<table>
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<th>PROGRAM</th>
<th>NATIONAL DIPLOMA ENGINEERING: BUILDING</th>
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<tbody>
<tr>
<td>SUBJECT</td>
<td>CONSTRUCTION TECHNOLOGY 1</td>
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<tr>
<td>CODE</td>
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<tr>
<td>DATE</td>
<td>SUMMER EXAMINATION 2015</td>
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<td>9 NOVEMBER 2015</td>
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<tr>
<td>DURATION</td>
<td>(SESSION 2) 12:30 - 16:30</td>
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<td>WEIGHT</td>
<td>40: 60</td>
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<td>TOTAL MARKS</td>
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<tr>
<td>ASSESSOR</td>
<td>O.A. BALOGUN</td>
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<td>MODERATOR</td>
<td>Dr. J.N. AGUMBA</td>
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<td>NUMBER OF PAGES</td>
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Question One

Draw to a scale 1:10, a vertical section through the foundation of a one brick solid foundation wall, using the following specifications:

- 660mm x 230mm concrete strip foundation.
- Ground level, 300mm above the top of the strip foundation.
- The top of the 75mm thick concrete surface bed is 225mm above ground level.
- The surface bed is cast on DPM, which is placed on compacted earth fill.
- DPC, with two courses of brickwork above it.
- Face bricks are to be used.

**Draw all the applicable hatching symbols.**

**Annotate fully and print the full title and scale (highlighted in the first sentence of this question), centrally below the drawing, in 5mm high letters and numerals.** [12]

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Question Two

Draw to a scale 1:10, a vertical section through the foundation of a 270mm cavity wall with a 50mm cavity, using the following specifications:

- 730mm x 230mm strip foundation.
- Ground level is 600mm above the top of the strip foundation.
- The top of the 75mm thick surface bed is 375mm above ground level.
- 150mm thick hardcore placed on filled earth.
- A 20mm thick blinding sand layer placed on hardcore.
- DPM placed on sand layer and turned up to unite with the inner skin’s DPC.
- DPC is to start at surface bed height on the inner skin, going down one course to the outer skin.
- A mortar infill in the cavity of the wall, from the top of the foundation to the bottom of this DPC.
- Face bricks are to be used.

**Draw all the applicable hatching symbols.**

**Annotate fully and print the full title and scale (in the first sentence of this question), centrally below the drawing, in 5mm high letters and numerals.** [18]

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Question Three

Q3.1 Explain why electrical conduits are placed on top of the DPM of a surface bed and not inside the earth fill? [1]
Q3.2 State the minimum and maximum width of the cavities in cavity walls? [2]
Q3.3 Why must the cavities of cavity walls always be clean? [1]
Q3.4 State two purposes of weep holes in a cavity wall? [2]
Question Four

Draw to a scale 1: 10 a deep strip foundation with a 270mm cavity wall built centrally on it. The depth of the foundation is 850mm and the width of the foundation is 750mm. The wall is built in face brick. Ground level is to be 300mm above the foundation.

The DPC is to go down one course from 375mm above ground level at the inner skin of the cavity wall to the outside of the wall, the DPC being supported by the mortar infill. Do not draw any other details, but insert the hatching symbols for what you draw.

Annotate the drawing fully and insert all the dimensions which are mentioned in this question. Print the full title (highlighted in the first sentence of this question) and scale, centrally below the drawing, in 5mm high letters. [10]

Question Five

Draw to a scale 1:5 a vertical section through a reinforced concrete wide-strip foundation with dimensions 800mm x 230mm, which is cast on 50mm thick blinding concrete. Use the following specification

- A 330 foundation wall which is 400mm high, is built centrally onto the strip foundation.
- Ground level is 225mm above the foundation.
- The foundation wall, which is built with stock bricks, supports a 270mm cavity wall.
- The outer skin of the cavity wall is flush with the external surface of the foundation wall. The cavity wall is built with face bricks
- The top of the 75mm thick surface bed is 250mm above ground level.
- The surface bed is built 170mm onto the foundation wall (up to the cavity of the wall).
- The surface bed rests on DPM, which is placed on a 20mm thick sand layer.
- The sand layer is placed on 150mm hardcore, which in turn is placed on compacted earth fill.
- The DPC begins at the top of the surface bed, going down one course through the cavity, to the outer skin of the cavity wall.

The reinforcement details of the strip foundations are:

- Concrete cover is 40mm.
- Y20 main bars at 200mm centres, with 90° bends in the tension zone of the strip foundation.
- Five equally-spaced Y16mm secondary bars fixed to the main reinforcement.

Do not draw the brick courses, but insert all the necessary hatching symbols for the drawing.

Insert the dimensions of the elements that are described but do not name these parts. Print the full title (highlighted in the first sentence of this question) and scale, centrally below the drawing, in 5mm high letters. [20]
Question Six
Draw to a scale 1:5, a horizontal section through one jamb of a 270mm cavity wall with a timber door frame. The external skin of the cavity wall is built with face bricks and the internal skin with stock bricks.
Draw the following:
- 108mm x 70mm door frame
- 12, 5mm thick internal plaster
- Vertical DPC fixed to the back of the frame
- A wall tie
- Show approximately 1000mm length of the wall.

Annotate fully and print the full title (highlighted in the first sentence of this question) and scale, centrally below the drawing, in 5mm high letters and numerals.
Use the dimensions given in the following sketch for the dimensions of the timber door frame.

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Question Seven
Carefully annotate all the parts of the drawing below. Annotate inside your answer booklet.
Question Eight

Carefully annotate all the parts of the drawing below. Annotate inside your answer booklet.
Question Nine

Carefully annotate all the parts of the drawing below. Annotate inside your answer booklet.