

6720-002 Level 2 Constructing and Maintaining the Built Environment

Version 1.0 – November 2016

Sample Mark Scheme

1

Explain how Gantt charts and precedence diagrams are used as production planning tools.
(4 marks)

Answer

- Gantt chart – provides a bar chart (1) that helps to plan, coordinate, and track specific tasks in a project (1)
- Precedence diagram – with boxes (nodes) to represent activities (1) and show their inter-dependencies (1)

Test spec reference: 201 LO2 2.3

Total marks: 4 marks

2

A new housing development is being built.

(a) State **one** suitable foundation that could be used when the ground has a high bearing capacity.
(1 mark)

Answer

One mark awarded for either strip or raft.

(b) Explain how a foundation for use on a building with **weak sub-soil** is fit for purpose.
(3 marks)

Answer

One mark awarded for reference to either pile or pad foundation

One mark awarded for reference to any one of the following; to a maximum of two marks:

- It will prevent movement of the foundation
- It will reduce the stress transmitted to the ground below

c) Describe the setting-up procedure for the new building site. (6 marks)

Answer

One mark awarded for each relevant point; maximum 6 marks

- Securing the site (1) through fencing/hoardings/signage (1)
- Site clearance and layout (1) including access/storage/accommodation/temporary services (1)
- Setting out (1) to include outline/checking diagonals/surface strip/trenches (1)

Test spec reference: 202 LO1 1.1, 1.2; 202 LO3

Total marks: 10 marks

3.2

3

Explain **four** properties that make timber a useful material for fixtures and fittings off-site.
(8 marks)

Answer

One mark awarded for reference to property and effect; maximum two marks for each property

- Aesthetics **(1)**: more attractive than other materials such as plastics **(1)**
- Highly workable **(1)**: by standard tools, with no requirement for preparatory work **(1)**
- Excellent strength to weight ratio **(1)**: other materials may be stronger but are generally heavier **(1)**
- Immune to chemical and U/V attack **(1)**: although vulnerable to attack by insects and fungi **(1)**
- Easily painted, varnished, and protected **(1)**: enhancing aesthetic properties and the efficiency of any protective application **(1)**

Test spec reference: 202 4.2

Total marks: 8 marks

4

Properties need to be serviced and maintained regularly.

(a) State **three** reasons why properties deteriorate. (3 marks)

Answer

One mark awarded for reference to the following; to a maximum of three marks.

- weather damage
- general wear and tear
- vandalism
- bad design
- bad workmanship
- neglect

Test spec reference: 203 1.1

Total marks: 3 marks

5

(a) Using the image below, identify the defect and explain its cause.

(4 marks)



Answer

One mark for identifying the defect: Spalling (1)

One mark for reference to the following; maximum three marks.

- water enters the porous bricks by capillary action (1)
- brick expands as it freezes when temperature below zero (1)
- expansion damages pores of brickwork. (1)

(b) Explain actions to be taken to remediate this defect.

(4 marks)

Answer

One mark for reference to the following; maximum four marks.

- The masonry work should be safely dismantled
- The wall should be rebuilt as a solid wall
- Bricks of low porosity should be used to prevent water being drawn into brickwork
- Reduces potential for internal damage to the bricks, and hence the wall.

Test spec reference: 203 3.1

Total marks: 8 marks

6

Calculate the cost of the bricks required to construct a wall if the wall is 3 m high, 6 m wide and 225 mm thick. Assume the standard number of bricks per m² and allow 15% extra for wastage, breakage and cutting. The bricks required cost £420 per 1000 bricks. Assume the work to be zero-rated for VAT purposes.

(3 marks)

Answer

One mark for correct number of bricks; **one** mark for working out; and **one** mark for final cost.

$$1.15 \times (3 \times 6 \times 0.225) \times 120 \text{ bricks/m}^2 \times 420/1000 = \text{£235 (to the nearest £)}$$

Test spec reference: 203 3.2

Total marks: 3 marks

7

Using examples, explain the impact to operatives of **three** hazardous materials on construction sites. (6 marks)

Answer

Award **one** mark for any **three** of the following hazardous materials:

Cement, lime, paint, thinners, varnish, glue, chemicals, dust, fumes, gases, MDF, petrol.

Award **one** mark for a suitable explanation of the hazards posed by **each** in terms of absorption, inhalation and ingestion.

[Indicative answer: Thinners (1) can be inhaled and (if room is not well ventilated), may cause damage to lungs (1)].

Test spec reference: 204 2.2

Total marks: 6 marks

8

The table below shows a partially completed risk assessment for a project to underpin a brick wall.

Complete the following in the table:

(a) Possible outcomes of each hazard (2 marks)

(b) Control methods used to mitigate hazards occurring (6 marks)

Test spec reference: Unit 201, 202, 204

Total marks: 8 marks

| Hazard | Risk level | | | Possible Outcomes | Who could be affected | Control Methods |
|--------------------------|------------|---|---|--|-----------------------|---|
| | L | M | H | | | |
| Manual Handling | | M | | N/A | N/A | Answers: Training and close supervision (1), materials well stacked (1) |
| Tools | | | H | Answers: Splinters in hands/fingers, bruised or trapped fingers (1) wrong lifting technique causing back injury (1) | N/A | Answers: Training and constant supervision with your trainees (1), smaller group numbers or more staff (1) |
| Possible Trench collapse | | | H | N/A | N/A | Answers: Training in small groups and constant supervision (1) provide PPE when required (1) |

9

Evaluate the use of different types of maintenance and repair that can be carried out on a property. (9 marks)

Answer

Indicative content:

- Efficacy
- Cost
- Planning
- Sequence of craft operations
- Integration of trade activities and tasks
- Preventative maintenance
- Planned maintenance
- Scheduled maintenance
- Emergency maintenance
- Routine maintenance

Band 1: 1 – 3 marks

Response covers a narrow range of options and with limited comparisons made between them. Some understanding of considerations in relation to efficacy, cost and planning.

To access the higher marks in the band, the consideration and evaluation will contain mostly relevant points.

Band 2: 4 – 6 marks

Detailed response covering a range of options with some comparisons made that show an understanding of the key characteristics of the different types of maintenance and repair. Efficacy, cost and planning have mostly been considered with an attempt to make conclusions.

To access the higher marks in the band, the response will be detailed and will contain clear and accurate considerations with mostly relevant conclusions made.

Band 3: 7 – 9 marks

Thorough and accurate response covering a range of relevant options with comparisons made that show a clear understanding of the different types of maintenance and repair. Efficacy, cost and planning have been fully considered with appropriate conclusions made.

To access the higher marks in the band, the response will be clear, coherent and comprehensive, with conclusions drawn from the evaluation which are relevant, accurate and fully supported.

Test spec reference: 201 2.3; 203 1.1; 2.1

Total marks: 9 marks