

6720-004 and 504 Designing and Planning the Built Environment March 2018 Mark Scheme

Q	Acceptable answer(s)	Guidance	Max marks
1	1 mark each, up to 3 marks: <ul style="list-style-type: none"> Residential/housing/housing. Commercial/retail. Industrial. 	Accepted retail instead of commercial but not as well as.	3
2	1 mark each, up to 3 marks: <ul style="list-style-type: none"> Provides homes for low-income families. Generates income for the local authority. Helps reduce rents in the private sector. Offers stable tenancy agreements. Eliminates unforeseen maintenance costs for the occupant. Affordable housing. 	n/a	3
3	Marks as shown below to a maximum of three marks. <ul style="list-style-type: none"> Access to nature reduces stress and improves mental well-being (1 mark). Open spaces increase social intercourse and inclusion (1 mark). Decreases car use and increases walking and bicycle travel that improves quality of air (1 mark). Open spaces make communities pleasantly cool in summer and reduce surface water run-off (1 mark). Provision of play spaces and sports fields (1 mark). 	n/a	3
4	Marks as shown below to a maximum of four marks. A coherent explanation of the following: <ul style="list-style-type: none"> Sustainable communities are important as they link people to jobs, schools, health and other services (any of these for 1 mark) which reduces dependency on cars (1 mark). They provide facilities to encourage safe local walking and cycling (1 mark) which as result reduces air pollution (1 mark). Local transport infrastructure comprise of buses, trams and trains (any of these for 1 mark) provides those without their own transport to travel and access other locations (1 mark). 	n/a	4

5	<p>1 mark each, up to 3 marks:</p> <p>a) Structural Insulated Panels (SIP)/Off-site prefabrication/panelised/panel construction.</p> <p>b) Steel frame.</p> <p>c) Concrete frame.</p>	<p>1 mark each for a, b and c.</p> <p>a) Accepted Panelised/panel construction.</p> <p>c) 'Pre-cast concrete' not accepted without the word 'frame'.</p>	3
6	<p>1 mark each, up to 4 marks:</p> <p>a) Corrosion/rust.</p> <p>b) Fungal attack (accepted dry rot/damp/mould).</p> <p>c) Frost attack (accepted freeze-thaw effect or spalling).</p> <p>d) Insect attack/wormwood.</p>	<p>1 mark each for a, b, c and d.</p>	4
7	<p>Marks as shown to a maximum of two marks for each of following four answers.</p> <p>a) Design for users and not for builders' profits (1 mark). Addresses issues such as; local character, safe streets, parks, public places, crime prevention, access, inclusion etc. (any 1 of these for 1 mark).</p> <p>b) Providing a built environment that is good to look at (1 mark) and which fits in with the existing built environment (1 mark). Could include issues of space, proportion, symmetry, balance, contrast, pattern, decoration, colour of materials and massing (any of these for 1 mark).</p> <p>c) The interconnected organisational structures (1 mark) that underpin communities and enable them to function effectively (1 mark). Includes issues of energy (gas/ electric), transport (rail/ roads), waste disposal, flood control, water supplies and telecoms (any 1 of these for 1 mark).</p> <p>d) Creating a built environment that has a minimal impact (1 mark) on the existing local and national built environment (1 mark). Can include respect for local habitats and wildlife, maximum energy efficiency, minimising pollution and flooding, local sourcing of materials, recycling of waste etc (any 1 of these for 1 mark).</p>	<p>n/a</p>	8

<p>8</p>	<p>Marks as shown to a maximum of two marks for each explanation of each drawing.</p> <p>Concept drawings are freehand drawings (1 mark) that are used by designers as a quick and simple way of exploring initial ideas for designs (1 mark). They are not intended to be accurate or definitive (1 mark), merely a way of investigating and communicating design principles and aesthetic concepts (1 mark). Pre planning application (1 mark)</p> <p>Working drawings provide dimensioned, graphical information (1 mark) that can be used by a contractor to construct the works (1 mark) or by suppliers to fabricate components (1 mark) of the works or to assemble or install components (1 mark) Suitable for planning and (or) Building Control Applications (1 mark).</p>	<p>n/a</p>	<p>4</p>
<p>9a</p>	<p>Marks as shown to a maximum of three marks.</p> <p>Building Regulations set standards for the design and construction of buildings (1 mark) to ensure the safety and health for people in or about those buildings (1 mark). They also include requirements to ensure that fuel and power is conserved and facilities are provided for people (1 mark) including those with disabilities, to access and move around inside buildings (1 mark). They are mandatory building regulations (1 mark) and can therefore be enforced with legal consequences (1 mark).</p>	<p>n/a</p>	<p>3</p>
<p>9b</p>	<p>Marks as shown to a maximum of three marks.</p> <p>BIM is a shared knowledge resource design program for information (1 mark) using 3d/4d software (1 mark), to create a model (1 mark) with properties (1 mark) about a facility forming a reliable basis for design, maintenance and use decisions during its life-cycle (1 mark), it is used from design to construction and on to demolition (1 mark). It is a design tool (1 mark), model for analysing building performance (1 mark) not a set of regulations (1 mark). BIM Level 2 is a requirement on government projects (1 mark) used in project management as well as by designers (1 mark).</p>	<p>n/a</p>	<p>3</p>
<p>10a</p>	<p>1 mark each, up to 3 marks:</p> <ul style="list-style-type: none"> • Plan. • Elevation. • Section. • Detailed. • Component. • Concept. 	<p>n/a</p>	<p>3</p>

<p>10b</p>	<p>Marks as shown to a maximum of two marks.</p> <p>To show information that cannot be shown by the drawing (1 mark) eg materials, construction techniques, dimensions (1 mark for an example).</p>	<p>n/a</p>	<p>2</p>
<p>11</p>	<p>a) Area of gable end $5 \times 4 = 20$ $2 \times 5 = 10$ $10 / 2 = 5$ $20 + 5 = 25 \text{ m}^2$</p> <p>b) Area of front and back wall $9 \times 4 = 36 \text{ m}^2$ $36 \text{ m}^2 \times 2 = 72 \text{ m}^2$</p> <p>c) Internal volume Gable end x length $25 \text{ m}^2 \times 9 \text{ m} = 225 \text{ m}^3$</p> <p>d) Total surface area Gable ends $25 \text{ m}^2 \times 2 = 50 \text{ m}^2$ Front and back walls = 72 m^2 $50 \text{ m}^2 + 72 \text{ m}^2 = 122 \text{ m}^2$</p>	<p>Allow for candidates who x by 2 and gave 50 m^2 as it isn't clear its only 1 gable end.</p> <p>If candidates only gave 36 m^2 award 1 mark.</p> <p>If candidates have carried forward the wrong gable end calculation award 1 mark provided it is evident in the working out.</p> <p>1 mark for formula if the wrong calculations for a) and b) are carried forward.</p> <p>Candidates must give the correct metrics otherwise cannot achieve full marks.</p> <p>a, b, c and d are each worth 2 marks.</p>	<p>8</p>
<p>12</p>	<p>0-3 marks: The candidate identifies a limited range of proposals without going into any detail and identifies a limited range of the design factors to be taken into consideration, but without describing those factors. The candidate provides an incoherent and vague summary of their proposal, not particularly well reinforced with procedures or technical terms.</p> <p>4-6 marks: The candidate identifies a wide range of proposals in some detail and describes a broad range of the design factors to be taken into consideration. The candidate provides a clear and coherent summary of their proposal, with some evident knowledge of procedures or technical terms required for this planning process.</p> <p>6-9 marks: The candidate identifies a comprehensive range of proposals in an in-depth fashion and</p>	<p>Indicative content;</p> <ul style="list-style-type: none"> • Concessions and proposals should include affordable housing, a wider range of residential properties of various sizes and at a wider range of prices, improved services to the site, better roads, schools, shops, health centres and so forth. • Design factors should include community needs, social impact, economic and financial issues, technical issues, 	<p>9</p>

	<p>accurately describes a broad range of the design factors to be taken into consideration. The candidate provides a demonstration of knowledge of planning procedures to be followed and describes some, of the supporting documents required including planning applications, drawings, specifications and environmental impact forms.</p>	<p>aesthetics, materials specification, infrastructure requirements, legal controls on design and environmental issues. These factors should be clearly linked to the project in question to if the candidate is to access the top of the highest mark band.</p> <ul style="list-style-type: none"> • Procedures and documentation should include pre-application advice, outline and detailed planning permission. Documentation should include reference to drawings, completed application forms, specifications, schedules and statements concerning access, heritage and environmental impact. 	
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