QUALIFICATION FILE

Technical Artist – AR/VR

☒ Worldskills ☐ Short Term Training (STT) ☐ Long Term Training (LTT) ☐ Apprenticeship

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

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

NCrF/NSQF Level: *NSQF Level:* 4.5

Submitted By:

Media & Entertainment Skills Council

522-524, DLF Tower-A, Jasola, New Delhi

110025

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Section 1: Basic Details

<table>
<tr><td>1.</td><td>Qualification Name</td><td colspan="2">Technical Artist – AR/VR</td></tr>
<tr><td>2.</td><td>Sector/s</td><td colspan="2">Media and Entertainment</td></tr>
<tr><td>3.</td><td>Type of Qualification: ☐ New ☐ Revised ☐ Has Electives/Options ☐OEM</td><td>NQR Code & version of existing/previous qualification:</td><td>Qualification Name of existing/previous version:</td></tr>
<tr><td>4.</td><td>a. OEM Name
b. Qualification Name
(Wherever applicable)</td><td colspan="2">Technical Artist – AR/VR</td></tr>
<tr><td>5.</td><td>National Qualification Register (NQR) Code &Version
(Will be issued after NSQC approval)</td><td>QG-4.5-ME-01841-2024-V1-MESC</td><td>6. NCrF/NSQF Level: NSQF Level 4.5</td></tr>
<tr><td>7.</td><td>Award (Certificate/Diploma/Advance Diploma/ Any Other (Wherever applicable specify multiple entry/exits also & provide details in annexure)</td><td colspan="2">Certificate</td></tr>
<tr><td>8.</td><td>Brief Description of the Qualification</td><td colspan="2">The individual in this job will act as an architecture and overlays AR-VR solution to deliver experience of their project vision to prospective users for analysis, learning and game development purpose. It articulates 3D content products for Virtual & Augmented Reality application with smart technology driven system (hardware) which brings realistic views to users. The Technical Artist also acts as bridge between the artists and programmers, ensuring the art content and features are easily integrated into the environment.</td></tr>
<tr><td>9.</td><td>Eligibility Criteria for Entry for Student/Trainee/Learner/Employee</td><td colspan="2">a. Entry Qualification & Relevant Experience:
<table>
<tr><th>S. No.</th><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Required Experience (with Specialization - if applicable)</th></tr>
<tr><td>1.</td><td>12th plus 2 Years Diploma in design</td><td>NA</td></tr>
<tr><td>2.</td><td>2nd Year of Graduation in related field</td><td>NA</td></tr>
<tr><td>3.</td><td>12th Pass</td><td>4 Years Experience in design</td></tr>
</table>
b. Age: Maximum 22 years in the year of the Competition</td></tr>
<tr><td>10.</td><td>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>17</td><td>11. Common Cost Norm Category (I/II/III): I</td></tr>
<tr><td>12.</td><td>Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)</td><td colspan="2">NA</td></tr>
</table>

<table>
<tr><td>13.</td><td>Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</td><td colspan="2">☐Offline ☐Online ☒Blended
<table>
<tr><th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>OJT Mandatory (Hours)</th><th>OJT Recommended (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>Classroom (offline)</td><td>150</td><td>360</td><td></td><td></td><td>510</td></tr>
<tr><td>Online</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
(Refer Blended Learning Annexure for details)</td></tr>
<tr><td>14.</td><td>Aligned to NCO/ISCO Code/s (if no code is available mention the same)</td><td colspan="2">NCO-2015/2166.0501</td></tr>
<tr><td>15.</td><td>Progression path after attaining the qualification (Please show Professional and Academic progression)</td><td colspan="2">AR-VR Developer, Entrepreneur</td></tr>
<tr><td>16.</td><td>Other Indian languages in which the Qualification & Model Curriculum are being submitted</td><td colspan="2"></td></tr>
<tr><td>17.</td><td>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</td><td colspan="2">☐ Yes ☒ No URLs of similar Qualifications:</td></tr>
<tr><td>18.</td><td>Is the Job Role Amenable to Persons with Disability</td><td colspan="2">☐ Yes ☒ No
If “Yes”, specify applicable type of Disability:</td></tr>
<tr><td>19.</td><td>How Participation of Women will be Encouraged</td><td colspan="2"></td></tr>
<tr><td>20.</td><td>Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)</td><td colspan="2">☐ Yes ☐ No</td></tr>
<tr><td>21.</td><td>Is Qualification Suitable to be Offered in Schools/Colleges</td><td colspan="2">Schools ☐ Yes ☐ No Colleges ☒ Yes ☐ No</td></tr>
<tr><td>22.</td><td>Name and Contact Details of Submitting / Awarding Body SPOC
(In case of CS or MS, provide details of both Lead AB & Supporting ABs)</td><td colspan="2">Name: Mohit Soni
Position in the organization: Chief Executive Officer
Address if different from above:
Tel number(s): 01149048335/ 49048336
E-mail address: ceo@mescindia.org</td></tr>
<tr><td>23.</td><td>Final Approval Date by NSQC:</td><td>24. Validity Duration: 2 Years</td><td>25. Next Review Date</td></tr>
</table>

Section 2: Module Summary

NOS/s of Qualifications

(In exceptional cases these could be described as components)

Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/ Module level. For further details refer curriculum document.

***Th.**-Theory **Pr.**-Practical **OJT**-On the Job **Man.**-Mandatory Training **Rec.**-Recommended **Proj.**-Project*

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.	Introduction	Intro	Core	4.5	1	15	15			30						
2.	Prepare model and complete the texture as per real-time engines requirement	MES/N2514	Core	4.5	2	15	45			60	3	10		2	15	15
3.	Test 3D models in the real-time/game environment	MES/N2512	Core	4.5	2	15	45			60	3	10		2	15	10
4.	Artificial intelligence & machine learning	MES/N2513	Core	4.5	2	15	45			60	3	5		2	10	15
5.	Deploy Internet of things (IoT)	MES/N2515	Core	4.5	2	15	45			60	3	5		2	10	10
6.	Enterprise block chain	MES/N2516	Core	4.5	2	15	45			60	3	5		2	10	10
7.	Prepare computer generated models	MES/N2502	Core	4.5	2	15	45			60	3	10		2	15	10
8.	Add textures to models	MES/N2517	Core	4.5	2	15	45			60	3	10		2	15	10
9.	Maintain Workplace Health and Safety	MES/N0104	Non-Core	4.5	1	15	15			30	1	2		2	5	10

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
10.	Employability Skills	DGT/VSQ/N0102	Non-Core	4.5	1	15	15			30	1	2		2	5	10
Duration (in Hours) / Total Marks				4.5	17	150	360			510	23	59		18	100	C

Elective NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.																
2.																
Duration (in Hours) / Total Marks																

Optional NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.																
2.																
Duration (in Hours) / Total Marks																

Assessment - Minimum Qualifying Percentage

*Please specify **any one** of the following:*

Minimum Pass Percentage – Aggregate at qualification level: 70 % *(Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)*

Minimum Pass Percentage – NOS/Module-wise: 70 % *(Every Trainee should score specified minimum passing percentage in each mandatory and selected elective NOS/Module to successfully clear the assessment.)*

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	**Graduate in IT field with 5 years' experience as a AR/VR developer or Designer.** **Graduate in IT field with 5 years' experience as a developer and additional certifications in 3D asset creation or related field.**
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	**Graduate in IT field with 5 years' experience as a developer and additional certifications in 3D asset creation or related field.**
3.	**Tools and Equipment Required for Training**	☒Yes ☐No (*If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised Qualification, Details of Any Upskilling Required for Trainer**	

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	**Graduate in IT field with 10 years' experience as a developer or Designer.**
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	**Graduate in IT Field with 2 years of experience**
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	**Graduate in IT field with 5 years' experience as a developer and additional certifications in 3D asset creation or related field.**
4.	**Assessment Mode** *(Specify the assessment mode)*	**Blended**
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 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	**Latest Skill Gap Study (not older than 2 years) (Yes/No):** Yes
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** Yes

3.	**Government /Industry initiatives/ requirement (Yes/No):** Yes WORLDSKILLS
4.	**Number of Industry validation provided:** NA
5.	**Estimated nos. of persons to be trained and employed:**
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments:** *NA* If "No", why:

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	**Annexure:** NCrF/NSQF level justification based on NCrF level/NSQF descriptors *(Mandatory)*	*Annexure 1*
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	*Annexure 2*
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	*Annexure 6*
4.	**Annexure:** Assessment Strategy *(Mandatory)*	*Annexure 7*
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	*Annexure 5*
6.	**Annexure:** Multiple Entry-Exit Details *(Mandatory, in case qualification has multiple Entry-Exit)*	
7.	**Annexure:** Acronym and Glossary *(Optional)*	*Annexure 8*
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	*Model Curriculum*
9.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	
10.	**Supporting Document:** Occupational Map *(Mandatory)*	
11.	**Supporting Document:** Assessment SOP *(Mandatory)*	
12.	**Any other document you wish to submit:**	

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
Professional Theoretical Knowledge/Process	1. Prepare model and complete the texture as per real-time engines requirement 2. Test 3D models in the real-time/game environment. 3. Artificial intelligence & machine learning. 4. Deploy Internet of things (IoT) 5. Enterprise block chain 6. Maintain workplace health and safety 7. Prepare computer generated models 8. Add textures to model	The job holder needs to analyze and prepare AR-VR model using various model /character and overlay AR-VR solutions for learning and game development purpose. Analyze the different aspects of AR-VR requirements, tools such as analyse concept of 3D technology, develop VR application, designing the character, code optimization etc. to use and analyse application Artificial Intelligence, machine learning, deploy internet of things, and enterprise block chains. He/she should develop AR mechanism which is aligned towards the organization's goals and get it implemented using the available resources and team members. The person should also monitor and optimize the creation of application and packaging it at the level to use for various programme	NSQF Level 4.5
Professional and Technical Skills/ Expertise/ Professional Knowledge	9. Recognize the importance of AR-VR application 10. Recognize the key differences between AR and VR for trending requirements 11. Recognize various aspects of its uses 12. Recognize how different companies are using VR to	The individual in this role needs to have a good understanding of how to use VR applications to promote a company's offering on various platforms. He/she will work on developing and implementing the AR tools based on the application required for the organization based on their goals and objectives. They are	NSQF Level 4.5

	engage with their current and prospective customers	required to adapt to the changing VR developing applications to develop game tools and stay up-to-date with the latest trends and best practices.	
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	1. Identify the target audience based on company's offerings 2. Overlay AR-VR application aligned with organization's goals 3. Monitor and optimize application on different platforms and uses for game designing 4. Manage team members effectively and provide constructive feedback 5. Present the campaign performance report to the key stakeholders 6. Maintain workplace health and safety	The individual in this job profile needs to know and understand how to effectively implement the VR application on different gaming requirements and optimize them to improve their performance. He/she should able to manage the team members to deliver the work as expected and meet the expectations of key stakeholders. The person is required to monitor the update changes in AR package, review the work of the team members and given them the feedback. He/she also needs to present the package performance reports to the stakeholders and incorporate their feedback in overall strategy.	NSQF Level 4.5
Broad Learning Outcomes/Core Skill	1. Overlay AR-VR solutions 2. Analyse concept of 3D techniques 3. Follow latest AR-VR application trends and best practices 4. Manage team members and get the character designed as per the application required through them 5. Analyse competitor's AR-VR application and incorporate the best practices	The job holder needs to possess good analytical and quantitative skills to be able to interpret and analyse while creating AR-VR applications results and benchmark it against the key competitors. He/she should be able to work with various AR-VR tools to do the campaign analysis and optimization to improve their performance. The person should also be able to communicate effectively with the team members, peers, and superiors to carry out the AR application packaging activity as per the defined	NSQF Level 4.5

	6. Allocate budgets to the different AR-VR applications based on their performance and expected outcomes 7. Measure and report the performance of application / game tools to the stakeholders 8. Maintain workplace health and safety	plan and get desired results. He/she should also manage the budgets across different applications effectively to maximize the Return on Investment (ROI)	
Responsibility	1. Overlay an effective AR-VR Solutions which can easily incorporated to design game engine / tools. 2. Review and test the set-up of application to ensure there are no errors. 3. Resolve and streamline the issues faced by the team members for smooth implementation. 4. Manage the time schedule effectively to meet the deadlines. 5. Meet the defined Key Performance Indicators (KPIs) for packaging VR application. 6. Work effectively with the team members and motivate them to achieve desired results. 7. Meet the expectations of the stakeholders and incorporate their feedback 8. Maintain workplace health and safety	He/she needs to overlay AR-VR solutions for learning or game engine and get it executed with the help of the team members and successfully meet the deadlines. The person should communicate effectively with the junior, peers and superiors and ensure successful implementation of the campaigns. The individual should be able to demonstrate good skills in managing the various VR application platforms across different gaming requirements and optimize them to maximize their performance. He/she needs to track and prepare performance reports clearly showing its impact on the growth of the business.	NSQF Level 4.5

Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size:

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Desktop Computer	HP I7, 16 GB RAM, 480 GB SSD, Nvidia GeForce RTX 3060 Super Graphic Card, 24" HP Monitor, Keyboard & Mouse	15
2	Apple M1 Mac Mini Desktop	Apple MI Chipset, 16 GB RAM, 256 GB SSD, Apple Graphics Card, 24" Apple Monitor, Apple Keyboard and. Apple Mouse	5
3	Apple IPad Pro Tab	Apple Mi Chipset, 8 Core CPU, 16 Core Neural Engine, 16 GB Ram, 256 GB SDD, 11" Display	5
4	Oculus Quest 2 (WIth accessories) - VR HMD	VR HMD with 2160x2160 per eye @ 90Hhz, in 6Dof Architecture for tracking infinite space	5
5	Vuforia		5
6	AR SDK		5
7	AR Kit		2
8	ARCore		2
9	Kudan		2
10	Holo Toolkit		2

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Laptop
2. Whiteboard and Markers
3. Projector
4. Screen
5. Stationary

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)*

Annexure: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates	Women	People with Disability

	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities

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

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.
2.

Content availability for previous versions of qualifications:

☐ Participant Handbook ☐ Facilitator Guide ☐ Digital Content ☐ Qualification Handbook ☐ Any Other:

Languages in which Content is available:

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 Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	☐Theory/ Lectures - Imparting theoretical and conceptual knowledge	LCD, Projector, Laptop, MSOffice Suite, Flipchart, whiteboard, Markers, wi-fi connectivity	50:50
2	☐Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners		
3	☐Showing Practical Demonstrations to the learners	LCD, Projector, Laptop, MSOffice Suite, various tools and software, computer camera, computer speakers, wi-fi connectivity	50:50

4	☐Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	Computer systems for all students, printers, wi-fi connectivity	50:50
5	☐Tutorials/ Assignments/ Drill/ Practice	Learning management system	0:100
6	☐Proctored Monitoring/ Assessment/ Evaluation/ Examinations	Online assessment portals, tablet for each student	0:100
7	☐On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	Access to industry partner in relevant field	100:0

Annexure: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare models and texture it as per real-time engines requirement	• PC1. Analyse AR VR environments				
	• PC2. Scribe design specifications and enterprise system architecture				
	• PC3. Prepare digital models and asset content as per design specification				
	• PC4. Use appropriate texturing and rendering systems to make displays as per design specification				
	• PC6. Create character design/frame and structure the character as model				
	• PC7. Create the visual style of the project, including colour sets, mood, etc				
	• PC8. add textures to models to create photo-realistic models				
Integrate & Test 3D models in the	**Total Marks**	3	10		2
	• PC1. Use AR VR Development tools				

realtime/game environment	• PC2. Understanding platform boundaries and optimisation techniques				
	• PC3. Integrate models in the AR VR Project				
	• PC4. Testing the models to ensure that they function correctly				
	• PC5. Test the models to ensure that they meet the design specifications				
	• PC6.production requirements and function as required				
	• PC7. Check the continuity of models, textures or paintings and make sure they are fit for purpose of for all required camera positions and angles				
	• PC8. Evaluate the quality of the assets in relation to others within the same context in which they will be used				
	• PC9.Correct any problems or issues that may arise				
	• PC10. Respond positively to feedback about work and changing textures/ other requirements and make refinements as needed				
	Total Marks	3	10		2
Artificial intelligence & machine learning	• PC1. identify application of pythons in work environment and its process				
	• PC2. editing python using IDE (Integrated development environments) and text editors				
	• PC3. create python list				

	• PC4. apply python in developing 2D or 3D games, web & internet development, database access, network programming and business application.				
	• PC5. create Numpy and use large collection of high-level mathematical functions				
	• PC6. apply matplotlib				
	• PC7. apply mathematical rule: equations, functions and graphs; differentiation and optimization, vector and matrices, statistics and probability				
	• PC8. explore data for machine learning				
	• PC9. prepare data and clean data				
	• PC10. foundation of Artificial Intelligence (AI) in machine learning				
	• PC11. recognise languages – computer vision				
	• PC12. convert Bots as platform				
	• PC13. detect digits in hand-written digit image				
	• PC14. build a model to forecast a time data using a recurrent network				
	• PC15. build text data application using recurrent LSTM (long short term memory)				
	• PC16. Create neural models for machine translation and conversion				

	• PC17. create multimodel intelligence using languages				
	• PC18. recognise speech using basic signal processing				
	• PC19. Create acoustic model and labelling				
	• PC20. Decoding acoustic features into speech				
	• PC21. apply ethical and legal framework for the data profession				
	• PC22. approach to data and analytics problems including big data, data science and AI				
	• PC23. apply data methods for ethical and legal work in Analytics and AI				
	• PC24. apply dynamic programming				
	• PC25. explore, manipulate and analyse images using python packages for computer vision				
	• PC26. implement image classification using classical machine learning and deep learning techniques.				
	• PC27. use data augmentation and transfer learning to create highly-effective convolutional neural networks (CNNs)				
	• PC28. classify image to use object detection and semantic segmentation models. approach to data and analytics problems including big data, data science and AI				
	Total Marks	3	5		2
	• PC1. interpret IoT solution for dummies				

Deploy Internet of things (IoT)	• PC2. apply principles to follow for a successful deployment				
	• PC3. analyse IoT connectivity and related technologies				
	• PC4. select a board for prototyping				
	• PC5. analyse digital signage solutions for windows IoT platform				
	• PC6. run environment locally				
	• PC7. apply IoT Central, maps and an IoT SaaS solution				
	• PC8. customize UX and redeploy a microservice				
	• PC9. integrate with visualization tools				
	• PC10. use IoT Hub and connect MX Chip				
	• PC11. connect a Pi simulator to IoT Hub				
	• PC12. visualize time-series data with Time Series Insights				
	• PC13. react to critical device lifecycle events and trigger Actions				
	• PC14. cold path storage and hot path analytics				
	• PC15. load test using Device Simulator and configure and monitor IoT devices at scale				
	• PC16. Customize the Remote Monitoring solution accelerator				
	• PC17. host IoT solution accelerator				

	• PC18. scale IoT solution, IoT data and extract insights				
	• PC19. explore Edge intelligence in a Connected Factory				
	• PC20. sequence IoT Hub primitives and Hub messaging				
	• PC21. host device management with IoT Hub and primitives				
	• PC22. examine automatic device management				
	• PC23. use IoT SDKs and developer tools				
	• PC24. analyse Hub device provisioning service				
	Total Marks	**3**	**5**		**2**
Enterprise block chain	• PC1. interpret block chain concept				
	• PC2. cryptocurrencies and risks				
	• PC3. consensus alogrithms				
	• PC4. transact block chain				
	• PC5. synergy of blockchain with other cutting edge technologies				
	• PC6. design block chain				
	• PC7. analyse ethereum				
	• PC8. design network structure of ethereum				
	• PC9. installation of toolchain				

	• PC10. setting up private node				
	• PC11. building blocks of blockchain solutions				
	• PC12. architect HLF runtime				
	• PC13. installation of Hyperledger fabric				
	• PC14. configure Hyperledger Fabric				
	• PC15. analyse the role of System components				
	• PC16. use-Case Introduction and create Hyperledger Fabric Blockchain network				
	• PC17. implement Smart Contract / Chain code				
	• PC18. install and Instantiate chain code				
	• PC19. deploy Client Application (DApp)				
	• PC20. communicate Transport Layer Security (TLS)				
	• PC21. architect security, threat and mitigation				
Prepare computer generated models	**Total Marks**	3	5		2
	• PC1. Prepare digital models according to the design brief (appearance, complexion, dressing, moods, personalities, expressions etc.), requirements (number, types, duplicates etc.) and specifications (dimensions, operating parameters etc.)				
	• PC2. Create prototypes/pilots for testing				
	• PC3.Understand the final display medium and adapt / suggest the model for its polycounts, mesh complexity, movement capability etc.				

	• PC4. Ensure that the models will be able to perform properly once animated, are uniform and consistent and are delivered in appropriate formats that can be used by others				
Add textures to models	**Total Marks**	3	10		2
	• PC1. Visualize possibilities for adding textures to models to create photorealistic models/images				
	• PC2. Develop and add textures to models in accordance to the design brief and concept art for different types of models				
	• PC3.Understand the final exhibition medium and adapt the textures accordingly				
	• PC4. Manage quality of textures during the animation process and ensure uniformity and consistency in the final output				
	• PC5.supply work in appropriate formats that can be used by others in the pipeline				
	Total Marks	3	10		2
Maintain Workplace Health and Safety	PC1. maintain one's posture and position to minimize fatigue and the risk of injury				
	PC2. maintain first aid kit and keep oneself updated on the first aid procedures				
	PC3. identify and document potential risks like siting postures while using computer, eye fatigue and other hazards in the workplace				
	PC4. accurately maintain accident reports				
	PC5. report health and safety risks/ hazards to concerned personne				
	• PC6. participate in organization health and safety knowledge sessions and drills				
	• PC7. identify the people responsible for health and safety in the workplace, including those to contact in case of an emergency				

	• PC8. identify security signals e.g. fire alarms and places such as staircases, fire warden stations, first aid and medical rooms				
	• PC9. identify aspects of workplace that could cause potential risk to own and others health and safety				
	• PC10. ensure own personal health and safety, and that of others in the workplace though precautionary measures				
	• PC11. identify and recommend opportunities for improving health, safety, and security to the designated person				
	• PC12. report any hazards outside the individual's authority to the relevant person in line with organisational procedures and warn other people who may be affected				
	• PC13. follow organisation's emergency procedures for accidents, fires or any other natural calamity in case of a hazard				
	• PC14. identify and correct risks like illness, accidents, fires or any other natural calamity safely and within the limits of individual's authority				
Employability Skills	**Total Marks**	1	2		2
	1. Introduction to Employability skills				
	2. Constitutional values				
	3. Becoming a professional in the 21st century				
	4. Basic English skills				
	5. Career development and goal setting				
	6. Communication skills				
	7. Diversity and inclusion				

	8. Financial and legal literacy				
	9. Essential digital skills				
	10. Entrepreneurship				
	Total Marks	1	2		2
	Grand Total	23	59		18

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.

Mention the detailed assessment strategy in the provided template.

1. Assessment System Overview:
   - Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
   - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
   - Assessment agency deploys the ToA certified Assessor for executing the assessment
   - SSC monitors the assessment process & records
2. Testing Environment:
   - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
   - Check the duration of the training.
   - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
   - If the batch size is more than 30, then there should be 2 Assessors.
   - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
   - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
   - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
   - Check the availability of the Lab Equipment for the particular Job Role.
3. Assessment Quality Assurance levels / Framework:
   - Question papers created by the Subject Matter Experts (SME)
   - Question papers created by the SME verified by the other subject Matter Experts
   - Questions are mapped with NOS and PC
   - Question papers are prepared considering that level 1 to 3 is for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management.
   - Assessor must be ToA certified & trainer must be ToT Certified

- Assessment agency must follow the assessment guidelines to conduct the assessment.

4. Types of evidence or evidence-gathering protocol:
   - Time-stamped & geotagged reporting of the assessor from assessment location
   - Centre photographs with signboards and scheme specific branding
   - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
   - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos
5. Method of verification or validation:
   - Surprise visit to the assessment location
   - Random audit of the batch
   - Random audit of any candidate
6. Method for assessment documentation, archiving, and access
   - Hard copies of the documents are stored
   - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
   - Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

Annexure: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards

Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf