

QUALIFICATION FILE

Bexel - BIM based Project Management (3D/4D/5D/6D BIM)

☒ Horizontal / Generic ☐ Vertical/Specialization

☐ Upskilling ☐ Dual/Flexi Qualification ☒ For ToT ☒ For ToA

☒ General ☐ Multi-skill (MS) ☐ Cross-Sectoral (CS) ☐ Future Skills ☒ OEM

NCrF/NSQF Level: 5

Submitted By:

Integrated Council for Entrepreneurship and Skilling

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Section 1: Basic Details

1.	NOS-Qualification Name	Bexel - BIM based Project Management (3D/4D/5D/6D BIM)		
2.	Sector/s	Construction		
3.	Type of Qualification: ☒ New ☐ Revised	NQR Code & version of existing/previous qualification: NA (<i>change to previous, once approved</i>)	Qualification Name of existing/previous version: NA	
4.	National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval)	NG-05-CO-046372025-V1-ICES & Version 1.0	5. NCrF/NSQF Level: 5	
6.	Brief Description of the Qualification	A BIM Project Management professional supports digital construction by creating and managing 3D/4D/5D BIM models for planning, cost control and project tracking using open BIM workflows across the project lifecycle.		
7.	Eligibility Criteria for Entry for Student / Trainee / Learner / Employee	a. Entry Qualification & Relevant Experience:		
		S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)
		1.	Completed 2 nd year of UG (B.E. / B.Tech in Civil Engineering / B.Arch)	
		b. Age: As per Govt. Norms		
8.	Credits Assigned to this Qualification, Subject to Assessment (<i>as per National Credit Framework (NCrF)</i>)	2.5	9. Common Cost Norm Category (I/II/III) (<i>wherever applicable</i>): I	

10.	Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)	Not Applicable					
11.	Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)	☐ Offline ☒ Online ☐ Blended					
		Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)
		Classroom (offline)					
		Online	30	45			75
		(Refer Blended Learning Annexure for details)					
12.	Assessment Criteria	Theory (Marks)	Practical (Marks)	Project (Marks)	Viva (Marks)	Total (Marks)	Passing %age
		40	60			100	70
13.	Is the Job Role Amenable to Persons with Disability	☐ Yes ☒ No If “Yes”, specify applicable type of Disability:					
14.	Progression path after attaining the qualification (Please show Professional and Academic progression)	BIM Analyst (NSQF Level: 5.5)					
15.	How Participation of Women will be Encouraged	• Early Awareness and Outreach: ➤ Promote BIM careers in schools, polytechnics, and colleges, especially in STEM and design programs ➤ Conduct career seminars exclusively for girls focused on digital construction technologies ➤ Highlight successful women BIM leaders through talks and mentorship events • Female-Friendly Training Programs ➤ Batch Composition: Reserve 30–50% seats for women ➤ Learning Mode: Allow hybrid / online lab-based training					

		➤ Mentoring: Assign female BIM mentors or TPO counselors ➤ Offer bridging / beginner courses for women from non-engineering backgrounds (interior design, drafting, civil diploma, etc.) to boost confidence. • Scholarships, Allowances and Incentives ➤ Women-only scholarships for BIM courses ➤ Transport or childcare allowance for working mothers ➤ Cashback on certification exam after course completion This not only encourages participation but reduces dropout rates. • Gender-Inclusive Curriculum Dimension ➤ Integrate topics such as: ❖ Women in Digital Construction & Smart Cities ❖ Career pathways in BIM for female professionals ❖ Work-from-home BIM opportunities ❖ Soft skills for female managers in AEC These modules signal to women that the industry expects and welcomes them.	
16.	Other Indian languages in which the Qualification & Model Curriculum are being submitted	Hindi	
17.	Is similar NOS available on NQR-if yes, justification for this qualification	☐ Yes ☒ No URLs of similar Qualifications:	
18.	Name and Contact Details of Submitting / Awarding Body SPOC <i>(In case of CS or MS, provide details of both Lead AB & Supporting ABs)</i>	Name: Maya Thakur Email: ceo@iceskills.in Contact No.: +91 9717900050 Website: www.iceskills.in	
19.	Final Approval Date by NSQC: 07-10-2025	20. Validity Duration: 3 Years	21. Next Review Date: 07-10-2028

Section 2: Training Related

		Minimum Educational Qualification	Specialization	Relevant Industry Experience		Preferable Training Experience	
				Years	Specialization	Years	Specialization
1.	Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Post Graduation	M. Tech in Civil Engineering / Architecture	2	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bexel Manager etc	1	Bexel Manager Software
		OR					
		Graduation	B.E. / B. Tech in Civil Engineering / Architecture	4	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bexel Manager etc	1	Bexel Manager Software
		OR					
		Diploma	Diploma in Civil Engineering / Architecture	6	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bexel Manager etc	1	Bexel Manager Software

		Minimum Educational Qualification	Specialization	Relevant Industry Experience		Preferable Training Experience	
				Years	Specialization	Years	Specialization
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Post Graduation	M. Tech in Civil Engineering / Architecture	4	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bexel Manager etc	1	Bexel Manager Software
		OR					
		Graduation	B.E. / B. Tech in Civil Engineering / Architecture	6	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bexel Manager etc	1	Bexel Manager Software
		OR					
		Diploma	Diploma in Civil Engineering / Architecture	8	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bexel Manager etc	1	Bexel Manager Software
		OR					
		Existing ToT Certified Trainer	Bexel Certified Trainer	5	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bexel Manager etc	1	Bexel Manager Software

3.	Tools and Equipment Required for Training	☒ Yes ☐ No (<i>If “Yes”, details provided in Annexure</i>)
4.	In Case of Revised NOS, Details of Any Upskilling Required for Trainer	Not Applicable

Section 3: Assessment Related

		Minimum Educational Qualification	Specialization	Relevant Industry Experience		Preferable Training/Assessment Experience	
				Years	Specialization	Years	Specialization
1.	Assessor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Post Graduation	M. Tech in Civil Engineering / Architecture	2	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bexel Manager etc	1	Bexel Manager Software
		OR					
		Graduation	B.E. / B. Tech in Civil Engineering / Architecture	4	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bexel Manager etc	1	Bexel Manager Software
		OR					
		Diploma	Diploma in Civil Engineering / Architecture	6	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bexel Manager etc	1	Bexel Manager Software
2.	Proctor's Qualification and	Minimum Educational Qualification	Specialization	Relevant Technical Experience			
				Years		Specialization	

	experience in relevant sector (in years) (as per NCVET guidelines)	Graduation	Any Stream	1		in basic computer skills, documentation, coordination etc.	
		OR					
		Diploma	In any stream	2		in basic computer skills, documentation, coordination etc.	
3.	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Minimum Educational Qualification	Specialization	Relevant Industry Experience		Preferable Training/Assessment Experience	
				Years	Specialization	Years	Specialization
		Post Graduation	M. Tech in Civil Engineering / Architecture	10	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bixel Manager etc	1	Bixel Manager Software
		OR					
		Graduation	B.E. / B. Tech in Civil Engineering / Architecture	10	Construction, Architecture and Engineering Industry along with comprehensive knowledge of BIM software such as Revit, Navisworks, Tekla, ArchiCAD, Bixel Manager etc	1	Bixel Manager Software
4.	Assessment Mode (Specify the assessment mode)	Online					
5.	Tools and Equipment Required for Assessment	☒ Same as for training ☐ Yes ☐ No (details to be provided in Annexure-if it is different for Assessment)					

Section 4: Evidence of the need for Qualification

Provide Annexure/Supporting documents name.

1.	Government /Industry initiatives/ requirement (Yes/No):	Yes
2.	Number of Industry validations provided:	1 (As this is an OEM based Qualification)
3.	Estimated nos. of people to be trained:	500
4.	Evidence of Concurrence/Consultation with Line/State Departments (In case of regulated sectors): (Yes/No): If “No”, why:	In Process

Section 5: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name:

1.	Annexure: NCrf/NSQF level justification based on NCrf level/NSQF descriptors <i>(Mandatory)</i>	Yes
2.	Annexure: List of tools and equipment relevant for qualification <i>(Mandatory, except in case of online course)</i>	Yes
3.	Annexure: Performance and Assessment Criteria <i>(Mandatory)</i>	Yes
4.	Annexure: Assessment Strategy <i>(Mandatory)</i>	Yes
5.	Annexure: Blended Learning <i>(Mandatory, in case selected Mode of delivery is “Blended Learning”)</i>	No
6.	Annexure: Acronym and Glossary <i>(Optional)</i>	Yes
7.	Annexure/Supporting Document: Standalone NOS- Performance Criteria Details Annexure/Document with PC-wise detailing as per NOS format (Mandatory- Public view)	Yes
8.	Supporting Document: Model Curriculum (Mandatory – Public view)	Yes

Annexure: Evidence of Level

NCrf/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrf/NSQF level descriptor	NCrf/NSQF Level
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Professional Theoretical Knowledge/Process	Possesses knowledge in multidisciplinary contexts, broadly, within the chosen fields of technology/ skills/ job role. Deeper knowledge and understanding of specialized field of technology / skills/ job role and its underlying principles, Acquired specialized knowledge and a range of cognitive and practical skills to accomplish tasks like basic design, prototyping, testing so as to solve a problem by selecting appropriate information, methods, tools, and materials. Multidisciplinary and specialized knowledge Possesses broad and deep knowledge and skills to solve problems in specialized fields.	The job role aligns with Level 5 as it demonstrates the application of comprehensive, factual, and theoretical knowledge in the field of digital construction and project management. It reflects the ability to apply standard methods and theoretical understanding to manage real-world construction data and processes.	5
Professional and Technical Skills/ Expertise/ Professional Knowledge	Demonstrates cognitive specialized professional and technical skills required for performing and accomplishing difficult tasks relating to the chosen field/s of technology / skills/ job role; successfully applying techniques in routine or non-routine, possesses a range of professional and technical skills, displays clarity of knowledge and practice in broad range of activities/ tasks. Project Management Skills, Skill to clearly identify the relevant tools or sometimes improvise the available tools and techniques; and has advance knowledge of materials in difficult situations and different contexts. Very good in collecting data organizing information, analysis and communication of results for informed decision making. Range of skills along with specialized domain skills Excellent cognitive skills and technical prowess utilized to perform complex tasks with ease, project management expertise, and adept at data analysis for informed decision making.	The role matches Level 5 as it requires a broad range of technical and practical skills to carry out project-specific tasks independently. It involves choosing and applying appropriate BIM tools and methodologies to solve problems, coordinate between disciplines, and maintain model accuracy.	5
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	Possesses excellent oral and written communication and collaboration skills for clearly taking the vision of the leaders to the shop floor level workforce. Possesses very good Digital, Financial and Legal Literacy to use them effectively, Has a good	This outcome fits Level 5 as it reflects the ability to independently manage tasks, take responsibility for work outputs, and adapt to new roles or project challenges. It prepares individuals with a mindset	5

	understanding the constitutional, humanistic, ethical, and moral values. Organization and Time Management, Very good in complex calculations, and mathematical and financial analysis skills for applied solutions. Has well informed practical understanding of the social, political and work environment. Exercise self management within the work contexts. Emotional Intelligence, May have an entrepreneurial Mind set for creating a startup/ small businesses and its end to end management Entrepreneurial mindset, self management versatile professional with excellent communication, digital and financial literacy, ethical values, self management and may have entrepreneurial mindset	suitable for both structured employment and entrepreneurial endeavors.	
Broad Learning Outcomes/Core Skill	Demonstrates a wide range of specialized professional and technical skill in broad range of activity involving standard and non-standard practices. Apply the acquired specialized knowledge and a range of cognitive and practical skills to accomplish tasks like basic design, prototyping, testing so as to solve problems by selecting appropriate information, methods, tools, and materials. Communication and collaboration skills to act as a layer between the senior management and workforce/ shopfloor. Should be able to listen and understand properly and present complex information in a clear and concise manner, make judgement and take decision, based on the analysis and evaluation of information, for determining solutions to a variety of unpredictable problems associated with the chosen fields of learning, Takes responsibility for the nature and quality of outputs. Is able to work on processes to improve the quality of outputs, can analyze and synthesize ideas, Uses discretion and judgement over a range of known and innovative responses to familiar and unfamiliar problems and issues. Judgement / decision making	The core skills required for this role align with Level 5, as they include using logical and structured approaches to solve project challenges, organizing and communicating information clearly, and evaluating project performance through digital data.	5

	specialized. A skilled professional with technical expertise, adept at solving complex problems and improving output.		
Responsibility	Is accountable for determining and achieving personal and /or group tangible outcomes, Handles/ / adapts/ accommodates change requirements and change management at the ground/ shop floor level. Team Building, Manages processes and procedures within broad parameters for defined activities. Supervises the routine work of others, takes the required responsibility for the evaluation and improvement of work or study activities. At level 4.5 the candidate is Highly skilled and works as a Junior Technical Supervisor. Constantly motivates, guides, mentors and trains the workforce. At level 5.0 the candidate is a Technical supervisor or junior/ deputy manager. Is responsible for managing an independent work unit/ shop floor/ section/ business activity/ assignment. Team leader Junior technical supervisor, Technical supervisor or junior/ deputy manager. Highly skilled Technical Supervisor responsible for achieving tangible outcomes, managing change, building teams, and mentoring the workforce	This reflects NSQF Level 5, as the job role includes responsibility for completion of assigned tasks and outputs, taking ownership of the quality of BIM deliverables, and exercising professional judgment in coordinating across teams and disciplines.	5

Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30 Candidates

S. No.	Tool / Equipment Name	Specification	Units	Quantity for specified Batch size	Remarks
1.	Bexel Build Collection License		NOS	30	NIL
2.	Laptop	System requirements BEXEL Manager Help Center	NOS	30	NIL

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Laptops
2. Whiteboards and markers
3. Projector
4. Screen
5. Chart paper
6. AV equipment
7. Stationery
8. Telephone connection

Annexure: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile (if available)
1.	Bexel India Consulting LLP	Juzer Bastawala	Manager, Operations	Bexel India Consulting LLP, 2nd Floor, S Kumar Complex, Nuduvilal, Thrissur, Kerala-680001	9879172706	juzer@bixelindia.com	

Annexure: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates	Women	People with Disability
	Estimated Training #	Estimated Training #	Estimated Training #
2025-26	100	20	As per Industry Requirement
2026-27	200	40	As per Industry Requirement
2027-28	200	40	As per Industry Requirement

Data to be provided year-wise for next 3 years

Training, Assessment, Certification and Placement Data for previous versions of Qualifications:

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Applicable for revised qualifications only, data to be provided year-wise for past 3 years.

List Schemes in which the previous version of Qualification was implemented:

1. NA

Content availability for previous versions of qualifications:
☒ Participant Handbook
 ☒ Facilitator Guide
 ☒ Digital Content
 ☒ Qualification Handbook
 ☐ Any Other:
Languages in which Content is available: English**Annexure: Blended Learning**

Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET “Guidelines for Blended Learning for Vocational Education, Training & Skilling” available on:
<https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf>

S.No.	Select the Components of the NOS	List Recommended Tools – for all selected Components	Offline: Online Ratio
1.	☐ Theory/ Lectures - Imparting theoretical and conceptual knowledge	NA	NA
2.	☐ Imparting Soft Skills, Life Skills and Employability Skills / Mentorship to Learners	NA	NA
3.	☐ Showing Practical Demonstrations to the learners	NA	NA
4.	☐ Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shopfloor training	NA	NA
5.	☐ Tutorials/ Assignments/ Drill/ Practice	NA	NA
6.	☐ Proctored Monitoring/ Assessment/ Evaluation/ Examinations	NA	NA
7.	☐ On the Job Training (OJT)/ Project Work Internship/ Candidate Training	NA	NA

Annexure: Standalone NOS- Performance Criteria details

1. Description:

A BIM Project Management professional leads the development, coordination, and application of 3D, 4D, and 5D BIM models across the project lifecycle. The role focuses on ensuring model quality, integrating open BIM workflows, and using BIM data for planning, cost control, and project performance tracking to support informed decision-making.

2. Scope:

The scope covers the following:

- Understand BIM Fundamentals and Industry Standards
- Apply Construction Project Lifecycle and BEXEL Manager Essentials
- Conduct BIM Data Validation, Clash Detection and Quantity Take-Off
- Integrate 4D Scheduling and Project Monitoring
- Execute 5D BIM for Cost Management
- Implement 6D BIM and Facilities Management in BEXEL Cloud

3. Elements and Performance Criteria:

To be competent, the user/individual on the job must be able to:

Understand BIM Fundamentals and Industry Standards

To be competent, the user/individual on the job must be able to:

- PC 1. explain the need for Building Information Modeling (BIM) and its strategic role in the construction industry
- PC 2. identify emerging job roles and career opportunities within the BIM domain
- PC 3. describe international BIM standards including ISO 19650 and their relevance in structured information management
- PC 4. discuss the importance of standardization and data consistency in BIM workflows
- PC 5. respond appropriately to clients' Exchange Information Requirements (EIR) using standardized BIM procedures
- PC 6. identify and use 3D BIM authoring tools and explain their role in the project lifecycle
- PC 7. differentiate BIM dimensions from 1D (basic awareness) to 6D (FM and lifecycle management), and their applications
- PC 8. explain BIM maturity levels and Level of Development (LoD) as part of implementation strategies.
- PC 9. summarize global practices and success stories related to BIM implementation across various geographies

Apply Construction Project Lifecycle and BEXEL Manager Essentials

To be competent, the user/individual on the job must be able to:

- PC 10. outline the construction project lifecycle and its stages with reference to PMBOK knowledge areas

- PC 11. identify practical tools and digital platforms used for construction project management
- PC 12. navigate the BEXEL Manager interface, understanding views, tabs, and functional areas
- PC 13. perform operations such as importing bx3/IFC files and reviewing project metadata
- PC 14. use tools like the Building Explorer, Property Panel, and Schedule tab to analyze BIM components
- PC 15. access and utilize auxiliary BEXEL features such as Viewer, Portfolio Manager, and Dashboards for documentation and project tracking

Conduct BIM Data Validation, Clash Detection and Quantity Take-Off

To be competent, the user/individual on the job must be able to:

- PC 16. explore model information layers and validate data properties using attribute filters and queries
- PC 17. perform data editing tasks, such as adding or modifying element properties and exporting results
- PC 18. conduct model validation using quality control tools and property check add-ins
- PC 19. coordinate the issues using BCF open workflows
- PC 20. generate visualized and color-coded quantity takeoffs and summarize model-based metrics by structure, story, or element type

Integrate 5D Scheduling and Project Monitoring

To be competent, the user/individual on the job must be able to:

- PC 21. create cost elements using queries and quantity formulas aligned with model data
- PC 22. import and export cost databases using Excel or integrated cost systems
- PC 23. define and manage resources such as labor, materials, and equipment within the cost framework
- PC 24. assign and manage cost items linked to model elements and perform multi-version cost comparisons
- PC 25. create stand-alone cost elements not linked to 3D models, enabling flexible financial modeling

Execute 4D BIM for Cost Management

To be competent, the user/individual on the job must be able to:

- PC 26. create and manage construction schedules using logic-based methods and zone planning
- PC 27. adjust durations, task relationships, and export scheduling data for stakeholder review
- PC 28. simulate 4D construction progress and visually analyze project sequencing
- PC 29. generate time-based task reports and conduct cash flow and S-curve analysis
- PC 30. track actual vs. planned progress using BIM data inputs and generate certified monthly payment reports

Implement 6D BIM and Facilities Management in BEXEL Cloud

To be competent, the user/individual on the job must be able to:

- PC 31. generate simulations and link construction models to document and asset management workflows
- PC 32. develop Facility Maintenance (FM) plans and associate them with BIM elements for lifecycle management
- PC 33. configure automated notifications, filter FM data, and manage task entries using BEXEL Cloud
- PC 34. link FM contracts, activities, and plans to document, ensuring traceability and compliance
- PC 35. control access rights at contract or plan level and apply data governance protocols in FM environments

4. Knowledge and Understanding (KU):

The individual on the job needs to know and understand:

- KU 1. BIM designing processes and standards
- KU 2. different stages of a BIM designing project lifecycle
- KU 3. the appropriate software required for BIM designing/reviewing
- KU 4. BIM project management and relevant BIM coordination activities
- KU 5. bidding process for BIM designing projects
- KU 6. appropriate information and documents required to bid for BIM design projects
- KU 7. make effective representations to clients and answer their queries
- KU 8. documentation requirements concerning the bidding process for BIM design projects
- KU 9. importance of determining the project objectives and scope before its execution
- KU 10. importance of time management and scheduling in construction projects
- KU 11. benefits of integrating BIM into project execution planning (4D BIM), e.g. prevention of time and cost inefficiencies on the construction site
- KU 12. use of 4D BIM models to improve construction time management and allocate time and resources relating to work activities
- KU 13. how to conduct planned vs actual schedule analysis
- KU 14. identify and prevent problems related to the sequential, spatial and temporal aspects of the construction process
- KU 15. risk visualization with 5D BIM Modeling to improve design decisions
- KU 16. use of 5D project planning process, i.e. mapping of model elements to cost items, element-based cost analysis, budgeting and preparation of bill of quantities, 5D scheduling, productivity rates and resource planning, using the BIM management software
- KU 17. facility maintenance planning process using 6D BIM
- KU 18. storage of graphical and text-based information in a BIM model
- KU 19. use of 6D BIM software in the design and operation phases of construction to make a building self-sustainable and energy efficient
- KU 20. benefits of integrating BIM with the IoT technology for facility maintenance
- KU 21. objectives of 7D BIM - operations and facility management
- KU 22. importance of using a scalable and configurable BIM management system like BEXEL FM/Docs

5. Generic Skills (GS):

User/individual on the job needs to know how to:

- GS 1. maintain work-related notes and records
- GS 2. listen attentively to understand the information/ instructions being shared by the speaker
- GS 3. read the relevant literature to learn about the latest developments in the field of work
- GS 4. communicate clearly and politely with co-workers and clients
- GS 5. coordinate with co-workers to achieve work objectives
- GS 6. plan and prioritize tasks to ensure timely completion
- GS 7. identify possible disruptions to work and take appropriate preventive measures
- GS 8. take quick decisions to deal with workplace emergencies/ accidents

Annexure: Assessment Criteria

S. No.	Assessment Criteria for Performance Criteria	Theory Marks	Practical Marks	Project Marks	Viva Marks
Understand BIM Fundamentals and Industry Standards		4	10		
PC 1.	explain the need for Building Information Modeling (BIM) and its strategic role in the construction industry				
PC 2.	identify emerging job roles and career opportunities within the BIM domain				
PC 3.	describe international BIM standards including ISO 19650 and their relevance in structured information management				
PC 4.	discuss the importance of standardization and data consistency in BIM workflows				
PC 5.	respond appropriately to clients' Exchange Information Requirements (EIR) using standardized BIM procedures				
PC 6.	identify and use 3D BIM authoring tools and explain their role in the project lifecycle				
PC 7.	differentiate BIM dimensions from 1D (basic awareness) to 6D (FM and lifecycle management), and their applications				
PC 8.	explain BIM maturity levels and Level of Development (LoD) as part of implementation strategies.				
PC 9.	summarize global practices and success stories related to BIM implementation across various geographies				
Apply Construction Project Lifecycle and BEXEL Manager Essentials		4	10		
PC 10.	outline the construction project lifecycle and its stages with reference to PMBOK knowledge areas				
PC 11.	identify practical tools and digital platforms used for construction project management				
PC 12.	navigate the BEXEL Manager interface, understanding views, tabs, and functional areas				
PC 13.	perform operations such as importing bx3/IFC files and reviewing project metadata				

PC 14.	use tools like the Building Explorer, Property Panel, and Schedule tab to analyze BIM components	8	10		
PC 15.	access and utilize auxiliary BEXEL features such as Viewer, Portfolio Manager, and Dashboards for documentation and project tracking				
Conduct BIM Data Validation, Clash Detection and Quantity Take-Off					
PC 16.	explore model information layers and validate data properties using attribute filters and queries				
PC 17.	perform data editing tasks, such as adding or modifying element properties and exporting results				
PC 18.	conduct model validation using quality control tools and property check add-ins				
PC 19.	coordinate the issues using BCF open workflows				
PC 20.	generate visualized and color-coded quantity takeoffs and summarize model-based metrics by structure, story, or element type	8	10		
Integrate 5D Scheduling and Project Monitoring					
PC 21.	create cost elements using queries and quantity formulas aligned with model data				
PC 22.	import and export cost databases using Excel or integrated cost systems				
PC 23.	define and manage resources such as labor, materials, and equipment within the cost framework				
PC 24.	assign and manage cost items linked to model elements and perform multi-version cost comparisons				
PC 25.	create stand-alone cost elements not linked to 3D models, enabling flexible financial modeling	8	10		
Execute 4D BIM for Cost Management					
PC 26.	create and manage construction schedules using logic-based methods and zone planning				
PC 27.	adjust durations, task relationships, and export scheduling data for stakeholder review				
PC 28.	simulate 4D construction progress and visually analyze project sequencing				
PC 29.	generate time-based task reports and conduct cash flow and S-curve analysis				

PC 30.	track actual vs. planned progress using BIM data inputs and generate certified monthly payment reports				
Implement 6D BIM and Facilities Management in BEXEL Cloud					
PC 31.	generate simulations and link construction models to document and asset management workflows				
PC 32.	develop Facility Maintenance (FM) plans and associate them with BIM elements for lifecycle management				
PC 33.	configure automated notifications, filter FM data, and manage task entries using BEXEL Cloud	8	10		
PC 34.	link FM contracts, activities, and plans to document, ensuring traceability and compliance				
PC 35.	control access rights at contract or plan level and apply data governance protocols in FM environments				
Total Marks		40	60		

Annexure: Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the Candidate on the required competencies of the program.

1. Assessment System Overview:

Assessment is done through ICES affiliated Assessment Agencies. Assessors are trained & certified by ICES after Training of Assessor (ToA) program. Assessments are conducted to gauge and assess the trainee's skill and knowledge competency in the specified areas.

The assessment will have both theory, practical and viva components as per ratio specified in the Standalone NOS **Bexel- BIM based Project Management (3D/4D/5D/6D BIM)**.

During the practical task, trainees are assessed on their workmanship, quality of finished product and time management. They will be graded for all their assessments based on the approved assessment strategy which is signed off by ICES. The Assessor submits an assessment plan to ICES prior to assessments.

The assessment plan contains the following information:

- What will be assessed, i.e. the competency based on each NOS based on theory, practical and viva questions
- How assessment will occur i.e. methods of assessment
- When the assessment will occur
- Duration of assessment
- Where the assessment will take place i.e. context of the assessment (workplace/simulation)
- The criteria for decision making i.e. those aspects that will guide judgments
- Where appropriate, any supplementary criteria are used to make a judgment on the level of performance.

ICES will be monitoring thoroughly the complete Assessment process.

2. Testing Environment:

- Training partner shares the batch start date and end date, number of trainees and the job role.
- Assessment will be fixed for a day after the end date of training. It could be next day or later. Assessment will be conducted at the training venue/test center only.
- The knowledge/theory assessments are conducted with proper seating arrangements with enough space between the candidates to prevent mal practicing.
- Question set for Theory and Practical will be distributed to each candidate by the Assessor.

- Theory testing will include MCQ type questions, pictorial questions etc. which will test the trainee on his theoretical knowledge of the subject.
- Practical assessments will be conducted in the approved test centers. The training provider will ensure adequate tools and materials are available to conduct the practical test.
- Viva Testing will be conducted during or post to the practical assessment by the assessor concerned. This Viva Assessment is applicable to understand the outcomes from OJT attended by the candidate concerned.
- One (1) Assessor is eligible to conduct assessments of a batch of maximum 30 candidates.
- The assessment must comprise of two components, namely:
 - Knowledge assessment (Theory assessment)
 - Skill assessment (Practical / Hands-on Skill assessment)

3. Mode of assessment

- Demonstration/Practical Performance /Skill Assessment
- Synoptic multiple-choice question test for Theory Assessment

4. Performance/skill assessment:

- The performance/skill assessment will be conducted through demonstration/practical
- For the practical test trainees are assessed through a given task, which they have to complete correctly for them to be marked as passed.
- The assessment is conducted in a simulated working environment. Due to this fact, the assessors must note that the naturally occurring evidence of competence is unavailable or infrequent. Simulation must be undertaken in a Realistic Working Environment which provides an environment that replicates the key characteristics of the workplace in which the skill to be assessed is normally employed.

5. Knowledge Assessment:

- The knowledge assessments are conducted through Theory (written) Test and Viva Test
- Synoptic test is used for this. It is an MCQ (Multiple Choice Question) test which is prepared externally and externally marked, meaning by agency having no link with training partners.
- The Viva test will be conducted by the assessor in the oral mode considering the communication and domain understanding of skills of trainees.
- The assessment strategy, weightage and duration of assessment for **Bexel- BIM based Project Management (3D/4D/5D/6D BIM)** is summarized below

Assessment Type	Formative or Summative	Strategies	Weightage	Duration (hours)
Knowledge	Summative	MCQ	40	2 hours
Skill	Summative	Structured practical Task	60	6 hours

6. Assessment Quality Assurance levels/Framework

- ICES has developed assessment criteria framework for each Qualification pack as per National Occupational Standards. The criteria framework includes weightages/marks for each criterion under knowledge and skill. The criteria ensure quality assurance as they ensure valid, consistent and fair assessments at all locations. Issued to the affiliated Assessment body. The Assessment Body develops questions based on ICES's approved assessment criteria.
- The training partner will intimate the time of arrival of the assessor and time of leaving the venue. Random spot checks/audit may conducted by ICES to monitor assessment.
- Continuous Monitoring through virtual and In-person mode are conducted to ensure the assessment is conducted as per stipulated process
- Process and Technical audit of assessment batches by quality team are conducted to avoid errors in assessment process
- A well -defined comprehensive framework of NON-COMPLIANCE MATRIX is defined and implemented to identify the non-compliance made by assessor and AA and punitive actions are taken correspondingly.
- The capacity building sessions are conducted regularly for assessors and assessment agencies to update them about best practices in assessment

7. Types of evidence or evidence-gathering protocol:

- Evidence in the form of answer sheets in case of knowledge assessments (Theory only) is collected.
- For Practical and Viva assessments videos and photographs are prepared as evidence. These are submitted by the assessor to the assessment agency. ICES does random checks of the same with the participant/ trainee's ID and ascertains authenticity and validity of assessments.
- Post Assessment, the evidence are uploaded by Assessor to assessment agency and further assessment agency to ICES as per stipulated TAT
- Evidence are broadly photographic and video graphics in nature (Geo-Tagged)
- Results along with evidence to be submitted to ICES by the concerning Assessment Agency in the prescribed format and on Digital Format and Physical Format (As required)
- Results to be uploaded on SIDH and other relevant portals for collective data management.

8. Method of verification or validation:

- The process and technical audit of assessment batches are done by Awarding Body
- Attendance of each candidate is verified and it is ensured that only those candidates are assessed by assessors who are meeting the stipulated minimum percentage of attendance
- The result of each candidate is verified; it is verified that that result on SIP is matched with respect to summary sheet submitted by AAs
- Under detailed technical audit for sample batches, the knowledge and skill assessment results for each candidate are checked in technical aspect.
- All the evidence of batches are preserved on server of Awarding Body digital platform

9. On the Job:

- OJT is Not Applicable for Skill training in this NOS.

Annexure: Acronym and Glossary

Acronym

Acronym	Description
NOS	National Occupational Standard(s)
NSQF	National Skills Qualification Framework
QP	Qualification Pack
TVET	Technical and Vocational Education and Training
MSDE	Ministry of Skill Development and Entrepreneurship
NCVET	National Council for Vocational Education and Training
NSDC	National Skill Development Corporation
ICES	Integrated Council for Entrepreneurship and Skilling (erstwhile Integrated Council for Entrepreneurship and Skilling)
AB	Awarding Body
AA	Assessment Agency
TP	Training Partner
TC	Training Centre
ITI	Industrial Training Institute
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NEP	New Education Policy
Q-File	Qualification File
MC	Model Curriculum
PC	Performance Criteria
KU	Knowledge and Understanding
GS	Generic Skills
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
DDUGKY	Deen Dayal Upadhyaya Grameen Kaushalya Yojana
STT	Short Term Training
RPL	Recognition of Prior Learning
NAPS	National Apprenticeship Promotion Scheme
NQR	National Qualification Register
OJT	On the Job Training

NSQC	National Skill Qualification Committee
IS	Indian Standard
BIM	Building Information Modeling
FM	Facility Management
PLPs	Project Lifecycle Phases
POE	Post-Occupancy Evaluations
AIM	Asset Information Modeling
PIM	Project Information Modeling

Glossary

Term	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.

Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.

Annexure: Career Progression

