRIL 2010

NATIONAL CERTIFICATE

BUILDING AND STRUCTURAL CONSTRUCTION N4

(8060004)

26 March (X-Paper)
09:00 – 13:00

REQUIREMENTS: A2 drawing paper
Standard hot-rolled structural steel section tables
(BOE 8/2)

This question paper consists of 4 pages.

DEPARTMENT OF EDUCATION
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
BUILDING AND STRUCTURAL CONSTRUCTION N4
TIME: 4 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1.   Answer ALL the questions.

2.   Read ALL the questions carefully.

3.   Number the answers correctly according to the numbering system used in this question paper.

4.   Write neatly and legibly.

QUESTION 1

Draw, to scale 1:10, a vertical section through a two-brick thick foundation wall, that forms part of a basement. The top of the foundation is four courses below ground level with a 150 mm thick concrete slab, resting on top of the foundation. The foundation wall is reduced, by means of a plinth brick, to a 385 mm thick cavity wall, three courses above ground level. The outer skin of the wall is constructed of face brick from two courses below ground level upwards.

The 150 mm x 38 mm joists of the suspended timber floor, with 150 mm x 22 mm tongued and grooved floor boards, are supported by sleeper walls, seven courses of brickwork in height, placed 55 mm from the inner face of the foundation walls. The basement is plastered on the inside.

Clearly show how you would effect the damp-proofing.   [20]

PTO

QUESTION 2

Draw, to scale 1:5, a vertical section of a complete construction at the apex, of a 30° and 60° pitch san-tooth steel roof truss, with asbestos cement corrugated sheet fixed to 50 mm x 76 mm onto timber 76,2 mm x 76,2 mm x 9,4 mm angle iron purlins.

The truss is constructed of angle iron with 101,6 mm x 101,6 mm x 12,6 mm rafter, 50,8 mm x 40 mm x 6,3 mm ties and 10 mm thick gusset plate.

The purlin connections are by means of M16 mild steel bolts, with 16 mm snaphead rivet through the gusset plate.   [20]

QUESTION 3

3.1   Draw, to scale 1:10, an isometric view of the alternate plan courses of a 385 mm English cavity wall corner, with lengths of wall approximately 1 265 mm and 1 045 mm, each with stopped ends. The lower projection must be four courses in height.   (10)

3.2   As a sales person of building materials, you are selling plastic rain water goods. Tell your customers the FIVE advantages of plastic gutters as compared to FIVE disadvantages of asbestos gutters.   (10)
                                                                                                                              [20]

QUESTION 4

4.1   Explain, by means of rough drawings, the following roof terms:

         NOTE: Not to a particular scale.
                                                                                                                              (3)
         4.1.1   Vink roof truss
                                                                                                                              (3)
         4.1.2   Saw-tooth roof truss
                                                                                                                              (3)
         4.1.3   Connector plate
                                                                                                                              (3)
         4.1.4   Overhang with closed eaves
                                                                                                                              (3)
         4.1.5   Apron with under flashing

4.2   Draw, to scale 1:5, a vertical section through a door opening with a double-rebated steel door frame suitable for a one-and-a-half brick wall. Include rubber stop and striking plate.   (10)
                                                                                                                              [25]

QUESTION 5

Draw, to scale 1:10, the front view of a two-ringed rough segmental arch. The arch spans 1 200 mm and the rise is one-sixth of the span.

Only half of the brickwork in the arch must be shown with the construction method clearly illustrated in the remaining half of the arch.

NO surrounding brick work needs to be shown.   [15]

TOTAL: 100