



6720-542 MARCH 2018

Level 3 Advanced Technical Diploma in Constructing the Built Environment (540) / Level 3 Advanced Technical Extended Diploma in Constructing the Built Environment (1080)

Level 3 Constructing the Built Environment – Theory Exam

If provided, stick your candidate barcode label here.

**Thursday 22 March 2018
09:30 – 12:30**

Candidate name (first, last)

First

Last

Candidate enrolment number

Date of birth (DDMMYYYY)

Gender (M/F)

Assessment date (DDMMYYYY)

Centre number

Candidate signature and declaration*

• If any additional answer sheets are used, enter the additional number of pages in this box.

• Please ensure that you **staple** additional answer sheets to the **back** of this answer booklet, clearly labelling them with your full name, enrolment number, centre number and qualification number in BLOCK CAPITALS.

• All candidates need to use a **black/blue pen**. **Do not** use a pencil or gel pen.

• If provided with source documents, these documents **will not** be returned to City & Guilds, and will be shredded. **Do not** write on the source documents.

***I declare that I had no prior knowledge of the questions in this assessment and that I will not divulge to any person any information about the questions.**

You should have the following for this examination

- a pen with blue or black ink
- a non-programmable calculator

General instructions

This question paper is the property of City and Guilds of London and should be returned after the examination.

- This examination contains **21** questions. Answer **all** questions.
 - Answer the questions in the space provided.
 - The marks for each question are shown in brackets.
- Show **all** calculations.



1 Name **two** methods used to waterproof basements. (2 marks)

2 Describe **two** techniques used to clad timber-framed domestic buildings. (4 marks)

3 Identify **three** benefits of volumetric domestic construction techniques. (3 marks)

4 Explain why an architect might recommend a deep strip foundation (or concrete trench fill), shown in Figure 1, for a domestic property even though the ground is of good bearing capacity. (3 marks)

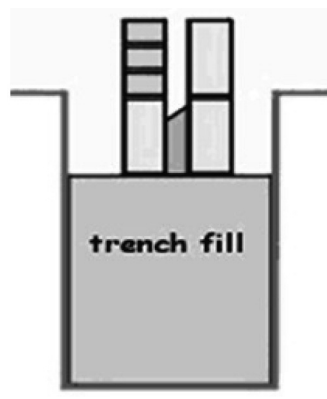


Figure 1

- 5 A historic building in a busy town centre is to be refurbished using modern methods of construction.
Explain how issues associated with this way of working can be overcome. (4 marks)

- 6 Summarise the techniques used to provide fire resistance in a domestic building. (4 marks)

- 7 Name **two** items of the existing built environment that should be in a site investigation report for a proposed development. (2 marks)

8 a) Identify a project for which a diaphragm wall might be specified. (1 mark)

b) State the reason why a diaphragm wall was specified for that project. (1 mark)

9 Describe **two** methods used to connect structural steel beams and columns. (4 marks)

10 A local authority intends to construct a primary school on land designated as contaminated. Justify the time and expense required to remediate the land before construction can start. (3 marks)

11 Explain why laminated timber (glulam) beams and columns may be preferred to steel for the structural frame of industrial and commercial buildings. (3 marks)

12 A damp proof membrane (DPM) can be included either above (Figure 2) or below (Figure 3) the concrete in a solid concrete floor.

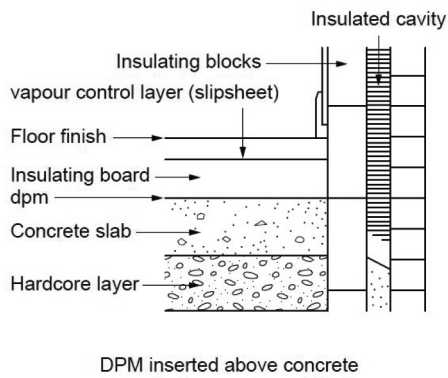


Figure 2

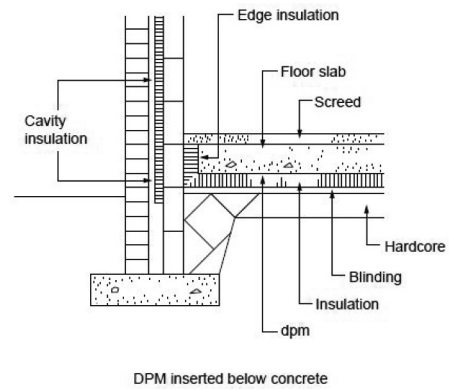


Figure 3

a) Explain why it was decided to place the DPM below the concrete. (3 marks)

b) Explain why placing the DPM below the concrete may put the integrity of the DPM at risk. (3 marks)

13 State:

a) **two** hazards associated with the weather conditions on a building site (2 marks)

b) **one** hazard associated with working in a confined space. (1 mark)

14 a) State **one** construction tool, or item of equipment, that may cause hand arm vibration (vibration white finger). (1 mark)

b) Describe **two** ways of reducing hand arm vibration (vibration white finger). (2 marks)

15 Explain how a construction company can benefit from collecting statistics on fatalities, major accidents, minor injuries and near misses. (4 marks)

16 Explain why those responsible for the design and construction of buildings and structures should understand the main requirements of the Control of Substances Hazardous to Health (COSHH) Regulations. (4 marks)



17 Describe how the following **should** be stored on site prior to immediate use:

a) Bags of Portland Cement.

(2 marks)

b) Common clay bricks.

(2 marks)

18 a) Name the **two** main methods used to procure the construction plant and equipment needed for a construction project.

(2 marks)

b) Describe the role of the construction supervisor in identifying the need for construction plant and equipment.

(2 marks)

19 Explain how a site supervisor or manager can demonstrate consideration for the neighbourhood, the general public, the workforce and the environment, in doing their job.

(5 marks)



20 Explain how each of the document templates below would be used by a site supervisor in a construction project.

(5 marks)

Potential Hazard	Who is at risk?	Existing Control Measures	Risk Rating	Preventative Measures	Responsibilities

Template 1

FILE NAME	FILE NO.	SHEET	SCALE
SIZE:			
DRAWN BY:			
CHECKED BY:			
APPROVED BY:			
ISSUED BY:	DWG NO.		
REVISED BY:			
CONTRACT:			

Template 2

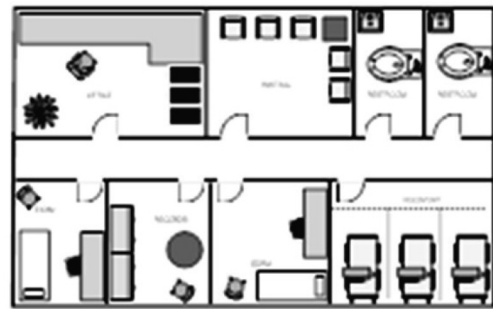
21 A property development company has purchased a large detached property that was constructed in the 1920s and which stands in its own grounds. The house is in good condition but has never been modernised. The intention is to convert the house into a residential nursing home and to also construct a new single-storey building in the grounds, on soil of variable load-bearing capacity. This building will function as a clinic specialising in the treatment and care of the elderly, both from the nursing home and from the wider community. The developers intend to use their own site managers to supervise the project but none of them have worked on this kind of project before.

The local authority has requested that the developers consider the following issues.

- Sympathetic conversion of the old house.
- Access to and use of the buildings for elderly and possibly disabled persons.
- Use of modern, sustainable construction techniques to construct the clinic.
- Use of good health and safety practices throughout the project.



Property to be converted



Proposed floor plan for new clinic

a) Evaluate the challenges faced by the on-site supervisory staff, in terms of the different types of tasks they may have to manage in this project. (3 marks)

b) Justify the selection of a foundation to be used for the new build clinic. (3 marks)
