Qualification Pack

Front Line Junior Supervisor (Construction)

QP Code: MSME/CON/Q0801

Version: 1.0

NSQF Level: 4.5

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Contents

Qualification Pack

MSME/CON/Q0801: Front Line Junior Supervisor (Construction)

Brief Job Description

Learners who attain this qualification are competent to work in Civil Construction and can get a job in a captive or commercial construction sector or become an entrepreneur. Qualifying learners attain skills to work in Auto CAD, STADD PRO, 3D Studio MAX, REVIT, Adobe Photoshop, GPS , DGPS Auto Level & total station

Personal Attributes

Learners who attain this qualification are competent to work in Civil Construction and can get a job in a captive or commercial construction sector or become an entrepreneur. Qualifying learners attain skills to work in Auto CAD, STADD PRO, 3D Studio MAX, REVIT, Adobe Photoshop, GPS , DGPS Auto Level & total station

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. MSME/CON/N0806: Intro to surveying, leveling, types, GPS/DGPS function & uses.
2. MSME/CON/N0805: Use of building materials and their function and construction procedure
3. MSME/CON/N0803: Analyze concrete & steel structures, applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop
4. MSME/CON/N0802: Sketch Architectural drawings, section view,3D View.
5. MSME/CON/N0801: Sketch Architectural drawings, section view,3D View.
6. MSME/CON/N0808: Estimation of building with rate analysis of civil works
7. MSME/CON/N0807: Intro to surveying, leveling, types, GPS/DGPS function & uses.
8. MSME/CON/N0809: Employability Skills & Entrepreneurship
9. MSME/CON/N0810: Analyze concrete & steel structures,applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop.

Qualification Pack (QP) Parameters

Sector	Construction

Qualification Pack

Sub-Sector	Construction
Occupation	Project Management (Structural Design and Analysis)
Country	India
NSQF Level	4.5
Credits	20
Aligned to NCO/ISCO/ISIC Code	Civil Engineer, Structural
Minimum Educational Qualification & Experience	Completed 3-year diploma (after 10th) with NA of experience OR Pursuing 3rd year of 3-year diploma after 10th with NA of experience OR Completed 1st year of UG (UG Certificate) (Completed 1st year of 3-year/ 4-years UG,) with NA of experience OR Certificate-NSQF (NSQF Level 4 in the field of Civil Engineering) with 1 Year of experience
Minimum Level of Education for Training in School	10th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	17 Years
Last Reviewed On	NA
Next Review Date	30/04/2027
NSQC Approval Date	30/04/2024
Version	1.0
Reference code on NQR	NCVET- QG-4.5-CO-02391-2024-V1-MSME
NQR Version	1.0

MSME/CON/N0806: Intro to surveying, leveling, types, GPS/DGPS function & uses.

Description

After completion of course Student should be able to Definition of surveying, classification based upon the nature of the field survey.

Scope

The scope covers the following :

- After completion of course Student should be able to
- Definition of surveying, classification based upon the nature of the field survey.

Elements and Performance Criteria

MSME/ADSDA/04 Intro to surveying, leveling, types, GPS/DGPS function & uses.

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

PC1. Do leveling & surveying

PC2. • Perform different operations using auto level/digital level and calculate • various parameters.

PC3. • Perform rise and fall method, error correction & do Fly leveling, profile • leveling, simple leveling.

PC4. Performing by long section & cross section method create road profile.

PC5. • Do operational panel & other plants of the instruments with the help of • machine in field.

PC6. • Do centering with the optical plummet eye piece as per procedure with • the leaser plummet, do leveling of the circle level with the help of • machine.

PC7. • Do Job selection, Job Details, Job detection, Station orientation of points • by help of machine

PC8. • Shift the instrument from one station to another station & Download • Data.

PC9. • Process data in computer, transfer format to CSV, DWG & DXF with • Specter link software

PC10. After transferring process data, Create Topo map in AutoCAD software.

PC11. • Identify main segments used for navigation & Differentiate between the • mobile GPS, GPS instrument, DGPS

PC12. Measure the point to point distance using GPS device through satellite.

PC13. Measure the point to point distance using DGPS device through satellite

PC14. • Do the GPS work in survey. Solve the common errors of GPS survey & • Principles of GPS device.

PC15. • Do the DGPS work in survey. Solve the common errors of DGPS survey & • Principles of DGPS device.

PC16. • Find out coordinate of any point by Static Survey and creating topo map
• by PPK Survey/RTK Survey.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADSDA/04 Intro to surveying, leveling, types, GPS/DGPS function & uses.	**100**	**-**	**-**	**-**
PC1. Do leveling & surveying	-	-	-	-
PC2. • Perform different operations using auto level/digital level and calculate • various parameters.	-	-	-	-
PC3. • Perform rise and fall method, error correction & do Fly leveling, profile • leveling, simple leveling.	-	-	-	-
PC4. Performing by long section & cross section method create road profile.	-	-	-	-
PC5. • Do operational panel & other plants of the instruments with the help of • machine in field.	-	-	-	-
PC6. • Do centering with the optical plummet eye piece as per procedure with • the leaser plummet, do leveling of the circle level with the help of • machine.	-	-	-	-
PC7. • Do Job selection, Job Details, Job detection, Station orientation of points • by help of machine	-	-	-	-
PC8. • Shift the instrument from one station to another station & Download • Data.	-	-	-	-
PC9. • Process data in computer, transfer format to CSV, DWG & DXF with • Specter link software	-	-	-	-
PC10. After transferring process data, Create Topo map in AutoCAD software.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. • Identify main segments used for navigation & Differentiate between the • mobile GPS, GPS instrument, DGPS	-	-	-	-
PC12. Measure the point to point distance using GPS device through satellite.	-	-	-	-
PC13. Measure the point to point distance using DGPS device through satellite	-	-	-	-
PC14. • Do the GPS work in survey. Solve the common errors of GPS survey & • Principles of GPS device.	-	-	-	-
PC15. • Do the DGPS work in survey. Solve the common errors of DGPS survey & • Principles of DGPS device.	-	-	-	-
PC16. • Find out coordinate of any point by Static Survey and creating topo map • by PPK Survey/RTK Survey.	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CON/N0806
NOS Name	Intro to surveying, leveling, types, GPS/DGPS function & uses.
Sector	Construction
Sub-Sector	
Occupation	Project Management (Structural Design and Analysis)
NSQF Level	4.5
Credits	1
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

Qualification Pack

MSME/CON/N0805: Use of building materials and their function and construction procedure

Description

After completion of course Student should be able to Students are able to understand the property , use , advantage and disadvantage of different material used in construction

Scope

The scope covers the following :

- After completion of course Student should be able to
- Students are able to understand the property , use , advantage and disadvantage of different material used
- in construction

Elements and Performance Criteria

MSME/ADSDA/03 Use of building materials and their function and construction procedure

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

PC1. • Stones : Introduction, All Classification of Rocks, use of stone, quality of
• good stone, characteristics of stone, selection of stone in various work.

PC2. • Bricks : Introduction, Composition, Dimensions confirming is-code1077:1992,Classification,Unburnt or sun-dried bricks, Burnt bricks and
• types, Classification confirming is-code-1077:1992, Quality of good bricks,
• Special type of bricks, Introduction of brick test, Introduction to brick
• bonding confirming is-code-2212:1991

PC3. • Cement : Introduction, Ingredients& Function, Type of cement
• &advantages- disadvantages (i)ordinary Portland cement (OPC), Portland
• Pozzolana cement (PPC), acid resistance Cement, Coloured Cement: Blast
• Furnace Cement, Expanding cement, High Alumina Cement, Bogue’s
• compound, Hydration of cement. Sand : Sources Of Sand-Pit, River, Sea
• Sand, Characteristics of sand, Bulking Of Sand, Grading Of Sand.

PC4. • Coarse Aggregate : Introduction, Particle shape & texture-rounded,
• irregular, flaky, angular IS-383-2016,

PC5. • Mortar : Introduction, Ingredients & Function, Properties of good mortar
• & Uses: Types of Mortar on the bases of –Bulk density, Kinds of binding
• material, Nature of application, Precautions in using mortar.

PC6. • Concrete : Introduction, Ingredients& Function, Properties of different
• type concrete, Gradation of concrete, Preparation of concrete mix-hand
• mixing, machine mixing, Curing of concrete.

PC7. • Timber : Introduction, Uses of timber: Classification of trees, Structure of
• tree: Defects in timber due to-conversion, fungi, natural forces, insects,
• characteristics of good timber.

PC8. • Bitumen : Introduction, Flash and Fire point of bitumen, Introduction of all
• types of Bitumen -Penetration Grade Bitumen, Oxidized Bitumen Grades,
• Cut Back Bitumen, Bitumen Emulsion, Polymer Modified Bitumen.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADSDA/03 Use of building materials and their function and construction procedure	**100**	**-**	**-**	**-**
PC1. • Stones : Introduction, All Classification of Rocks, use of stone, quality of • good stone, characteristics of stone, selection of stone in various work.	-	-	-	-
PC2. • Bricks : Introduction, Composition, Dimensions confirming is-code1077:1992,Classification,Unburnt or sun-dried bricks, Burnt bricks and • types, Classification confirming is-code-1077:1992, Quality of good bricks, • Special type of bricks, Introduction of brick test, Introduction to brick • bonding confirming is-code-2212:1991	-	-	-	-
PC3. • Cement : Introduction, Ingredients& Function, Type of cement • &advantages- disadvantages (i)ordinary Portland cement (OPC), Portland • Pozzolana cement (PPC), acid resistance Cement, Coloured Cement: Blast • Furnace Cement, Expanding cement, High Alumina Cement, Bogue's • compound, Hydration of cement. Sand : Sources Of Sand-Pit, River, Sea • Sand, Characteristics of sand, Bulking Of Sand, Grading Of Sand.	-	-	-	-
PC4. • Coarse Aggregate : Introduction, Particle shape & texture-rounded, • irregular, flaky, angular IS-383-2016,	-	-	-	-
PC5. • Mortar : Introduction, Ingredients & Function, Properties of good mortar • & Uses: Types of Mortar on the bases of –Bulk density, Kinds of binding • material, Nature of application, Precautions in using mortar.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC6. • Concrete : Introduction, Ingredients& Function, Properties of different • type concrete, Gradation of concrete, Preparation of concrete mix-hand • mixing, machine mixing, Curing of concrete.	-	-	-	-
PC7. • Timber : Introduction, Uses of timber: Classification of trees, Structure of • tree: Defects in timber due to-conversion, fungi, natural forces, insects, • characteristics of good timber.	-	-	-	-
PC8. • Bitumen : Introduction, Flash and Fire point of bitumen, Introduction of all • types of Bitumen -Penetration Grade Bitumen, Oxidized Bitumen Grades, • Cut Back Bitumen, Bitumen Emulsion, Polymer Modified Bitumen.	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CON/N0805
NOS Name	Use of building materials and their function and construction procedure
Sector	Construction
Sub-Sector	
Occupation	Project Management (Structural Design and Analysis)
NSQF Level	4.5
Credits	1
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

Qualification Pack

MSME/CON/N0803: Analyze concrete & steel structures, applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop

Description

After completion of course Student should be able to: Demonstrate STAAD- PRO, & its uses. Do frame structure, steel structure & applying properties, loads, shear force and bending moment. Do design of steel, /concreate structure & staad foundation.

Scope

The scope covers the following :

- After completion of course Student should be able to:
- Demonstrate STAAD- PRO, & its uses. Do frame structure, steel structure & applying properties, loads, shear
- force and bending moment. Do design of steel, /concreate structure & staad foundation.

Elements and Performance Criteria

MSME/ADSDA/02 Analyze concrete & steel structures, applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop

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

PC1. Identify the materials as per their properties.

PC2. Analyze problem related to elastic constant.

PC3. • Solve problem related to cantilever beam subjected by point load, UDL &
• by both of them, solving problem related to simply supported beam
• subjected by point load, UDL & by both point load & UDL. Solving problem
• related to overhanging beam subjected by point load & UDL .Finding out
• S.F.D & B.M.D. in continuous beam.

PC4. • Solve problem related to moment distribution method & slope deflection
• method.

PC5. Review and analyze the civil core problems.

PC6. • Calculate the coordinate system manually in paper & using that
• coordinate points create frame structure & steel structure in STAAD pro
• software.

PC7. • Operate feeding of the co-ordinates in STAAD pro & using tools like copy,
• paste, insert nodes, views, check dimension, rotate, text, change colors,
• and choose units with practice. Use auto cad software to transfer the file
• from auto cad to STAAD pro (using ID point system).

PC8.	• Prepare water tank by using translational repeat & circular repeat & filling • the water tank with plates (concrete slab) Triangular, Quad and by usingauto cad software (ID points system), manually calculate amount of water • required, find out specification of water tank & use grid system to form • the transmission tower & use different types of planes and circular repeat, • Generate truss in STAAD pro by using translational repeat & circular • repeat make surface to cover the roof.
PC9.	• Use property option to define material over the structure, Define different • shapes, Ex: - Circle, Rectangle, Tee, Trapezoidal. Use group option, Assign • material over the structure, and define Angie, s-shape, channel, pipe • section for steel structure. Manually find out structure, Dead & Live loads • Ex: - slab weight, wall weight, column weight, beam weight, live loads & • using I.S codes to calculate basic wind speed & pressure, according to the • different region by manually. Apply the calculated pre
PC10.	• Generate concrete parameters to design column, beam & slab by using IS • 456 code. Use STAAD pro to get elaborated details of beam, column & get • working drawings from auto cad.
PC11.	• Use STAAD pro to define various types of beams such as, simple supported • beam, fixed beam, cantilever beam, overhanging beam, continuous beam • & different types of supports
PC12.	• Use STAAD pro to design steel structures Ex. tower, truss & find out the • eligible members. Use the surface panel models to design shear walls(RC • wall)using lift room Including practice & STAAD foundation to design, pile, • mat, isolated, combined footings.
PC13.	• Work with object & modifier, reactors with 3Ds max. Work with grids, Use • snap tool, Move an object, Rotate an object, Mirror an object, Clone an • object
PC14.	• Create floor plan, elevation, Work with editable poly objects, Modify • editable poly object. Make shapes by using spline & Modify spline object • using sub object.
PC15.	• Draw the drawing adding materials to object and refer libraries, • Understand the multi/sub-object for the window & doors, UVW map & • make the rendering.
PC16.	• Operate lighting & different type of camera. Make scaling renderer & • mental ray/ renderer Use texture in 3d building by using 3ds max • software.
PC17.	• Work with v-ray, Set v-ray, V-ray rendering & animation in building. Work • with free camera & biped in drawing
PC18.	• Provide texture on existing modern building by using Photoshop tools. • Menus and panel, Open new files. Open existing files.
PC19.	• Create and view a new document Customizing the interface Setting • preferences.
PC20.	• Sketch multiple images use by rulers' guides, & grids, Adjust colors with • the new adjustment panel.
PC21.	• Resize the images by pixels & resolution using commands. Cut the images. • Use tools for Color correction & Effects (blur, noise etc).
PC22.	• Create a new project, Sketch element, Modify an element, Move an • element, Rotate an element, Mirror an element, Delete an element, Work • with project view.

PC23.	Create levels, Work with level, elevation & Floor plan.
PC24.	• Work with Basic wall, Curtain wall, Stacked wall. Add doors to a wall, Add • window to a wall & component.
PC25.	• Use align tools, Split tools Trim tools, Offset tools, Match type tools, Set • color for wall. Understand section libraries, Create a floor, Modify floor, • Create roof, Modify roof, Create ceiling, Modify ceiling, Cut open in.
PC26.	Create different types of stairs using stair tool. Create ramp. Create railing.
PC27.	• Use of Model in-place elements. Work with different tool like extrude, • blend, sweep, revolve, swept blend, void.
PC28.	• Identify Temporary dimension, Permanent dimension, modify dimension, • Room & area Analyze Area, Color fill skim, Camera views Work through.
PC29.	• Do the rendering work flow, Use light, Add plants & entourage, Render & • image Understand the sectioning, floor plan, elevation, Work with sheets. • Use title block, Print the drawing.
PC30.	• Import AutoCAD file in Revit software. Export Revit file to AutoCAD and • 3Ds Max software.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADSDA/02 Analyze concrete & steel structures, applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop	**100**	**-**	**-**	**-**
PC1. Identify the materials as per their properties.	-	-	-	-
PC2. Analyze problem related to elastic constant.	-	-	-	-
PC3. • Solve problem related to cantilever beam subjected by point load, UDL & • by both of them, solving problem related to simply supported beam • subjected by point load, UDL & by both point load & UDL. Solving problem • related to overhanging beam subjected by point load & UDL .Finding out • S.F.D & B.M.D. in continuous beam.	-	-	-	-
PC4. • Solve problem related to moment distribution method & slope deflection • method.	-	-	-	-
PC5. Review and analyze the civil core problems.	-	-	-	-
PC6. • Calculate the coordinate system manually in paper & using that • coordinate points create frame structure & steel structure in STAAD pro • software.	-	-	-	-
PC7. • Operate feeding of the co-ordinates in STAAD pro & using tools like copy, • paste, insert nodes, views, check dimension, rotate, text, change colors, • and choose units with practice. Use auto cad software to transfer the file • from auto cad to STAAD pro (using ID point system).	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC8. • Prepare water tank by using translational repeat & circular repeat & filling • the water tank with plates (concrete slab) Triangular, Quad and by usingauto cad software (ID points system), manually calculate amount of water • required, find out specification of water tank & use grid system to form • the transmission tower & use different types of planes and circular repeat, • Generate truss in STAAD pro by using translational repeat & circular • repeat make surface to cover the roof.	-	-	-	-
PC9. • Use property option to define material over the structure, Define different • shapes, Ex: - Circle, Rectangle, Tee, Trapezoidal. Use group option, Assign • material over the structure, and define Angie, s-shape, channel, pipe • section for steel structure. Manually find out structure, Dead & Live loads • Ex: - slab weight, wall weight, column weight, beam weight, live loads & • using I.S codes to calculate basic wind speed & pressure, according to the • different region by manually. Apply the calculated pre	-	-	-	-
PC10. • Generate concrete parameters to design column, beam & slab by using IS • 456 code. Use STAAD pro to get elaborated details of beam, column & get • working drawings from auto cad.	-	-	-	-
PC11. • Use STAAD pro to define various types of beams such as, simple supported • beam, fixed beam, cantilever beam, overhanging beam, continuous beam • & different types of supports	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. • Use STAAD pro to design steel structures Ex. tower, truss & find out the • eligible members. Use the surface panel models to design shear walls(RC • wall)using lift room Including practice & STAAD foundation to design, pile, • mat, isolated, combined footings.	-	-	-	-
PC13. • Work with object & modifier, reactors with 3Ds max. Work with grids, Use • snap tool, Move an object, Rotate an object, Mirror an object, Clone an • object	-	-	-	-
PC14. • Create floor plan, elevation, Work with editable poly objects, Modify • editable poly object. Make shapes by using spline & Modify spline object • using sub object.	-	-	-	-
PC15. • Draw the drawing adding materials to object and refer libraries, • Understand the multi/sub-object for the window & doors, UVW map & • make the rendering.	-	-	-	-
PC16. • Operate lighting & different type of camera. Make scaling renderer & • mental ray/ renderer Use texture in 3d building by using 3ds max • software.	-	-	-	-
PC17. • Work with v-ray, Set v-ray, V-ray rendering & animation in building. Work • with free camera & biped in drawing	-	-	-	-
PC18. • Provide texture on existing modern building by using Photoshop tools. • Menus and panel, Open new files. Open existing files.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC19. • Create and view a new document Customizing the interface Setting • preferences.	-	-	-	-
PC20. • Sketch multiple images use by rulers' guides, & grids, Adjust colors with • the new adjustment panel.	-	-	-	-
PC21. • Resize the images by pixels & resolution using commands. Cut the images. • Use tools for Color correction & Effects (blur, noise etc).	-	-	-	-
PC22. • Create a new project, Sketch element, Modify an element, Move an • element, Rotate an element, Mirror an element, Delete an element, Work • with project view.	-	-	-	-
PC23. Create levels, Work with level, elevation & Floor plan.	-	-	-	-
PC24. • Work with Basic wall, Curtain wall, Stacked wall. Add doors to a wall, Add • window to a wall & component.	-	-	-	-
PC25. • Use align tools, Split tools Trim tools, Offset tools, Match type tools, Set • color for wall. Understand section libraries, Create a floor, Modify floor, • Create roof, Modify roof, Create ceiling, Modify ceiling, Cut open in.	-	-	-	-
PC26. Create different types of stairs using stair tool. Create ramp. Create railing.	-	-	-	-
PC27. • Use of Model in-place elements. Work with different tool like extrude, • blend, sweep, revolve, swept blend, void.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC28. • Identify Temporary dimension, Permanent dimension, modify dimension, • Room & area Analyze Area, Color fill skim, Camera views Work through.	-	-	-	-
PC29. • Do the rendering work flow, Use light, Add plants & entourage, Render & • image Understand the sectioning, floor plan, elevation, Work with sheets. • Use title block, Print the drawing.	-	-	-	-
PC30. • Import AutoCAD file in Revit software. Export Revit file to AutoCAD and • 3Ds Max software.	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CON/N0803
NOS Name	Analyze concrete & steel structures, applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop
Sector	Construction
Sub-Sector	
Occupation	Project Management (Structural Design and Analysis)
NSQF Level	4.5
Credits	1
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

Qualification Pack

MSME/CON/N0802: Sketch Architectural drawings, section view,3D View.

Description

After completion of course Student should be able to Apply safe working practices.

Scope

The scope covers the following :

- After completion of course Student should be able to Apply safe working practices.

Elements and Performance Criteria

MSME/ADSDA/01 Sketch Architectural drawings, section view,3D View.

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

PC1. Do exercises to develop drawing manually on drawing sheet.

PC2. • Do unit conversation & make the plain scale, diagonal scale, Vernier scale, • comparative scale and scale of chord.

PC3. • Differentiate between 1st angle& 3rd angle projection. Draw orthographic • views in 1st and 3rd angle projection method

PC4. • Identify different types of Stairs, Parts of stairs, Different sizes of doors • and windows by using technical terms of door and window

PC5. Identify the culverts, syphons, and bridges. Design PEB structure.

PC6. • Calculate the coordinate system in manually & using by AutoCAD • software.

PC7. Draw all the drawing & diagram by using software.

PC8. • Make practice some command option, arc& TEXT option by using In all the • drawing & diagram

PC9. • Identify function &use of Hatching, gradient, Layer in drawing or • building plan

PC10. • Set the dimension, scale& modify, increase /decrease the object by using • scale factor and create the interior design in the building drawing.

PC11. • Identify to make the steel structure manual in paper sheet & also system. • Calculating the steel property(volume, weight, density)

PC12. • Set the 3D toolbar & 3D views. Create 3D Drawing & modeling in • building plan by using modeling toolbar (extrude, subtract, union, press • pull, sweep, loft, revolve, box or other option) & modifying the 3D building • model by using solid editing toolbar (Extrude face, move face, shell, color • face, chamfer edge, fillet edge or other option).

PC13. • Make spiral stair case & details, Put material texture on spiral stair case & • building drawing. Insert block, W block, block & create template with • proper dimension and using scale in the drawing.

PC14. • Draw Layout plan of column, foundation & beam,Draw Detail drawing of • R.C.C Beam, column, stair, slab, foundation, underground & over head • tank & septic tank.

PC15. • Create 2D plan of soak pit, septic tank by using 2D option AutoCAD
• software. Set the layout plan for plotting or printing & transfer pdf.
• format. Create 2D plan & 3D building model by using 2D & 3D option in
• AutoCAD software.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADSDA/01 Sketch Architectural drawings, section view,3D View.	-	100	-	-
PC1. Do exercises to develop drawing manually on drawing sheet.	-	-	-	-
PC2. • Do unit conversation & make the plain scale, diagonal scale, Vernier scale, • comparative scale and scale of chord.	-	-	-	-
PC3. • Differentiate between 1st angle& 3rd angle projection. Draw orthographic • views in 1st and 3rd angle projection method	-	-	-	-
PC4. • Identify different types of Stairs, Parts of stairs, Different sizes of doors • and windows by using technical terms of door and window	-	-	-	-
PC5. Identify the culverts, syphons, and bridges. Design PEB structure.	-	-	-	-
PC6. • Calculate the coordinate system in manually & using by AutoCAD • software.	-	-	-	-
PC7. Draw all the drawing & diagram by using software.	-	-	-	-
PC8. • Make practice some command option, arc& TEXT option by using In all the • drawing & diagram	-	-	-	-
PC9. • Identify function &use of Hatching, gradient, Layer in drawing or • building plan	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. • Set the dimension, scale& modify, increase /decrease the object by using • scale factor and create the interior design in the building drawing.	-	-	-	-
PC11. • Identify to make the steel structure manual in paper sheet & also system. • Calculating the steel property(volume, weight, density)	-	-	-	-
PC12. • Set the 3D toolbar & 3D views. Create 3D Drawing & modeling in • building plan by using modeling toolbar (extrude, subtract, union, press • pull, sweep, loft, revolve, box or other option) & modifying the 3D building • model by using solid editing toolbar (Extrude face, move face, shell, color • face, chamfer edge, fillet edge or other option).	-	-	-	-
PC13. • Make spiral stair case & details, Put material texture on spiral stair case & • building drawing. Insert block, W block, block & create template with • proper dimension and using scale in the drawing.	-	-	-	-
PC14. • Draw Layout plan of column, foundation & beam,Draw Detail drawing of • R.C.C Beam, column, stair, slab, foundation, underground & over head • tank & septic tank.	-	-	-	-
PC15. • Create 2D plan of soak pit, septic tank by using 2D option AutoCAD • software. Set the layout plan for plotting or printing & transfer pdf. • format. Create 2D plan & 3D building model by using 2D & 3D option in • AutoCAD software.	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CON/N0802
NOS Name	Sketch Architectural drawings, section view,3D View.
Sector	Construction
Sub-Sector	
Occupation	Project Management (Structural Design and Analysis)
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

Qualification Pack

MSME/CON/N0801: Sketch Architectural drawings, section view,3D View.

Description

After completion of course Student should be able to Apply safe working practices.

Scope

The scope covers the following :

- After completion of course Student should be able to Apply safe working practices.

Elements and Performance Criteria

MSME/ADSDA/01 Sketch Architectural drawings, section view,3D View.

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

PC1. Do exercises to develop drawing manually on drawing sheet.

PC2. • Do unit conversation & make the plain scale, diagonal scale, Vernier scale,
• comparative scale and scale of chord.

PC3. • Differentiate between 1st angle& 3rd angle projection. Draw orthographic
• views in 1st and 3rd angle projection method

PC4. • Identify different types of Stairs, Parts of stairs, Different sizes of doors
• and windows by using technical terms of door and window

PC5. Identify the culverts, syphons, and bridges. Design PEB structure.

PC6. • Calculate the coordinate system in manually & using by AutoCAD
• software.

PC7. Draw all the drawing & diagram by using software.

PC8. • Make practice some command option, arc& TEXT option by using In all the
• drawing & diagram

PC9. • Identify function &use of Hatching, gradient, Layer in drawing or
• building plan

PC10. • Set the dimension, scale& modify, increase /decrease the object by using
• scale factor and create the interior design in the building drawing.

PC11. • Identify to make the steel structure manual in paper sheet & also system.
• Calculating the steel property(volume, weight, density)

PC12. • Set the 3D toolbar & 3D views. Create 3D Drawing & modeling in
• building plan by using modeling toolbar (extrude, subtract, union, press
• pull, sweep, loft, revolve, box or other option) & modifying the 3D building
• model by using solid editing toolbar (Extrude face, move face, shell, color
• face, chamfer edge, fillet edge or other option).

PC13. • Make spiral stair case & details, Put material texture on spiral stair case &
• building drawing. Insert block, W block, block & create template with
• proper dimension and using scale in the drawing.

PC14. • Draw Layout plan of column, foundation & beam,Draw Detail drawing of
• R.C.C Beam, column, stair, slab, foundation, underground & over head
• tank & septic tank.

PC15. • Create 2D plan of soak pit, septic tank by using 2D option AutoCAD
• software. Set the layout plan for plotting or printing & transfer pdf.
• format. Create 2D plan & 3D building model by using 2D & 3D option in
• AutoCAD software.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADSDA/01 Sketch Architectural drawings, section view,3D View.	**100**	**-**	**-**	**-**
PC1. Do exercises to develop drawing manually on drawing sheet.	-	-	-	-
PC2. • Do unit conversation & make the plain scale, diagonal scale, Vernier scale, • comparative scale and scale of chord.	-	-	-	-
PC3. • Differentiate between 1st angle& 3rd angle projection. Draw orthographic • views in 1st and 3rd angle projection method	-	-	-	-
PC4. • Identify different types of Stairs, Parts of stairs, Different sizes of doors • and windows by using technical terms of door and window	-	-	-	-
PC5. Identify the culverts, syphons, and bridges. Design PEB structure.	-	-	-	-
PC6. • Calculate the coordinate system in manually & using by AutoCAD • software.	-	-	-	-
PC7. Draw all the drawing & diagram by using software.	-	-	-	-
PC8. • Make practice some command option, arc& TEXT option by using In all the • drawing & diagram	-	-	-	-
PC9. • Identify function &use of Hatching, gradient, Layer in drawing or • building plan	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. • Set the dimension, scale& modify, increase /decrease the object by using • scale factor and create the interior design in the building drawing.	-	-	-	-
PC11. • Identify to make the steel structure manual in paper sheet & also system. • Calculating the steel property(volume, weight, density)	-	-	-	-
PC12. • Set the 3D toolbar & 3D views. Create 3D Drawing & modeling in • building plan by using modeling toolbar (extrude, subtract, union, press • pull, sweep, loft, revolve, box or other option) & modifying the 3D building • model by using solid editing toolbar (Extrude face, move face, shell, color • face, chamfer edge, fillet edge or other option).	-	-	-	-
PC13. • Make spiral stair case & details, Put material texture on spiral stair case & • building drawing. Insert block, W block, block & create template with • proper dimension and using scale in the drawing.	-	-	-	-
PC14. • Draw Layout plan of column, foundation & beam,Draw Detail drawing of • R.C.C Beam, column, stair, slab, foundation, underground & over head • tank & septic tank.	-	-	-	-
PC15. • Create 2D plan of soak pit, septic tank by using 2D option AutoCAD • software. Set the layout plan for plotting or printing & transfer pdf. • format. Create 2D plan & 3D building model by using 2D & 3D option in • AutoCAD software.	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CON/N0801
NOS Name	Sketch Architectural drawings, section view,3D View.
Sector	Construction
Sub-Sector	
Occupation	Project Management (Structural Design and Analysis)
NSQF Level	4.5
Credits	1
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

MSME/CON/N0808: Estimation of building with rate analysis of civil works

Description

After completion of course Student should be able to Understand the preparation of an Abstract Estimate and detailed estimate of building.

Scope

The scope covers the following :

- After completion of course Student should be able to
- Understand the preparation of an Abstract Estimate and detailed estimate of building.

Elements and Performance Criteria

MSME/ADSDA/05 Estimation of building with rate analysis of civil works.

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

PC1. Estimate, requirements for building design.

PC2. • Calculate number of brick required for area, weight of brick, different brick
• densities required cost percentage of labor & different cost percentage of
• material.

PC3. Calculate plinth rate & cube rate

PC4. • Calculate Lime concrete, footings, plinth height, plinth wall and super
• structure wall.

PC5. Solve problem with long and short wall and centerline method.

PC6. • Solve problem with ratio of cement, fine aggregate & coarse aggregate.
• Fresh technical siltation rate of different material with volume calculation.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADSDA/05 Estimation of building with rate analysis of civil works.	**100**	**-**	**-**	**-**
PC1. Estimate, requirements for building design.	-	-	-	-
PC2. • Calculate number of brick required for area, weight of brick, different brick • densities required cost percentage of labor & different cost percentage of • material.	-	-	-	-
PC3. Calculate plinth rate & cube rate	-	-	-	-
PC4. • Calculate Lime concrete, footings, plinth height, plinth wall and super • structure wall.	-	-	-	-
PC5. Solve problem with long and short wall and centerline method.	-	-	-	-
PC6. • Solve problem with ratio of cement, fine aggregate & coarse aggregate. • Fresh technical siltation rate of different material with volume calculation.	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CON/N0808
NOS Name	Estimation of building with rate analysis of civil works
Sector	Construction
Sub-Sector	
Occupation	Project Management (Structural Design and Analysis)
NSQF Level	4.5
Credits	1
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

MSME/CON/N0807: Intro to surveying, leveling, types, GPS/DGPS function & uses.

Description

After completion of course Student should be able to Definition of surveying, classification based upon the nature of the field survey.

Scope

The scope covers the following :

- After completion of course Student should be able to
- Definition of surveying, classification based upon the nature of the field survey.

Elements and Performance Criteria

MSME/ADSDA/04 Intro to surveying, leveling, types, GPS/DGPS function & uses.

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

PC1. Do leveling & surveying

PC2. • Perform different operations using auto level/digital level and calculate • various parameters.

PC3. • Perform rise and fall method, error correction & do Fly leveling, profile • leveling, simple leveling.

PC4. Performing by long section & cross section method create road profile.

PC5. • Do operational panel & other plants of the instruments with the help of • machine in field.

PC6. • Do centering with the optical plummet eye piece as per procedure with • the leaser plummet, do leveling of the circle level with the help of • machine.

PC7. • Do Job selection, Job Details, Job detection, Station orientation of points • by help of machine

PC8. • Shift the instrument from one station to another station & Download • Data.

PC9. • Process data in computer, transfer format to CSV, DWG & DXF with • Specter link software

PC10. After transferring process data, Create Topo map in AutoCAD software.

PC11. • Identify main segments used for navigation & Differentiate between the • mobile GPS, GPS instrument, DGPS

PC12. Measure the point to point distance using GPS device through satellite.

PC13. Measure the point to point distance using DGPS device through satellite

PC14. • Do the GPS work in survey. Solve the common errors of GPS survey & • Principles of GPS device.

PC15. • Do the DGPS work in survey. Solve the common errors of DGPS survey & • Principles of DGPS device.

PC16. • Find out coordinate of any point by Static Survey and creating topo map
• by PPK Survey/RTK Survey.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADSDA/04 Intro to surveying, leveling, types, GPS/DGPS function & uses.	-	100	-	-
PC1. Do leveling & surveying	-	-	-	-
PC2. • Perform different operations using auto level/digital level and calculate • various parameters.	-	-	-	-
PC3. • Perform rise and fall method, error correction & do Fly leveling, profile • leveling, simple leveling.	-	-	-	-
PC4. Performing by long section & cross section method create road profile.	-	-	-	-
PC5. • Do operational panel & other plants of the instruments with the help of • machine in field.	-	-	-	-
PC6. • Do centering with the optical plummet eye piece as per procedure with • the leaser plummet, do leveling of the circle level with the help of • machine.	-	-	-	-
PC7. • Do Job selection, Job Details, Job detection, Station orientation of points • by help of machine	-	-	-	-
PC8. • Shift the instrument from one station to another station & Download • Data.	-	-	-	-
PC9. • Process data in computer, transfer format to CSV, DWG & DXF with • Specter link software	-	-	-	-
PC10. After transferring process data, Create Topo map in AutoCAD software.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. • Identify main segments used for navigation & Differentiate between the • mobile GPS, GPS instrument, DGPS	-	-	-	-
PC12. Measure the point to point distance using GPS device through satellite.	-	-	-	-
PC13. Measure the point to point distance using DGPS device through satellite	-	-	-	-
PC14. • Do the GPS work in survey. Solve the common errors of GPS survey & • Principles of GPS device.	-	-	-	-
PC15. • Do the DGPS work in survey. Solve the common errors of DGPS survey & • Principles of DGPS device.	-	-	-	-
PC16. • Find out coordinate of any point by Static Survey and creating topo map • by PPK Survey/RTK Survey.	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CON/N0807
NOS Name	Intro to surveying, leveling, types, GPS/DGPS function & uses.
Sector	Construction
Sub-Sector	
Occupation	Project Management (Structural Design and Analysis)
NSQF Level	4.5
Credits	1
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

Qualification Pack

MSME/CON/N0809: Employability Skills & Entrepreneurship

Description

This NOS unit is about carrying out operations about learners applying basic and advanced Employability Skills concepts in real life situations to become a successful 21st century professional

Scope

The scope covers the following :

- The scope covers the following:
- plan and prepare advance employability skills activities
- carry out the work to plan and prepare the learners to build key knowledge and skills for career
- development in the 21st century using advanced employability skills
- documenting the record

Elements and Performance Criteria

MSME/ES&E/02 Employability Skills & Entrepreneurship

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

PC1. Explain occupational health and Safety

PC2. Explain about safety rules

PC3. • State the name and location of people responsible for health and safety in • the workplace.

PC4. • Identify employability skills required for jobs in various industries. & • Identify and explore learning and employability portals

PC5. • Recognize the significance of constitutional values, including civic rights and • duties, citizenship, responsibility towards society etc. and personal values • and ethics such as honesty, integrity, caring and respecting others, etc

PC6. • Follow environmentally sustainable practices.& Recognize the significance • of 21st Century Skills for employment

PC7. • Practice the 21st Century Skills such as Self-Awareness, Behavior Skills, time • management, critical and adaptive thinking, problem-solving, creative • thinking, social and cultural awareness, emotional awareness, learning to • learn for continuous learning etc. in personal and professional life

PC8. • Use basic English for everyday conversation in different contexts, in person • and over the telephone.

PC9. How to Minimize the team conflicts & Explain Ethics & values.

PC10. • Read and understand routine information, notes, instructions, mails, letters • etc. written in English

PC11. • Write short messages, notes, letters, e-mails etc. in English & Understand • the difference between job and career.

PC12. • Prepare a career development plan with short- and long-term goals, based • on aptitude & Discuss the main types of electronic funds transfers.

PC13. • Follow verbal and non-verbal communication etiquette and active listening
• techniques in various settings & work collaboratively with others in a team.

PC14. • Communicate and behave appropriately with all genders and PwD &
• escalate any issues related to sexual harassment at workplace according to
• POSH Act.

PC15. • Select financial institutions, products, and services as per requirement &
• carry out offline and online financial transactions, safely and securely.

PC16. • Identify common components of salary and compute income, expenses,
• taxes, investments etc & identify relevant rights and laws and use legal aids
• to fight against legal exploitation.

PC17. • Operate digital devices and carry out basic internet operations securely and
• safely & use e- mail and social media platforms and virtual collaboration
• tools to work effectively.

PC18. Use basic features of word processor, spreadsheets, and presentations.

PC19. • Identify different types of Entrepreneurship and Enterprises and assess
• opportunities for potential business through research & develop a business
• plan and a work model, considering the 4Ps of Marketing Product, Price,
• Place and Promotion.

PC20. • Identify sources of funding, anticipate, and mitigate any financial/ legal
• hurdles for the potential business opportunity.

PC21. • Identify different types of customers & identify and respond to customer
• requests and needs in a professional manner.

PC22. Follow appropriate hygiene and grooming standards.

PC23. • Create a professional Curriculum vitae (Résumé) & search for suitable jobs
• using reliable offline and online sources such as Employment exchange,
• recruitment agencies, newspapers etc. and job portals, respectively.

PC24. • Apply to identified job openings using offline /online methods as per
• requirement & answer questions politely, with clarity and confidence,
• during recruitment and selection.

PC25. • Identify apprenticeship opportunities and register for it as per guidelines
• and requirements.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ES&E/02 Employability Skills & Entrepreneurship	**100**	**-**	**-**	**-**
PC1. Explain occupational health and Safety	-	-	-	-
PC2. Explain about safety rules	-	-	-	-
PC3. • State the name and location of people responsible for health and safety in • the workplace.	-	-	-	-
PC4. • Identify employability skills required for jobs in various industries. & • Identify and explore learning and employability portals	-	-	-	-
PC5. • Recognize the significance of constitutional values, including civic rights and • duties, citizenship, responsibility towards society etc. and personal values • and ethics such as honesty, integrity, caring and respecting others, etc	-	-	-	-
PC6. • Follow environmentally sustainable practices.& Recognize the significance • of 21st Century Skills for employment	-	-	-	-
PC7. • Practice the 21st Century Skills such as Self-Awareness, Behavior Skills, time • management, critical and adaptive thinking, problem-solving, creative • thinking, social and cultural awareness, emotional awareness, learning to • learn for continuous learning etc. in personal and professional life	-	-	-	-
PC8. • Use basic English for everyday conversation in different contexts, in person • and over the telephone.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. How to Minimize the team conflicts & Explain Ethics & values.	-	-	-	-
PC10. • Read and understand routine information, notes, instructions, mails, letters • etc. written in English	-	-	-	-
PC11. • Write short messages, notes, letters, e-mails etc. in English & Understand • the difference between job and career.	-	-	-	-
PC12. • Prepare a career development plan with short- and long-term goals, based • on aptitude & Discuss the main types of electronic funds transfers.	-	-	-	-
PC13. • Follow verbal and non-verbal communication etiquette and active listening • techniques in various settings & work collaboratively with others in a team.	-	-	-	-
PC14. • Communicate and behave appropriately with all genders and PwD & • escalate any issues related to sexual harassment at workplace according to • POSH Act.	-	-	-	-
PC15. • Select financial institutions, products, and services as per requirement & • carry out offline and online financial transactions, safely and securely.	-	-	-	-
PC16. • Identify common components of salary and compute income, expenses, • taxes, investments etc & identify relevant rights and laws and use legal aids • to fight against legal exploitation.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC17. • Operate digital devices and carry out basic internet operations securely and • safely & use e- mail and social media platforms and virtual collaboration • tools to work effectively.	-	-	-	-
PC18. Use basic features of word processor, spreadsheets, and presentations.	-	-	-	-
PC19. • Identify different types of Entrepreneurship and Enterprises and assess • opportunities for potential business through research & develop a business • plan and a work model, considering the 4Ps of Marketing Product, Price, • Place and Promotion.	-	-	-	-
PC20. • Identify sources of funding, anticipate, and mitigate any financial/ legal • hurdles for the potential business opportunity.	-	-	-	-
PC21. • Identify different types of customers & identify and respond to customer • requests and needs in a professional manner.	-	-	-	-
PC22. Follow appropriate hygiene and grooming standards.	-	-	-	-
PC23. • Create a professional Curriculum vitae (Résumé) & search for suitable jobs • using reliable offline and online sources such as Employment exchange, • recruitment agencies, newspapers etc. and job portals, respectively.	-	-	-	-
PC24. • Apply to identified job openings using offline /online methods as per • requirement & answer questions politely, with clarity and confidence, • during recruitment and selection.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. • Identify apprenticeship opportunities and register for it as per guidelines • and requirements.	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CON/N0809
NOS Name	Employability Skills & Entrepreneurship
Sector	Construction
Sub-Sector	
Occupation	Project Management (Structural Design and Analysis)
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

Qualification Pack

MSME/CON/N0810: Analyze concrete & steel structures,applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop.

Description

After completion of course Student should be able to: Demonstrate STAAD- PRO, & its uses. Do frame structure, steel structure & applying properties, loads, shear force and bending moment. Do design of steel, /concreate structure & staad foundation.

Scope

The scope covers the following :

- After completion of course Student should be able to:
- Demonstrate STAAD- PRO, & its uses. Do frame structure, steel structure & applying properties, loads, shear
- force and bending moment. Do design of steel, /concreate structure & staad foundation.

Elements and Performance Criteria

MSME/ADSDA/02 Analyze concrete & steel structures, applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop

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

PC1. Identify the materials as per their properties.

PC2. Analyze problem related to elastic constant.

PC3. • Solve problem related to cantilever beam subjected by point load, UDL &
• by both of them, solving problem related to simply supported beam
• subjected by point load, UDL & by both point load & UDL. Solving problem
• related to overhanging beam subjected by point load & UDL .Finding out
• S.F.D & B.M.D. in continuous beam.

PC4. • Solve problem related to moment distribution method & slope deflection
• method.

PC5. Review and analyze the civil core problems.

PC6. • Calculate the coordinate system manually in paper & using that
• coordinate points create frame structure & steel structure in STAAD pro
• software.

PC7. • Operate feeding of the co-ordinates in STAAD pro & using tools like copy,
• paste, insert nodes, views, check dimension, rotate, text, change colors,
• and choose units with practice. Use auto cad software to transfer the file
• from auto cad to STAAD pro (using ID point system).

PC8.	• Prepare water tank by using translational repeat & circular repeat & filling • the water tank with plates (concrete slab) Triangular, Quad and by usingauto cad software (ID points system), manually calculate amount of water • required, find out specification of water tank & use grid system to form • the transmission tower & use different types of planes and circular repeat, • Generate truss in STAAD pro by using translational repeat & circular • repeat make surface to cover the roof.
PC9.	• Use property option to define material over the structure, Define different • shapes, Ex: - Circle, Rectangle, Tee, Trapezoidal. Use group option, Assign • material over the structure, and define Angie, s-shape, channel, pipe • section for steel structure. Manually find out structure, Dead & Live loads • Ex: - slab weight, wall weight, column weight, beam weight, live loads & • using I.S codes to calculate basic wind speed & pressure, according to the • different region by manually. Apply the calculated pre
PC10.	• Generate concrete parameters to design column, beam & slab by using IS • 456 code. Use STAAD pro to get elaborated details of beam, column & get • working drawings from auto cad.
PC11.	• Use STAAD pro to define various types of beams such as, simple supported • beam, fixed beam, cantilever beam, overhanging beam, continuous beam • & different types of supports
PC12.	• Use STAAD pro to design steel structures Ex. tower, truss & find out the • eligible members. Use the surface panel models to design shear walls(RC • wall)using lift room Including practice & STAAD foundation to design, pile, • mat, isolated, combined footings.
PC13.	• Work with object & modifier, reactors with 3Ds max. Work with grids, Use • snap tool, Move an object, Rotate an object, Mirror an object, Clone an • object
PC14.	• Create floor plan, elevation, Work with editable poly objects, Modify • editable poly object. Make shapes by using spline & Modify spline object • using sub object.
PC15.	• Draw the drawing adding materials to object and refer libraries, • Understand the multi/sub-object for the window & doors, UVW map & • make the rendering.
PC16.	• Operate lighting & different type of camera. Make scaling renderer & • mental ray/ renderer Use texture in 3d building by using 3ds max • software.
PC17.	• Work with v-ray, Set v-ray, V-ray rendering & animation in building. Work • with free camera & biped in drawing
PC18.	• Provide texture on existing modern building by using Photoshop tools. • Menus and panel, Open new files. Open existing files.
PC19.	• Create and view a new document Customizing the interface Setting • preferences.
PC20.	• Sketch multiple images use by rulers' guides, & grids, Adjust colors with • the new adjustment panel.
PC21.	• Resize the images by pixels & resolution using commands. Cut the images. • Use tools for Color correction & Effects (blur, noise etc).
PC22.	• Create a new project, Sketch element, Modify an element, Move an • element, Rotate an element, Mirror an element, Delete an element, Work • with project view.

PC23.	Create levels, Work with level, elevation & Floor plan.
PC24.	• Work with Basic wall, Curtain wall, Stacked wall. Add doors to a wall, Add • window to a wall & component.
PC25.	• Use align tools, Split tools Trim tools, Offset tools, Match type tools, Set • color for wall. Understand section libraries, Create a floor, Modify floor, • Create roof, Modify roof, Create ceiling, Modify ceiling, Cut open in.
PC26.	Create different types of stairs using stair tool. Create ramp. Create railing.
PC27.	• Use of Model in-place elements. Work with different tool like extrude, • blend, sweep, revolve, swept blend, void.
PC28.	• Identify Temporary dimension, Permanent dimension, modify dimension, • Room & area Analyze Area, Color fill skim, Camera views Work through.
PC29.	• Do the rendering work flow, Use light, Add plants & entourage, Render & • image Understand the sectioning, floor plan, elevation, Work with sheets. • Use title block, Print the drawing.
PC30.	• Import AutoCAD file in Revit software. Export Revit file to AutoCAD and • 3Ds Max software.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADSDA/02 Analyze concrete & steel structures, applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop	-	100	-	-
PC1. Identify the materials as per their properties.	-	-	-	-
PC2. Analyze problem related to elastic constant.	-	-	-	-
PC3. • Solve problem related to cantilever beam subjected by point load, UDL & • by both of them, solving problem related to simply supported beam • subjected by point load, UDL & by both point load & UDL. Solving problem • related to overhanging beam subjected by point load & UDL .Finding out • S.F.D & B.M.D. in continuous beam.	-	-	-	-
PC4. • Solve problem related to moment distribution method & slope deflection • method.	-	-	-	-
PC5. Review and analyze the civil core problems.	-	-	-	-
PC6. • Calculate the coordinate system manually in paper & using that • coordinate points create frame structure & steel structure in STAAD pro • software.	-	-	-	-
PC7. • Operate feeding of the co-ordinates in STAAD pro & using tools like copy, • paste, insert nodes, views, check dimension, rotate, text, change colors, • and choose units with practice. Use auto cad software to transfer the file • from auto cad to STAAD pro (using ID point system).	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC8. • Prepare water tank by using translational repeat & circular repeat & filling • the water tank with plates (concrete slab) Triangular, Quad and by usingauto cad software (ID points system), manually calculate amount of water • required, find out specification of water tank & use grid system to form • the transmission tower & use different types of planes and circular repeat, • Generate truss in STAAD pro by using translational repeat & circular • repeat make surface to cover the roof.	-	-	-	-
PC9. • Use property option to define material over the structure, Define different • shapes, Ex: - Circle, Rectangle, Tee, Trapezoidal. Use group option, Assign • material over the structure, and define Angie, s-shape, channel, pipe • section for steel structure. Manually find out structure, Dead & Live loads • Ex: - slab weight, wall weight, column weight, beam weight, live loads & • using I.S codes to calculate basic wind speed & pressure, according to the • different region by manually. Apply the calculated pre	-	-	-	-
PC10. • Generate concrete parameters to design column, beam & slab by using IS • 456 code. Use STAAD pro to get elaborated details of beam, column & get • working drawings from auto cad.	-	-	-	-
PC11. • Use STAAD pro to define various types of beams such as, simple supported • beam, fixed beam, cantilever beam, overhanging beam, continuous beam • & different types of supports	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. • Use STAAD pro to design steel structures Ex. tower, truss & find out the • eligible members. Use the surface panel models to design shear walls(RC • wall)using lift room Including practice & STAAD foundation to design, pile, • mat, isolated, combined footings.	-	-	-	-
PC13. • Work with object & modifier, reactors with 3Ds max. Work with grids, Use • snap tool, Move an object, Rotate an object, Mirror an object, Clone an • object	-	-	-	-
PC14. • Create floor plan, elevation, Work with editable poly objects, Modify • editable poly object. Make shapes by using spline & Modify spline object • using sub object.	-	-	-	-
PC15. • Draw the drawing adding materials to object and refer libraries, • Understand the multi/sub-object for the window & doors, UVW map & • make the rendering.	-	-	-	-
PC16. • Operate lighting & different type of camera. Make scaling renderer & • mental ray/ renderer Use texture in 3d building by using 3ds max • software.	-	-	-	-
PC17. • Work with v-ray, Set v-ray, V-ray rendering & animation in building. Work • with free camera & biped in drawing	-	-	-	-
PC18. • Provide texture on existing modern building by using Photoshop tools. • Menus and panel, Open new files. Open existing files.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC19. • Create and view a new document Customizing the interface Setting • preferences.	-	-	-	-
PC20. • Sketch multiple images use by rulers' guides, & grids, Adjust colors with • the new adjustment panel.	-	-	-	-
PC21. • Resize the images by pixels & resolution using commands. Cut the images. • Use tools for Color correction & Effects (blur, noise etc).	-	-	-	-
PC22. • Create a new project, Sketch element, Modify an element, Move an • element, Rotate an element, Mirror an element, Delete an element, Work • with project view.	-	-	-	-
PC23. Create levels, Work with level, elevation & Floor plan.	-	-	-	-
PC24. • Work with Basic wall, Curtain wall, Stacked wall. Add doors to a wall, Add • window to a wall & component.	-	-	-	-
PC25. • Use align tools, Split tools Trim tools, Offset tools, Match type tools, Set • color for wall. Understand section libraries, Create a floor, Modify floor, • Create roof, Modify roof, Create ceiling, Modify ceiling, Cut open in.	-	-	-	-
PC26. Create different types of stairs using stair tool. Create ramp. Create railing.	-	-	-	-
PC27. • Use of Model in-place elements. Work with different tool like extrude, • blend, sweep, revolve, swept blend, void.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC28. • Identify Temporary dimension, Permanent dimension, modify dimension, • Room & area Analyze Area, Color fill skim, Camera views Work through.	-	-	-	-
PC29. • Do the rendering work flow, Use light, Add plants & entourage, Render & • image Understand the sectioning, floor plan, elevation, Work with sheets. • Use title block, Print the drawing.	-	-	-	-
PC30. • Import AutoCAD file in Revit software. Export Revit file to AutoCAD and • 3Ds Max software.	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CON/N0810
NOS Name	Analyze concrete & steel structures,applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop.
Sector	Construction
Sub-Sector	
Occupation	Project Management (Structural Design and Analysis)
NSQF Level	4.5
Credits	10
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

as per QP

Minimum Aggregate Passing % at QP Level : 40

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Minimum Passing % at NOS Level: 40

(**Please note**: A Trainee must score the minimum percentage for each NOS separately as well as on the QP as a whole.)

Assessment Weightage

Compulsory NOS

Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MSME/CON/N0806.Intro to surveying, leveling, types, GPS/DGPS function & uses.	100	-	-	-	100	10
MSME/CON/N0805.Use of building materials and their function and construction procedure	100	-	-	-	100	10
MSME/CON/N0803.Analyze concrete & steel structures, applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop	100	-	-	-	100	10
MSME/CON/N0802.Sketch Architectural drawings, section view,3D View.	-	100	-	-	100	10
MSME/CON/N0801.Sketch Architectural drawings, section view,3D View.	100	-	-	-	100	10
MSME/CON/N0808.Estimation of building with rate analysis of civil works	100	-	-	-	100	10
MSME/CON/N0807.Intro to surveying, leveling, types, GPS/DGPS function & uses.	-	100	-	-	100	10
MSME/CON/N0809.Employability Skills & Entrepreneurship	100	-	-	-	100	10
MSME/CON/N0810.Analyze concrete & steel structures,applying properties & loads. Design exterior/interior, Render with 3Ds MAX & Revit, create color/shadow in Photoshop.	-	100	-	-	100	20
Total	**600**	**300**	**-**	**-**	**900**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Glossary

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.