6073-30 Level 3 Fundamentals of Building Information Modelling (BIM)

301 – Fundamentals of BIM

V 1.0 September 2016

Sample Assessments

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Contents

Introduction and general information

General

This document contains the sample of the short answer assessment for Unit 301 – Fundamentals of BIM, part of the **6073-30 Level 3 Fundamentals of Building Information Modelling (BIM)**

A mark scheme can be found later within this document.

Internal quality assurance requirements

Approved centres **must** have effective quality assurance systems to ensure optimum delivery and assessment of qualifications.

Quality assurance includes initial centre approval, qualification approval and the centre's own internal procedures for monitoring quality. Centres are responsible for internal quality assurance, and City & Guilds is responsible for external quality assurance.

Full details and guidance on the internal and external quality assurance requirements and procedures, are provided in Providing City & Guilds Qualifications and in the Centre toolkit.

This document also explains the tasks, activities and responsibilities of quality assurance staff.

Entry for assessment and certification

Candidates should be registered via the Walled Garden.

Results of the test should be submitted via the Walled Garden. Only those units which have been achieved should be included in the submission.

Assessor guidance

Underpinning knowledge tests

These underpinning knowledge tests are set by City & Guilds and are administered by the centre when the candidate is ready. They are then internally marked by the centre, using the answer guide provided and the results submitted via the walled garden.

Internally marked assessments are subject to internal and external verification.

Tests should be taken under supervised exam conditions as closed-book tests.

It is envisaged that most candidates will take the tests in their normal learning environment with their own tutor present.

A suitable invigilator must be present throughout to guarantee the integrity of the assessment, hand out papers, monitor the time taken and ensure that all tests/completed answers are collected. Suitable people include trainers, tutors, assessors and internal verifiers who are part of the centre's quality assurance systems. It is the centre's responsibility to ensure that each candidate's responses are their own and their own only.

The tests are graded **Pass/Merit/Distinction/Fail**. Where candidates do not achieve the necessary pass mark as indicated in the mark scheme, candidates can be given a chance to re-sit the assessment at a later date.

The question papers should be photocopied and be handed out to candidates immediately before they take the test. Centres can photocopy the test and hold a stock securely within the centre.

The mark scheme for these short answer assessments are contained later in this document. The answers **must** be held securely by centres and **not** made available to candidates.

Centre quality assurance co-ordinators are responsible for ensuring that all assessment materials and answer guides are held securely before and after the date of the assessment.

Scheduling assessments

The underpinning knowledge tests can be completed in any order. Centres will be expected to organise the tests in a logical order according to the requirements of the course, as well as candidate readiness.

Preparation of candidates

Tutors should teach to the learning outcomes of the unit and **not** the assessments.
Candidates should **not** be entered for assessment before they are ready.

Assessment 301   Fundamentals of BIM

Short answer question paper - Sample

This is a closed book test

Candidate's Name: (Block letters please)

Date

Question paper
Time allowed: 1 hour
Marks Available: 40
Materials Required: A black or blue ink pen

General instructions

Questions carry different amount of marks.
Answer all questions.

Read each question carefully. Short answers only are required.

Your answers should be written or drawn in the space provided. If additional separate sheets of paper are used, make sure each page is clearly labelled with your name and question number.

1   Give the definition of the following key terms:

a)   Common Data Environment (CDE)   (1 mark)

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b)   Soft landings   (1 mark)

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2   A project to refurbish a property is currently at the design stage.
Explain how **each** of the following BIM principles would apply at this stage.

a)   Collaborative working   (4 marks)

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b)   Security minded approach   (4 marks)

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3   Give **three** characteristics of BIM Maturity Level 2.   (3 marks)

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4   What is the focus of BS 8536-1?   (1 mark)

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5   Explain how technology has improved the analysis of information for a BIM project.   (4 marks)

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6   Explain the role of the government as an initiator of change.   (3 marks)

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7   Describe **three** examples of inefficiency in traditional working practices.   (3 marks)

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8   Explain the importance of passionate people to the success of BIM implementation in the UK.   (4 marks)

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9   A local authority has commissioned a construction company to build a swimming pool.

a)   Explain how the local authority benefits from BIM implementation of this project.   (4 marks)

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b)   Describe **two other** stakeholders of this project.   (2 marks)

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10   Organisational culture can be a barrier to successful BIM implementation.

a)   Explain how this can be overcome.   (4 marks)

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b)   Describe two other barriers to successful BIM implementation.   (2 marks)

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Total Marks		Grade	
Marker Name		Date	
Marker Signature			

Assessment 301   Fundamentals of BIM
Marking Scheme - Sample

Grading Criteria:
Pass: 24/40 (60%)
Merit: 29/40 (73%)
Distinction: 34/40 (85%)

	Mark Scheme	Specification Reference

1	Give the definition of the following key terms:
	     a) Common Data Environment (CDE) (1mark)
	     b) Soft landings (1 mark)
	
	Award 1 mark for each correct definition
	Indicative content
	  a) CDE
	The single source of information for any given project.
	
	  b) Soft Landings
	The smooth transition between the design and construction project into operation and use of the asset.
		301.1.1

2	A project to refurbish a property is currently at the design stage. Explain how **each** the following BIM principles would apply at this stage.
	     a) Collaborative working (4 marks)
	     b) Security minded approach (4 marks)
	
	Award 1 mark for each relevant point made, to a maximum of 4 marks. For maximum marks, the response must be clearly related to the stage and type of project.
	
	  a) Collaborative working
	Indicative content
	• Clear identification and involvement of stakeholders
	• Defined roles and responsibilities
	• Collaborative tools
	• Commercial and/or legal drivers and incentives to encourage collaboration
	• Design review process
	• Team working and interpersonal behaviours
	• Any other appropriate response
	
	  b) Security minded approach
	Indicative content
	• Security issues
	• Risk assessment/triage
	• Information, people, physical
	• Roles and responsibilities
	• Deliverables (plans, strategies)
		301.1.2

	• British Standard (1192-5) • Need for consideration prior to this stage, at the earliest possible stage • Any other appropriate response	
3	Give **three** characteristics of BIM Maturity Level 2. (3 marks) Award 1 mark for each correct characteristic to a maximum of 3 marks. Indicative content • File based electronic information • Federated model • Common Data Environment • BS/PAS 1192 in full • Discipline specific models • Any other appropriate response	301.1.3
4	What is the focus of BS 8536-1? (1 mark) Award 1 mark for a correct answer Indicative content • Facilities management briefing for design and construction • Soft landings • GSL	301.1.4
5	Explain how technology has improved the analysis of information for a BIM project. (4 marks) Award 1 mark for each relevant point made up to a maximum 4 marks. Indicative content • Complex information • Speed • Aggregation and assimilation of diverse information • Quality assurance • Coordination and clash detection • Time and cost analysis • Building performance • Any other appropriate response	301.1.5
6	Explain the role of the government as an initiator of change. (3 marks) Award 1 mark for each relevant point made up to a maximum 3 marks. Indicative content • Largest client to construction industry • Strategy • Mandate • Task Group creation • Any other appropriate response	301.2.1
7	Describe **three** examples of inefficiency in traditional working practices. (3 marks) Award 1 mark for each appropriate example. Examples must make reference to inefficiency in terms of time, cost and/or resource	301.2.1

	Indicative content	
	- Poor specification - Design variation - Repetition - Rework - Duplication - Construction clashes - Late changes in design - Silo thinking Any other appropriate response	
8	Explain the importance of passionate people to the success of BIM implementation in the UK. (4 marks) Award 1 mark for each relevant point made to a maximum 4 marks. - Positives - Mobilise and bring together like minded people eg through online forums - Advocates for approach - Early adoption of approach - Help and support - Impartiality - Negatives - No governance of oversight so inconsistent messages - Difficult to sustain through lack of funding - Incomplete or out of date information - May have a hidden agenda	301.2.2
9	A local authority has commissioned a construction company to build a swimming pool. a) Explain how the local authority benefits from BIM implementation of this project. (4 marks) b) Describe **two other** stakeholders of this project. (2 marks) a) Award 1 mark for each relevant point to a maximum of 4 marks. Indicative content - Training - Leadership - Advocacy - Goals and objectives - Performance measurement - Any other appropriate response b) Award 1 mark for each appropriate barrier to a maximum 2 marks. Indicative content - Initial costs - Lack of awareness - Resistance to change - Attitude to risk - Short term thinking - Commercial arrangements - Organisational structures Lack of investment in education and training	301.2.3
10	Organisational culture can be a barrier to successful BIM implementation.	301.2.4

a) Explain how this can be overcome. (4 marks)
b) Describe two other barriers to successful BIM implementation. (2 marks)

a) Award 1 mark for each relevant point to a maximum of 4 marks.
Indicative content
- Training
- Leadership
- Advocacy
- Goals and objectives
- Performance measurement
- Any other appropriate response

b) Award 1 mark for each appropriate barrier to a maximum 2 marks.
Indicative content
- Initial costs
- Lack of awareness
- Resistance to change
- Attitude to risk
- Short term thinking
- Commercial arrangements
- Organisational structures
- Lack of investment in education and training
- Lack of investment in research and development

Useful contacts

**City&
Guilds**

UK learners **General qualification information**	**E: learnersupport@cityandguilds.com**
International learners General qualification information	E: **intcg@cityandguilds.com**
Centres Exam entries, Registrations/enrolment, Certificates, Invoices, Missing or late exam materials, Nominal roll reports, Results	E: **centresupport@cityandguilds.com**
Single subject qualifications Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	E: **singlesubjects@cityandguilds.com**
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	E: **intops@cityandguilds.com**
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, GOLA, Navigation, User/menu option, Problems	E: **walledgarden@cityandguilds.com**
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	E: **business_unit@cityandguilds.com**

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