Assessment Evidence Guide

For

“Steel Fixer/ Erector”

Level-3

Perform Basic Computer Operations

(Formative Assessment)

National Vocational & Technical

Training Commission

Instruction Sheet for the Candidate

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Perform Basic Computer Operations Maintain Safety at Site	**Assessment Date (DD/MM/YY):** **Assessment Time:**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **Assessment Task 1:** Candidate is required to install MS Office application and prepare a formatted document using MS word, specified by assessor. **Assessment Task 2:** Candidate is required sign in and sends an email as per instructions given by assessor. **And complete:** 1. **Knowledge assessment test (Written or Oral)** 2. **Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria 1:**Install drivers and applications according to the software specification **Performance Criteria 2:**Troubleshoot applications to trace and fix faults in a specific application to bring it in a running condition **Performance Criteria 3:** Compose a document as per the requirement. **Performance Criteria 4:** Format Word Document according to given requirements. **Performance Criteria 5:** Print Word Documents according to requirements. **Performance Criteria 6:**Check the connectivity of earthing with power equipment **Performance Criteria 7:** Check leads and cable for any visual damage before use.

	Assessment Task 2 **Performance Criteria 1:**Select email browser **Performance Criteria 2:**Go to sign in page **Performance Criteria 3:**Enter and confirm password **Performance Criteria 4:**Send an email
	Portfolios required at the time of assessment (if any) for

Assessors Judgment Guide

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature: ....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code:..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1	**Description of Assessment Task 1** Candidate is required to install MS Office application and prepare a formatted document using MS word, specified by assessor.

During the practical assessment, candidate demonstrated the following:			No	Remarks
1.	Install drivers and applications according to the software specification			
2.	Troubleshoot applications to trace and fix faults in a specific application to bring it in a running condition			
3.	Compose a document as per the requirement.			
4.	Format Word Document according to given requirements.			
5.	Print Word Documents according to requirements.			
6.	Check the connectivity of earthing with power equipment			
7.	Check leads and cable for any visual damage before use			

Competent ☐	Not Yet Competent ☐

Each Assessment Task (with performance criteria)

Assessment Task 2	**Description of Assessment Task2** Candidate is required sign in and sends an email as per instructions given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Select email browser			
2.	Go to sign in page			
3.	Enter and confirm password			
4.	Send an email			

Competent ☐	Not Yet Competent ☐

Knowledge Assessment

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Perform Basic Computer Operations	**Assessment Date (DD/MM/YY):** **Assessment Time:** 30 min		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT □ NOT YET COMPETENT □ Name of the Assessor:..... Assessor's code: Signature of the Assessor: ....

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. What is the use of this Ctrl+Esc key?	
2. What is the use of this Ctrl+Shift+Esc key?	
3. What is the use of this Ctrl+X in MS word key?	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
4. What is the use of this Ctrl+Vin MS word key?	
5. What is the use of this Ctrl+Ain MS word key?	
6. How to compose an email?	
7. What is the purpose of email?	

ANSWER KEY

Sr.	Answers
1.	Opens the Start menu.
2.	Opens Windows Task Manager.
3.	Cut
4.	Paste
5.	Select whole document
6.	Open mail box , create new mail message, fill out the new message form , enter email id, click on send button
7.	An email is a digital message sent electronically from one computer to one or more other computers.

Assessment Evidence Guide

For

“Steel Fixer/Erector”

Level-3

Interpret Bar Bending Schedule

(Formative Assessment)

National Vocational & Technical

Training Commission

Instruction Sheet for the Candidate

Title of Qualification: National Vocational Certificate Level3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Interpret Bar Bending Schedule	**Assessment Date (DD/MM/YY):** **Assessment Time :**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **Assessment Task 1:** Candidate is required to interpret bar bending schedule assigned by assessor. **Assessment Task 2:** Candidate is required to calculate volume of two different types of rebars and calculate percentage with respect of the total volume of rebars given by assessor. **And complete:** 1. **Knowledge assessment test (Written or Oral)** 2. **Portfolios at the time of assessment (if any)**

Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria 1:**Interpret structural drawing **Performance Criteria 2:** Make list of all the shapes of rebar in the structural drawing. **Performance Criteria 3:** Count the number of different shapes of the rebar and note in Table **Performance Criteria 4:**Measure spacing between bars **Performance Criteria 5:** Measure length of the concrete member **Performance Criteria 6:**Identify concrete cover **Performance Criteria 7:**Measure development length **Performance Criteria 8:** Calculate length of each rebar **Performance Criteria 9:**Identify density of each rebar **Performance Criteria 10:**Calculate unit weight of each rebar **Performance Criteria 11:**Calculate total weight of required rebar

Assessors Judgment Guide

(To be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature: ....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code:..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1	**Description of Assessment Task 1** Candidate is required to Interpret bar bending schedule assigned by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Interpret structural drawing			
2.	Make list of all the shapes of rebar in the structural drawing.			
3.	Count the number of different shapes of the rebar and note in Table			
4.	Measure spacing between bars			
5.	Measure length of the concrete member			
6.	Identify concrete cover			
7.	Measure development length			
8.	Calculate length of each rebar			
9.	Identify density of each rebar			
10.	Calculate unit weight of each rebar			
11.	Calculate total weight of required rebar			

Competent ☐	Not Yet Competent ☐

Knowledge Assessment

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Interpret Bar Bending Schedule	**Assessment Date (DD/MM/YY):** **Assessment Time:**30 min		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor: ....

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. Define reinforcement in concrete?	
2. Define curtailment?	
3. Define stirrups?	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
4. Enlist the types of steel bars.	
5. Enlist the types of beam.	
6. BOQ stand for?	
7. Enlist the types of column?	
8. Define reinforcement in beam?	
9. Define reinforcement in column?	
10. Define bar bending schedule?	

ANSWER KEY

Sr.	Answers
1.	Reinforced concrete (RC), also called reinforced cement concrete (RCC), is a composite material in which concrete's relatively low tensile strength and ductility are compensated for by the inclusion of reinforcement having higher tensile strength or ductility.
2.	Curtail bar in beam is a way of reducing the area of tensile reinforcement at points/areas (either on a beam/slab) where bending moment is minimum or zero for the purpose of achieving an economic design.
3.	A *stirrup* is a light frame or ring that holds the foot of a rider, attached to the saddle by a strap, often called a *stirrup*
4.	• Hot Rolled Deformed Bars. • Cold Rolled Steel Bars. • Mild Steel Bars. • Twisted Steel Bars. • Welded Steel Wire.
5.	• Simply Supported Beam. • Fixed Beam. • Cantilever Beam. • Continuous Beam. ... • Reinforced Concrete Beams. ... • Steel Beams. ... • Timber beams. ...
6.	Bill of Quantities
7.	• Square or Rectangular Column. • Circular Column. ... • L and T shaped Column. ... • Tied Column. ... • Spiral Column. ... • Composite Column. ... • Axially Loaded Column. ... • Uniaxial Eccentrically Loaded Column.
8.	Reinforcement are provided to resist tensile stresses due to bending and shear in beams for singly reinforced sections.
9.	The main role of transverse reinforcement in reinforced concrete columns is not to transfer the shear stress as it is mainly in the beams, but it is prevention buckling of longitudinal bars and transfer of tensile stresses
10.	Bar bending schedule generally describes the particulars of bars, shape of bending with sketches and total length and weight of the bars along with their numbers

Assessment Evidence Guide

For

“Steel Fixer/ Erector”

Level-3

Execute the Steelwork for the Foundations and the Necks

(Formative Assessment)

National Vocational & Technical

Training Commission

Instruction Sheet for the Candidate

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Execute the Steelwork for the Foundations and the Necks Maintain Safety at Site Plan and Organize Work Follow Safety Rules at Site	**Assessment Date (DD/MM/YY):** **Assessment Time :**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **Assessment Task 1:** Candidate is required to prepare the rebars for the foundationas per bar bending schedule given by assessor. **Assessment Task 2:** Candidate is required to erect the cage of the foundation with the cables as per bar bending schedule given by assessor. **Assessment Task 3:** Candidate is required to assemble parts of the foundations as per bar bending schedule given by assessor. **Assessment Task 4:** Candidate is required to use of spacer and cover block in foundation as per instruction given by assessor. **And complete:** 1. **Knowledge assessment test (Written or Oral)** 2. **Portfolios at the time of assessment (if any)**

Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria 1:** Prepare workplace for task **Performance Criteria 2:** Collect required equipment **Performance Criteria 3:**Check physical working condition of the tools **Performance Criteria 4:** Operate tools according to standard safety procedures. **Performance Criteria 5:**Plan task sequences for optimum efficiency **Performance Criteria 6:**Use PPE and apply safe work practices **Performance Criteria7:** Interpret reinforcement drawing **Performance Criteria 8:** Interpret bar bending schedule **Performance Criteria 9:** Measure the rebarsas per foundation and beam requirements as per bar bending schedule **Performance Criteria 10:** Straighten therebars **Performance Criteria 11:** Cut and bend required rebars **Performance Criteria 12:** **Performance Criteria 13:** Report unsafe condition to immediate supervisor **Performance Criteria 14:** Identify risk associated with job to be done. **Performance Criteria 15:** Identify manpower requirements according to job. **Performance Criteria 16:** Calculate the man hours as per job quantum. **Performance Criteria 17:** Calculate the cost of labor services. **Performance Criteria 18:** Assign the task to the sub ordinates. **Performance Criteria 19:**Monitor the working of sub ordinates
	Assessment Task 2 **Performance Criteria 1:**Separate the rebars according to diameter as per bending bar schedule of foundation **Performance Criteria 2:** Separate the rebars according to diameter as per bending bar schedule of foundation cage **Performance Criteria 3:**Place the cut rebars in foundation as per drawing and prepare required cage **Performance Criteria 4:**Tie rebars in cage foundation with binding wire / cables

	Assessment Task 3 **Performance Criteria 1:**Mark the neck columns in foundation **Performance Criteria 2:**Measure the rebars of neck column as per drawing **Performance Criteria 3:**Mark the points for cutting and shaping rebars as per measurements for neck and other foundation parts **Performance Criteria 4:**Prepare required rings / stirrups for neck column by cutting and bending of rebars. **Performance Criteria 5:**Bind rings and other rebars in foundation parts with MS binding wire
	Assessment Task 4 **Performance Criteria 1:** Select the spacer and cover block as per requirements **Performance Criteria 2:** Place spacer as per design **Performance Criteria 3:** Place cover blocks as per design

Assessors Judgment Guide

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature: ....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code:..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Each Assessment Task (with performance criteria)	
Assessment Task 1	**Description of Assessment Task 1** Prepare the rebars for the foundationas per bar bending schedule given by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Prepare workplace for task			
2.	Collect required equipment			
3.	Check physical working condition of the tools			
4.	Operate tools according to standard safety procedures.			
5.	Plan task sequences for optimum efficiency			
6.	Use PPE and apply safe work practices			
7.	Interpret reinforcement drawing			
8.	Interpret bar bending schedule			
9.	Measure the rebars as per foundation and beam requirements as per bar bending schedule			
10.	Straighten the rebars			
11.	Cut and bend required rebars			
12.	Report unsafe condition to immediate supervisor			
13.	Identify risk associated with job to be done.			
14.	Identify manpower requirements according to job.			
15.	Calculate the man hours as per job quantum.			
16.	Calculate the cost of labor services.			
17.	Assign the task to the sub ordinates			
18.	Monitor the working of sub ordinates			
19.	Prepare workplace for task			
20.	Collect required equipment			

21.	Check physical working condition of the tools			
22.	Operate tools according to standard safety procedures.			
23.	Plan task sequences for optimum efficiency			
24.	Use PPE and apply safe work practices			
25.	Interpret reinforcement drawing			
26.	Interpret bar bending schedule			
27.	Measure the rebars as per foundation and beam requirements as per bar bending schedule			
28.	Straighten the rebars			
29.	Cut and bend required rebars			
Competent ☐		Not Yet Competent ☐		

Assessment Task 2	**Description of Assessment Task 2** Erect the cage of the foundation with the cablesas per bar bending schedule given by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Separate the rebars according to diameter as per bending bar schedule of foundation			
2.	Separate the steel rebars according to diameter as per bending bar schedule of foundation cage			
3.	Place the cut rebars in foundation as per drawing and prepare required cage			
4.	Tie rebars in cage foundation with binding wire / cables			
Competent ☐		Not Yet Competent ☐		

Assessment Task 3	**Description of Assessment Task 3** Assemble the parts of the foundationas per bar bending schedule given by assessor.

During the practical assessment, candidate demonstrated the following:			No	Remarks
1.	Mark the neck columns in foundation			
2.	Measure the rebars of neck column as per drawing			
3.	Mark the points for cutting and shaping rebars as per measurements for neck and other foundation parts			
4.	Prepare required rings / stirrups for neck column and beam by cutting and bending of rebars.			
5.	Bind rings and other rebars in foundation parts with MS binding wire			
Competent ☐		Not Yet Competent ☐		

Assessment Task 4	**Description of Assessment Task 4** Use of spacer and cover block in foundation as per instruction given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Select the spacer and cover block as per requirements			
2.	Place spacer as per design			
3.	Place cover blocks as per design			
Competent ☐		Not Yet Competent ☐		

Knowledge Assessment

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Execute the Steelwork for the Foundations and the Necks Maintain Safety at Site Plan and organize work	**Assessment Date (DD/MM/YY):** **Assessment Time:**30 min		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

candidate Details	Name: ..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor: ....

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. Enlist the types of shallow foundation?	
2. Define Layout?	
3. Define measuring system?	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
4. Define combined footing?	
5. Define dowel bars?	
6. Define bar bending schedule?	
7. Enlist the types of foundation?	
8. Define section?	
9. Define concrete cover?	
10. What is mat foundation?	
11. Difference b/w unsafe act and unsafe conditions?	
12. Define the procedure to store the material?	
13. Define safety tools?	

ANSWER KEY

Sr.	Answers
1.	• Isolated Spread Footing. ... • Wall Footing or Strip footing. ... • Combined Footing. ... • Cantilever or Strap Footing. ... • Raft or Mat Foundation.
2.	The plan or design or arrangement of something laid out.
3.	Systems of measurement in use include the International System of Units (SI), the modern form of the metric system, the British imperial system, and the United States customary system.
4.	Combined footings are constructed for two or more columns when they are close to each other and their foundations overlap.
5.	Dowel bars are short steel bars that are installed in concrete slabs to provide a mechanical connection that doesn't restrict horizontal joint movement.
6.	Bar bending schedule generally describes the particulars of bars, shape of bending with sketches and total length and weight of the bars along with their number
7.	• Shallow foundation. I • Deep Foundation.
8.	A part that is cut off or separated. a distinct part or subdivision of anything, as an object, country, community, class.
9.	Concrete cover, in reinforced concrete, is the least distance between the surface of embedded reinforcement and the outer surface of the concrete
10.	A raft or mat foundation is a large continuous rectangular or circular concrete slab that carries the entire load of the superstructure and spreads it over the whole area beneath the building
11.	Unsafe acts — Unsafe conditions Operating without clearance or warning — Inadequately guarded Operating or working at unsafe speed — Unguarded, absence of required guards Making safety devices inoperative — Defective, sharp, slippery, cracked, etc
12.	Store keeping refers to the art of preserving raw materials, work-in-progress, and finished parts in the stores in the best possible manner...
13.	• Inspect regularly. • Carry with care. ... • Don't pocket sharp objects. ...

	• Be aware of your surroundings. ... • Use the right tools. ... • Follow instructions. ... • Clean and return.

Assessment Evidence Guide

For

“Steel Fixer/ Erector”

Level-3

Execute the Steelwork for the Grade Beams

(Formative Assessment)

National Vocational & Technical

Training Commission

Instruction Sheet for the Candidate

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Execute the Steelwork for the Grade Beams Maintain Safety at Site Plan and Organize Work	**Assessment Date (DD/MM/YY):** **Assessment Time :**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **Assessment Task 1:** Candidate is required to prepare the rebars for the grade beams as per bar bending schedule given by assessor. **Assessment Task 2:**Candidate is required to prepare grade beam as per bar bending schedule given by assessor.. **And complete:** **3. Knowledge assessment test (Written or Oral)** **4. Portfolios at the time of assessment (if any)**

Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria 1:** Interpret bar bending schedule **Performance Criteria 2:** Interpret structure drawings **Performance Criteria 3:** Select appropriate tools for specific job. **Performance Criteria 4:** Check physical working condition of the tools **Performance Criteria 5:** Identify risk associated with job to be done. **Performance Criteria 6:** Select and wear appropriate PPEs. **Performance Criteria 7:** Report unsafe condition to immediate supervisor **Performance Criteria 8:** Operate tools according to standard safety procedures. **Performance Criteria 9:** Mark the location of grade beams as per structural drawing **Performance Criteria 10:**Straighten up the rebars **Performance Criteria 11:** Measure and mark the required cut length on rebars as per cut length mentioned in bar bending schedule **Performance Criteria 12:**Cut the rebars **Performance Criteria 13:**Bend the rebars to make the stirrups, as per bar bending schedule **Performance Criteria 14:**Bend the end hooks for main and bent up rebars as per shape dimension **Performance Criteria 15:** Make the bundle of prepared rebars and mark the bar code using tag for grade beam for reference. **Performance Criteria 16:**Identify manpower requirements according to job. **Performance Criteria 17:**Calculate the man hours as per job quantum. **Performance Criteria 18:**Calculate the cost of labor services. **Performance Criteria 19:**Assign the task to the sub ordinates. **Performance Criteria 20:**Monitor the working of sub ordinates

	Assessment Task 2 **Performance Criteria 1:** Place the bundle of prepared rebars to the required central place **Performance Criteria 2:**Separate the rebars and place them at required location **Performance Criteria 3:**Mark the stirrups spacing as per drawing **Performance Criteria 4:** Insert stirrups at bottom and top rebars **Performance Criteria 5:**Bind the stirrups with binding wire **Performance Criteria 6:**Bind curtailed rebars with the top and bottom rebars, **Performance Criteria 7:** Fix spacer in bottom of beam as per drawing **Performance Criteria 8:**Report unsafe condition to immediate supervisor

Assessors Judgment Guide

(to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature: ....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code:..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1	**Description of Assessment Task 1** Prepare the rebars for the grade beamsas per bar bending schedule given by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Interpret bar bending schedule			
2.	Interpret structure drawings			
3.	Select appropriate tools for specific job.			
4.	Check physical working condition of the tools			
5.	Identify risk associated with job to be done.			
6.	Select and wear appropriate PPEs.			
7.	Report unsafe condition to immediate supervisor			
8.	Operate tools according to standard safety procedures.			
9.	Mark the location of grade beams as per structural drawing			
10.	Straighten up the rebars			
11.	Measure and mark the required cut length on rebars as per cut length mentioned in bar bending schedule			
12.	Cut the rebars			
13.	Bend the rebars to make the stirrups, as per bar bending schedule			
14.	Bend the end hooks for main and bent up rebars as per shape dimension			
15.	Make the bundle of prepared rebars and mark the bar code using tag for grade beam for reference.			
16.	Identify manpower requirements according to job.			
17.	Calculate the man hours as per job quantum.			
18.	Calculate the cost of labor services.			
19.	Assign the task to the sub ordinates			
20.	Monitor the working of sub ordinates			
Competent ☐		Not Yet Competent ☐		

Assessment Task 2	**Description of Assessment Task 2** Prepare grade beamas per bar bending schedule given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Place the bundle of prepared rebars to the required central place			
2.	Separate the rebars and place them at required location			
3.	Performance Criteria 3: Mark the stirrups spacing as per drawing			
4.	Insert stirrups at bottom and top rebars in grade beam			
5.	Bind the stirrups with binding wire			
6.	Bind curtailed rebars with the top and bottom rebars			
7.	Fix spacer in bottom of beam as per drawing			
8.	Report unsafe condition to immediate supervisor			
Competent ☐		Not Yet Competent ☐		

Knowledge Assessment

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Execute the Steel work for the Grade Beams Maintain safety at site Plan and organize work	**Assessment Date (DD/MM/YY):** **Assessment Time:**30 min		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor: ....

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. Enlist the types cutting tools?	
2. Define structural drawing?	
3. Define lap length?	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
4. Define the spacer?	
5. Define steel cutting?	
6. Define bending?	
7. Define section?	
8. Enlist the types of hazards?	
9. What is first aid process?	
10. What is the importance of planning?	

ANSWER KEY

Sr.	Answers
1.	• Cutting tools. • Reamer. • Drill. • Milling tools. • End mill • Broach. • Tap/thread cutting die
2.	A structural drawing, a type of engineering drawing, is a plan or set of plans and details for how a building or other structure will be built
3.	The lap length is the length provided to overlap two rebars in order to safely transfer load from one bar to another bar
4.	A spacer is used to increase the distance between parts being fastened
5.	Steel cutting is “the process of removing unwanted material in the form of chips, from a block of steel, using cutting tool.
6.	Bending is a manufacturing process that produces a V-shape, U-shape, or channel shape along a straight axis in ductile materials, most commonly sheet metal.
7.	A part that is cut off or separated. a distinct part or subdivision of anything, as an object, country, community &class.
8.	• Workers falling during steel fixing and the erection of formwork. • Collapse of the formwork / false work. • Materials falling during the striking of formwork. • Silica dust from scabbing operations. • Manual handling of shutters, reinforcing bars etc. • Cement burns from wet cement.
9.	ABC in first aid traditionally stands for airway, breathing, and circulation.
10.	Planning is essential both personally and professionally. It **helps us achieve our goals**, and allows for more efficient use of time and other resources

Assessment Evidence Guide

For

“Steel Fixer/ Erector”

Level-3

Fabricate Complex Column Cage

(Formative Assessment)

National Vocational & Technical

Training Commission

Instruction Sheet for the Candidate

Title of Qualification:	**CS Code:**	**Level:**	**Version:**
National Vocational Certificate Level 3in Steel Fixer& Erector		3	01
Competency Standard Title: Fabricate complex Column Cage Maintain Safety at Site Plan and Organize Work	**Assessment Date (DD/MM/YY):** **Assessment Time :**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **Assessment Task 1:** Candidate is required to prepare lateral ties as per bar bending schedule given by assessor. **Assessment Task 2:** Candidate is required to cut required main rebars and fix for the columns with the necks and place spacer as per bar bending schedule given by assessor. **And complete:** **1. Knowledge assessment test (Written or Oral)** **2. Portfolios at the time of assessment (if any)**

Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria 1:** Interpret bar bending schedule **Performance Criteria 2:** Interpret structural drawing **Performance Criteria 3:** Collect required equipment **Performance Criteria 4:** Use PPE and apply safe work practices **Performance Criteria 5:** Check physical working condition of the tools **Performance Criteria 6:** Operate tools according to standard safety procedures. **Performance Criteria 7:** Identify risk associated with job to be done. **Performance Criteria 8:** Report unsafe condition to immediate supervisor **Performance Criteria 9:** Measure and mark the required cut length on rebars as requirement **Performance Criteria 10:** Cut rebar according to the marked points **Performance Criteria 11:**Make bundle of cut rebars and mark the bar code using tag **Performance Criteria 12:** Mark and pin on bending bench for making of ties, and rings. **Performance Criteria 13:** Place rebar between the pins and bend at required angle. **Performance Criteria 14:** Check the bent rebar for its shape, angle & length. **Performance Criteria 15:** Identify manpower requirements according to job. **Performance Criteria 16:** Calculate the man hours as per job quantum. **Performance Criteria 17:** Calculate the cost of labor services. **Performance Criteria 18:** Assign the task to the sub ordinates. **Performance Criteria 19:**Monitor the working of sub ordinates

	Assessment Task 2 **Performance Criteria 1:**Measure and mark the required cut length on rebars as requirement **Performance Criteria 2:** Cut rebar according to the marked points **Performance Criteria 3:** Make bundle of cut rebars and mark the bar code using tag **Performance Criteria 4:** Place the bundle of prepared rebars to the required central place **Performance Criteria 5:** Separate and Place rebars **Performance Criteria 6:** Provide splices of main vertical rebars with dowel bar of column **Performance Criteria 7:** Mark the spacing of ties on one vertical bar as per pitch mentioned in structural drawing **Performance Criteria 8:** Bind the main vertical rebars with ties on marked spot **Performance Criteria 9:** Select spot on column sides for using spacer for proposed concrete cover **Performance Criteria 10:** Fix/tie spacer in four sides of the column on alternate ties. **Performance Criteria 11:** Check and clean all tools & accessories for any discrepancy tag and report. **Performance Criteria 12:** Clear work area and dispose off rebar wastage as per standards.

Assessors Judgment Guide

(to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature: ....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code:..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							
Each Assessment Task (with performance criteria)							

Observation Checklist

Assessment Task 1	**Description of Assessment Task 1** Prepare lateral ties as per bar bending schedule given by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Interpret bar bending schedule			
2.	Interpret structural drawing			
3.	Collect required equipment			
4.	Use PPE and apply safe work practices			
5.	Check physical working condition of the tools			
6.	Operate tools according to standard safety procedures.			
7.	Identify risk associated with job to be done.			
8.	Report unsafe condition to immediate supervisor			
9.	Measure and mark the required cut length on rebars as requirement			
10.	Cut rebar according to the marked points			
11.	Make bundle of cut rebars and mark the bar code using tag			
12.	Mark and pin on bending bench for making of ties, and rings.			
13.	Place rebar between the pins and bend at required angle.			
14.	Check the bent rebar for its shape, angle & length.			
15.	Identify manpower requirements according to job.			
16.	Calculate the man hours as per job quantum.			
17.	Calculate the cost of labor services.			
18.	Assign the task to the sub ordinates.			
19.	Monitor the working of sub ordinates			
Competent ☐		Not Yet Competent ☐		

Assessment Task 2	**Description of Assessment Task 2** Candidate is required to cut required main rebars and fix for the columns with the necks and place spacer as per bar bending schedule given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Measure and mark the required cut length on rebars as requirement			
2.	Cut rebar according to the marked points			
3.	Make bundle of cut rebars and mark the bar code using tag			
4.	Place the bundle of prepared rebars to the required central place			
5.	Separate and Place rebars			
6.	Provide splices of main vertical rebars with dowel bar of column			
7.	Mark the spacing of ties on one vertical bar as per pitch mentioned in structural drawing			
8.	Bind the main vertical rebars with ties on marked spot			
9.	Select spot on column sides for using spacer for proposed concrete cover			
10.	Fix/tie spacer in four sides of the column on alternate ties.			
11.	Check and clean all tools & accessories for any discrepancy tag and report.			
12.	Clear work area and dispose off rebar wastage as per standards.			

Competent ☐	Not Yet Competent ☐

Knowledge Assessment

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Fabricate complex Column Cage Maintain safety at site Plan and organize work	**Assessment Date (DD/MM/YY):** **Assessment Time:**30 min		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor: ....

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. Which is use of stirrups?	
2. Define ties?	
3. What is the codes for steel?	
4. Define the procedure of cutting steel?	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
5. Define grade of steel?	
6. What is the use of 60 grade steel?	
7. What is the use of 40 grade steel?	
8. Why is rebar twisted?	
9. What are the types of column?	
10. Define eccentricity?	
11. What is trench safety system?	

ANSWER KEY

Sr.	Answers
1.	Stirrups assist in holding the reinforcement bars in place.
2.	Tie bars are deformed, epoxy coated steel bars, typically placed mid-depth across longitudinal joints or between an edge joint and a curb or shoulder.
3.	IS: 2062 – specifications for steel for general purposes.
4.	Steel cutting is “the process of removing unwanted material in the form of chips, from a block of metal, using cutting tool.
5.	Rebar is graded to show the amount of tensile strength it has in terms of pounds per square inch. Grade 33 starts out the low end of strength, with strength increasing as the grade number gets bigger. Grade 40 has a minimum yield strength of 40,000 PSI and a minimum tensile strength of 60,000 PSI.
6.	60 grade rebar particularly well-suited for medium- to heavy-duty concrete reinforcement applications.
7.	Grade 40 rebar an excellent choice for light- to medium-duty concrete reinforcing applications
8.	Rebar's surface is often "deformed" with ribs, lugs or indentations to promote a better bond with the concrete and reduce the risk of slippage
9.	Long and short column
10.	e = eccentricity, the distance from the center of gravity of the column section to the center of gravity of the applied load
11.	Trench box is also known as a trench shield, sewer box, manhole box, or a tap box. It is used in the construction work.

Competent ☐ Not Yet Competent ☐

Assessment Evidence Guide

For

“Steel Fixer/ Erector”

Level-3

Execute the Steel Work for the Stairs

(Formative Assessment)

National Vocational & Technical

Training Commission

Instruction Sheet for the Candidate

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Execute the Steel work for the Stairs Maintain Safety at Site Plan and Organize Work	**Assessment Date (DD/MM/YY):** **Assessment Time :**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **Assessment Task 1:** Prepare cantilever stairsas per bar bending schedule given by assessor **Assessment Task 2:** Prepare geometrical stairsas per bar bending schedule given by assessor **Assessment Task 3:** Prepare RCC rampas per bar bending schedule given by assessor. **And complete:** 1. **Knowledge assessment test (Written or Oral)** 2. **Portfolios at the time of assessment (if any)**

Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria 1:** Interpret bar bending schedule **Performance Criteria 2:** Interpret structrual drawing **Performance Criteria 3:** Select the material as per job requirement. **Performance Criteria 4:** Select the tools as per job requirement. **Performance Criteria 5:** Select and wear the PPEs relevant to Job. **Performance Criteria 6:**Abstract the cut length and number of different types of rebars stairs slab and steps **Performance Criteria 7:** Cut rebars as per bar bending schedule **Performance Criteria 8:**Bend rebars as per drawing **Performance Criteria 9:**Make stirrups for stringer beam stirrups as per drawing **Performance Criteria 10:**Place rebars as per bar bending schedule **Performance Criteria 11:**Bind rebars as per bar bending schedule **Performance Criteria 12:** Place the spacer as per requirement **Performance Criteria 13:** Identify risk associated with job to be done. **Performance Criteria 14:**Report unsafe condition to immediate supervisor **Performance Criteria 15:** Identify physical hazards (risk of slip, trip and fall etc.) at work site. **Performance Criteria 16:** Identify manpower requirements according to job. **Performance Criteria 17:** Calculate the man hours as per job quantum. **Performance Criteria 18:** Calculate the cost of labor services. **Performance Criteria 19:** Assign the task to the sub ordinates. **Performance Criteria 20:**Monitor the working of sub ordinates
	Assessment Task 2 **Performance Criteria 1:**Interpret bar bending schedule **Performance Criteria 2:** Select the tools as per job requirement. **Performance Criteria 3:** Select and wear the PPEs relevant to Job. **Performance Criteria 4:** Abstract the cut length and number of different types of rebars stairs slab and steps **Performance Criteria 5:**Cut rebars as per design **Performance Criteria 6:**Bend of rebars at the required angle as per drawing **Performance Criteria 7:**Place rebars as per bar bending schedule **Performance Criteria 8:**Bind rebars as per bar bending schedule **Performance Criteria 9:**Place the spacer as per requirement

	Assessment Task 3 **Performance Criteria 1:** Interpret the Job drawing and bar bending schedule. **Performance Criteria 2:** Abstract the cut length and number of different types of rebars **Performance Criteria 3:** Cut rebars as per bar bending schedule. **Performance Criteria 4:**bend rebars, at the required angle as per drawing **Performance Criteria 5:**Place rebars, as per drawing **Performance Criteria 6:**Place and fix dowel bars with rebars as per requirement **Performance Criteria 7:**Bind rebars as per drawing **Performance Criteria 8:**Place spacer as per requirement

Assessors Judgment Guide

(to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature: ....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code:..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1	**Description of Assessment Task 1** Prepare cantilever stairsas per bar bending schedule given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Interpret bar bending schedule			
2.	Interpret structrual drawing			
3.	Select the material as per job requirement.			
4.	Select the tools as per job requirement.			
5.	Select and wear the PPEs relevant to Job.			
6.	Abstract the cut length and number of different types of rebars stairs slab and steps			
7.	Cut rebars as per bar bending schedule			
8.	Bend rebars as per drawing			
9.	Make stirrups for stringer beam stirrups as per drawing			
10.	Place rebars as per bar bending schedule			
11.	Bind rebars as per bar bending schedule			
12.	Place the spacer as per requirement			
13.	Identify risk associated with job to be done.			
14.	Report unsafe condition to immediate supervisor			
15.	Identify physical hazards (risk of slip, trip and fall etc.) at work site.			
16.	Identify manpower requirements according to job.			
17.	Calculate the man hours as per job quantum.			
18.	Calculate the cost of labor services.			
19.	Assign the task to the sub ordinates.			
20.	Monitor the working of sub ordinates			

Competent ☐	Not Yet Competent ☐

Assessment Task 2	**Description of Assessment Task 2** Prepare geometrical stairsas per bar bending schedule given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Interpret bar bending schedule			
2.	Select the tools as per job requirement.			
3.	Select and wear the PPEs relevant to Job.			
4.	Abstract the cut length and number of different types of rebars stairs slab and steps			
5.	Cut rebars as per design			
6.	Bend of rebars at the required angle as per drawing			
7.	Place rebars as per bar bending schedule			
8.	Bind rebars as per bar bending schedule			
9.	Place the spacer as per requirement			
Competent ☐		Not Yet Competent ☐		

Assessment Task 3	**Description of Assessment Task 3** Prepare RCC rampas per bar bending schedule given by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Interpret the Job drawing and bar bending schedule.			
2.	Abstract the cut length and number of different types of rebars			
3.	Cut rebars as per bar bending schedule.			
4.	Bend rebars, at the required angle as per drawing			
5.	Place rebars, as per drawing			
6.	Place and fix dowel bars with rebars as per requirement			
7.	Bind rebars as per drawing			
8.	Place spacer as per requirement			
Competent ☐		Not Yet Competent ☐		

Knowledge Assessment

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Execute the Steel work for the Stairs Maintain safety at site Plan and organize work	**Assessment Date (DD/MM/YY):** **Assessment Time:**30 min		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor: ....

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. What are the components of door?	
2. Define door steps?	
3. Enlist types of steps.	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
4. What is the component of stair?	
5. Define stair?	
6. Enlist the different types stair according to materials.	
7. Enlist the different types stair according to shape.	
8. Define RCC Ramp?	
9. Define winder?	
10. Define bull nose step?	
11. What is the Formula to calculate steps?	
12. Define spiral stair?	
13. Enlist PPE's for eye protection?	
14. Enlist PPE's for hand protection?	
15. Define landing?	

ANSWER KEY

Sr.	Answers
1.	• Door Frame. • Head jamb. • Side jamb • Mullion (mull)
2.	The threshold of a doorway, entrance and access.
3.	• Straight. • L-shaped • Winder. • U-shaped Spiral. • Curved. • Bifurcated. • Ladder
4.	There are Stringers, Treads, Risers, Newels, Winders and Landings, Handrail's and Balusters. Stringer.
5.	A series of steps or flights of steps for passing from one level to another.
6.	• Straight Stairs. • Stone Stairs. • Timber Stairs. • Brick Stairs • Concrete Stairs.
7.	• Straight Stairs. • L-shaped Stairs. • U-shaped Stairs. • Winder Stairs or Circular Stairs.
8.	A *ramp* is a sloped pathway used to provide access between two vertical levels.
9.	Winders are steps that are narrower on one side than the other. **They are used to change the direction of the stairs without landings**.
10.	The bull nose step has **a radius to one corner and is used to create a feature at the bottom of the stairs**.
11.	No of steps= Height of building x12 /riser height
12.	A set of stairs that winds around a central post or column.
13.	General safety glasses, laser safety glasses, chemical splash goggles and impact goggles
14.	gloves, finger guards and arm coverings
15.	A level platform, typically used when a stair makes a turn. Typically found on a "Landing" stair. Built from framing material.

Assessment Evidence Guide

For

“Steel Fixer/ Erector”

Level-3

Execute the Steel Work for Shell and Domes

(Formative Assessment)

National Vocational & Technical

Training Commission

Instruction Sheet for the Candidate

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Execute the Steel work for Shell and Domes Maintain Safety at Site Plan and Organize Work	**Assessment Date (DD/MM/YY):** **Assessment Time :**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **Assessment Task 1:** Candidate is required to prepare shell roof as per bar bending schedule given by assessor. **Assessment Task 2:** Candidate is required to prepare dome roof as per bar bending schedule given by assessor. **And complete:** 1. **Knowledge assessment test (Written or Oral)** 2. **Portfolios at the time of assessment (if any)**

Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria 1:** Interpret bar bending schedule **Performance Criteria 2:** Interpret structural drawing **Performance Criteria 3:** Select the material as per job requirement. **Performance Criteria 4:** Select the tools as per job requirement. **Performance Criteria 5:** Select and wear the PPEs relevant to Job. **Performance Criteria 6:** Abstract cut length and number of different types of rebars **Performance Criteria 7:**Straighten rebars as per rebar bending schedule **Performance Criteria 8:**Measure and mark the required cut length on rebars as per rebar bending schedule **Performance Criteria 9:**Cut the rebars with rebar cutting tools/ machine cutter **Performance Criteria 10:**bend the end hooks of bars as per bending schedule **Performance Criteria 11:** Prepare the stirrups for beams **Performance Criteria 12:**Make the bundle of prepared bars and tag rebars **Performance Criteria 13:**Place the bundle of prepared bars of structural members to the required central place **Performance Criteria 14:**separate the bars of different sizes of beams/slabs **Performance Criteria 15:**Place the rebars to required location **Performance Criteria 16:**Mark the stirrups spacing according to rebar bending schedule **Performance Criteria 17:**Bind the stirrups with bottom and top bars on marked points **Performance Criteria 18:** Bind curtailed/tension rebars with stirrups. **Performance Criteria 19:**Spread the main bars and distribution bars for slab in two direction **Performance Criteria 20:**Bind rebars with one another with binding wire **Performance Criteria 21:**Fix the additional tension bars with rebars **Performance Criteria 22:**Fix the concrete spacers in slabs, beams **Performance Criteria 23:** Instruct sub ordinates on the housekeeping and risks related to the construction site. **Performance Criteria 24:**Assign the task to the sub ordinates.

	Assessment Task 2 **Performance Criteria 1:** Abstract cut length and number of different types of rebars **Performance Criteria 2:**Straighten rebars **Performance Criteria 3:**Measure and mark the required cut length on rebars as per bar bending schedule **Performance Criteria 4:** Cut the rebars with bar cutting tools/ machine cutter **Performance Criteria 5:** Bend the rebars as per bending schedule. **Performance Criteria 6:** Prepare the stirrups for ring beam **Performance Criteria 7:** Make the bundle of prepared rebars and tag rebars **Performance Criteria 8:** Place the bundle of prepared rebars of structural members to the required central place **Performance Criteria 9:** Separate the rebars of different sizes of beams/slabs **Performance Criteria 10:** Place the ring beamrebars to required location **Performance Criteria 11:**Mark the stirrups spacing according to bar bending schedule **Performance Criteria 12:** Bind the stirrups with bottom and top rebars on marked points **Performance Criteria 13:** Bind curtailed/tension rebars with stirrups **Performance Criteria 14:** Spread the main rebars and distribution rebars for dome **Performance Criteria 15:** Bind rebars with one another with binding wire **Performance Criteria 16:** Fix the additional tension rebars with rebars **Performance Criteria 17:** Fix the concrete spacers in dome and ring beam. **Performance Criteria 18: :**Monitor the working of sub ordinates

Assessors Judgment Guide

(to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature: ....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code:..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1	**Description of Assessment Task 1** Candidate is required to prepare shell roof as per bar bending schedule given by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Interpret bar bending schedule			
2.	Interpret structural drawing			
3.	Select the material as per job requirement.			
4.	Select the tools as per job requirement.			
5.	Select and wear the PPEs relevant to Job.			
6.	Abstract cut length and number of different types of rebars			
7.	Straighten rebars as per rebar bending schedule			
8.	Measure and mark the required cut length on rebars as per rebar bending schedule			
9.	Cut the rebars with rebar cutting tools/ machine cutter			
10.	bend the end hooks of bars as per bending schedule			
11.	Prepare the stirrups for beams			
12.	Make the bundle of prepared bars and tag rebars			
13.	Place the bundle of prepared bars of structural members to the required central place			
14.	separate the bars of different sizes of beams/slabs			
15.	place the rebars to required location			
16.	Mark the stirrups spacing according to rebar bending schedule			

17.	Bind the stirrups with bottom and top bars on marked points			
18.	Bind curtailed/tension rebars with stirrups			
19.	Spread the main bars and distribution bars for slab in two direction			
20.	Bind rebars with one another with binding wire			
21.	Fix the additional tension bars with rebars			
22.	Fix the concrete spacers in slabs, beams			
23.	Instruct sub ordinates on the housekeeping and risks related to the construction site.			
24.	Assign the task to the sub ordinates.			
Competent ☐		Not Yet Competent ☐		

Assessment Task 2	**Description of Assessment Task 2** Candidate is required to prepare dome roof as per bar bending schedule given by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Abstract cut length and number of different types of rebars			
2.	Straighten rebars			
3.	Measure and mark the required cut length on rebars as per bar bending schedule			
4.	Cut the rebars with bar cutting tools/ machine cutter			
5.	Bend the rebars as per bending schedule.			
6.	Prepare the stirrups for ring beam			
7.	Make the bundle of prepared rebars and tag rebars			
8.	Place the bundle of prepared rebars of structural members to the required central place			
9.	Separate the rebars of different sizes of beams/slabs			
10.	Place the ring beam rebars to required location			
11.	Mark the stirrups spacing according to bar bending schedule			
12.	Bind the stirrups with bottom and top rebars on marked points			
13.	Bind curtailed/tension rebars with stirrups			
14.	Spread the main rebars and distribution rebars for dome			
15.	Bind rebars with one another with binding wire			
16.	Fix the additional tension rebars with rebars			
17.	Fix the concrete spacers in dome and ring beam.			
18.	Monitor the working of sub ordinates			
Competent ☐		Not Yet Competent ☐		

Knowledge Assessment

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Execute the Steel work for Shell and Domes Maintain safety at site Plan and organize work	**Assessment Date (DD/MM/YY):** **Assessment Time:**30 min		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor: ....

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. Define roof?	
2. Define Dome?	
3. Enlist the different types dome?	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
4. Enlist the different types of slab?	
5. Enlist the different types of roof?	
6. What is the purpose of reinforcement?	
7. Define bar bending schedule?	
8. What are the components of fall arrest system?	
9. Define anchorage.	
10. Enlist the lifting equipment used in construction.	

ANSWER KEY

Sr.	Answers
1.	The structure forming the upper covering of a building.
2.	a large rounded roof or ceiling that is shaped like half of a ball
3.	• Corbel dome. • Cloister vault. • Crossed-arch dome. • Geodesic dome. • Monolithic dome. • Onion dome. • Oval dome. • Rotational dome.
4.	• One-Way Slabs on Beams. • One-way joist slab (Ribbed slab) • Waffle Slab (Grid slab) • Flat Plates. • Flat Slabs. • Two-way Slabs on Beams. • Hollow core slab. • Hardy Slab.
5.	• Gable roof. • Dutch. • Mansard roof. • Flat roof. • Shed roof. • Butterfly roof. ... • Gambrel roof.
6.	The purpose of reinforcement is to provide additional strength for concrete where it is needed.
7.	Bar Bending Schedule (BBS) is basically the representation of bend shapes and cut length of bars as per structure drawings.
8.	It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.
9.	Anchorage is defined by OSHA as a secure point of attachment for lifeline, lanyards or deceleration device.
10.	• Hook lifts • Mechanical lifts • Tower cranes • Cranes • Tele handlers

	• Hydraulic lifts • Chain pulley system

Assessment Evidence Guide

For

“Steel Fixer/ Erector”

Level-3

Execute Steel Work for the Tank and Basement

(Formative Assessment)

National Vocational & Technical

Training Commission

Instruction Sheet for the Candidate

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Execute steel work for the Tank and Basement Maintain Safety at Site Plan and Organize Work	**Assessment Date (DD/MM/YY):** **Assessment Time :**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the giventime frame (for practical demonstration & assessment):** **Assessment Task 1:** Candidate is required to prepare Tank/Basement as per bar bending schedule given by assessor. **Assessment Task 2:** Candidate is required to prepare Overhead Tank as per bar bending schedule given by assessor. **And complete:** 1. **Knowledge assessment test (Written or Oral)** 2. **Portfolios at the time of assessment (if any)**

Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria 1:** Select the tools as per job requirement **Performance Criteria 2:** Select and wear the PPEs relevant to Job. **Performance Criteria 3:**Interpret bar bending schedule **Performance Criteria 4:**Interpret structural drawing **Performance Criteria 5:** Plan task sequence **Performance Criteria 6:** Abstract cut length and number of different types of rebars for base slab and retaining wall. **Performance Criteria 7:** Straighten the rebars **Performance Criteria 8:** Measure and mark the cut length of rebars according to bar bending schedule **Performance Criteria 9:**Cut ofrebars as per design **Performance Criteria 10:**Bend the rebars, stirrups, ties and chairsat the required angle as per drawing **Performance Criteria 11:** Make bundles of cut bars and tag them. **Performance Criteria 12:**Secure access according to site procedures **Performance Criteria 13:**Place rebars for bottom slab as per bar bending schedule **Performance Criteria 14:**Place rebars for retaining wall and column as per bar bending schedule **Performance Criteria 15:** Check proper overlap of neck columns and retaining walls. **Performance Criteria 16:**Place the spacer as per requirement **Performance Criteria 17:** Verify the reinforcement detail in Tank/Basement according to the drawing **Performance Criteria 18:**Collect tools, equipment and materials from the trench **Performance Criteria 19:**Remove, clean and store barriers and signs **Performance Criteria 20:** Identify physical hazards (risk of slip, trip and fall etc.) at work site. **Performance Criteria 21:** Erect barricades, hoardings, signage in the hazardous areas. **Performance Criteria 22:** Remove obstacles from work area. **Performance Criteria 23:** Identify risk associated with job to be done. **Performance Criteria 24:** Report unsafe condition to immediate supervisor

	Assessment Task 2 **Performance Criteria 1:** Abstract cut length and number of different types of rebars for footing, column, base slab and shear wall. **Performance Criteria 2:** Straighten the rebars **Performance Criteria 3:** Measure and mark the length of rebars according to bar bending schedule **Performance Criteria 4:** cut rebars as per bar bending schedule **Performance Criteria 5:** Bend of rebars at the required angle as per drawing **Performance Criteria 6:** Bend the rebars, stirrups, ties and chairs at the required angle as per drawing **Performance Criteria 7:** Make bundles of cut bars and tag them **Performance Criteria 8:** Mark the position of rebars on finish surface of base **Performance Criteria 9:**Place and bind rebarsfor footing and columnsas per bar bending schedule **Performance Criteria 10:**Place and bindrebarsfor base slab and shear wallas per bar bending schedule **Performance Criteria 11:** Check overlap/splices of rebars **Performance Criteria 12:**Place the spacer as per requirement **Performance Criteria 13:** Verify the reinforcement detail in overhead tank according to the drawing **Performance Criteria 14:**Conduct inspection of the work done in overhead tank **Performance Criteria 15:**gather tools, equipment and waste material **Performance Criteria 16:**Remove, clean and store barriers and signs **Performance Criteria 17:**Judge the weight of load to be lifted **Performance Criteria 18:**Select lifting equipment accordingly **Performance Criteria 19:**Assemble the lifting equipment **Performance Criteria 20:**Clamp the load with sling **Performance Criteria 21:**Check load balance. **Performance Criteria 22:**Operate chain pulley block without jerk **Performance Criteria 23:** Use hand signal while lifting and placing load **Performance Criteria 24:** Assign the task to the sub ordinates. **Performance Criteria 25:**Monitor the working of sub ordinates

Assessors Judgment Guide

(to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature: ....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code:..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1	**Description of Assessment Task 1** Candidate is required to prepare Tank/Basement as per bar bending schedule given by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Select the tools as per job requirement			
2.	Interpret bar bending schedule			
3.	Interpret structural drawing			
4.	Plan task sequence			
5.	Abstract cut length and number of different types of rebars for base slab and retaining wall.			
6.	Straighten the rebars			
7.	Measure and mark the cut length of rebars according to bar bending schedule			
8.	Cut ofrebars as per design			
9.	Bend the rebars, stirrups, ties and chairs at the required angle as per drawing			
10.	Make bundles of cut bars and tag them.			
11.	Secure access according to site procedures			
12.	Mark the position of rebars on finish surface of base			
13.	Place rebars for bottom slab as per bar bending schedule			
14.	Place rebars for retaining wall and column as per bar bending schedule			
15.	Check proper overlap of neck columns and retaining walls.			
16.	Place the spacer as per requirement			
17.	Verify the reinforcement detail in Tank/Basement according to the drawing			

18.	Collect tools, equipment and materials from the trench			
19.	Remove, clean and store barriers and signs			
20.	Identify physical hazards (risk of slip, trip and fall etc.) at work site.			
21.	Erect barricades, hoardings, signage in the hazardous areas.			
22.	Remove obstacles from work area.			
23.	Identify risk associated with job to be done			
24.	Report unsafe condition to immediate supervisor			
Competent ☐		Not Yet Competent ☐		

Assessment Task 2	**Description of Assessment Task 2** Candidate is required to prepare Overhead Tank as per bar bending schedule given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Abstract cut length and number of different types of rebars for footing, column, base slab and shear wall.			
2.	Straighten the rebars			
3.	Measure and mark the length of rebars according to bar bending schedule			
4.	cut rebars as per bar bending schedule			
5.	Bend of rebars at the required angle as per drawing			
6.	Bend the rebars, stirrups, ties and chairs at the required angle as per drawing			
7.	Make bundles of cut bars and tag them			
8.	Mark the position of rebars on finish surface of base			
9.	Place and bind rebars for footing and columnsas per bar bending schedule			
10.	Place and bind rebars for base slab and shear wallas per bar bending schedule			
11.	Check overlap/splices of rebars			
12.	Place the spacer as per requirement			
13.	Verify the reinforcement detail in overhead tank according to the drawing			
14.	Conduct inspection of the work done in overhead tank			
15.	Gather tools, equipment and waste material			
16.	Remove, clean and store barriers and signs			
17.	Judge the weight of load to be lifted			
18.	Select lifting equipment accordingly			
19.	Assemble the lifting equipment			
20.	Clamp the load with sling			
21.	Check load balance.			
22.	Operate chain pulley block without jerk			
23.	Use hand signal while lifting and placing load			
24.	Assign the task to the sub ordinates.			
25.	Monitor the working of sub ordinates			

Competent ☐	Not Yet Competent ☐

Knowledge Assessment

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Execute steel work for the Tank/Basement Maintain safety at site Plan and organize work	**Assessment Date (DD/MM/YY):** **Assessment Time:**30 min		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor: ....

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. Define RCC water tank?	
2. Define retaining wall?	
3. Enlist the component of retaining wall?	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
4. Enlist the different types of water tanks?	
5. Enlist the different types of retaining wall?	
6. What are the OSHA requirements for working in trenches?	
7. Define neck column?	
8. Explain the role of spacer in steel work?	

ANSWER KEY

Sr.	Answers
1.	Reinforced concrete water tanks are constructed for storing water. The tanks can be made in different shapes usually circular and rectangular shapes are mostly used
2.	Retaining wall is a structure that retain (holds back) any material (usually earth) and prevents it from sliding or eroding away
3.	A typical retaining wall has four main components: • the Stem is the vertical member holding the backfill. • the Toe is the portion of the footing at the front of the wall. • Heel is the portion of the footing at the backfill side. • Shear Key projects down under the footing.
4.	• Carbon Welded Steel Tanks. ... • Pillow Tanks. ... • Folding Tanks. ... • Bolted Steel Tanks. ... • Polyethylene Tanks. ... • Corrugated Steel Tank. ... • Above Ground Fiberglass Storage Tanks
5.	• Gravity Retaining Wall. • Cantilevered Retaining Wall. ... • Sheet Piling Retaining Wall. • Anchored Retaining Wall.
6.	OSHA requires employers to provide ladders, steps, ramps, or other safe means of egress for workers working in trench excavations 4 feet (1.22 meters) or deeper..
7.	It is a part of the column (any type of column) which is buried in earth is called Neck column.
8.	A rebar spacer is a device that secures the reinforcing steel or "rebar" in reinforced concrete structures as the rebar is assembled in place prior to the final concrete pour.

Assessment Evidence Guide

For

“Steel Fixer/ Erector”

Level-3

Perform Welding

(Formative Assessment)

National Vocational & Technical

Training Commission

Instruction Sheet for the Candidate

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Perform Welding Maintain Safety at Site Plan and Organize Work	**Assessment Date (DD/MM/YY):** **Assessment Time :**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **Assessment Task 1:** Candidate is required to perform arc welding according to job assigned by assessor. **Assessment Task 2:** Candidate is required to perform oxy-fuel welding according to job assigned by assessor. **And complete:** 1. **Knowledge assessment test (Written or Oral)** 2. **Portfolios at the time of assessment (if any)**

Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria 1:** Select appropriate personal protective equipment as per job requirement **Performance Criteria 2:** Select tools and equipment as per the job requirement. **Performance Criteria 3:** Select required material as per job. **Performance Criteria 4:** Prepare base / parent metal for welding as per standard procedures. **Performance Criteria 5:** Align and tack weld base / parent metal into position as per the job requirements **Performance Criteria 6:** Maintain the gap and angle between electrode and base metal as per the job requirements. **Performance Criteria 7:** Remove slag. **Performance Criteria 8:** Check welded objects as per SOPs. **Performance Criteria 9:**Check the connectivity of earthing with power equipment **Performance Criteria 10:** Check leads and cable for any visual damage before use. **Performance Criteria 11:** Tag damaged lead, cable and connection points and report to the supervisor. **Performance Criteria 12:** Operate tools according to standard safety procedures. **Performance Criteria 13:** Perform first aid treatment in simulated condition for eye injury. **Performance Criteria 14:**Perform first aid treatment for a electrical shock **Performance Criteria 15:** Calculate the cost of labor services. **Performance Criteria 16:** Assign the task to the sub ordinates. **Performance Criteria 17:**Monitor the working of sub ordinates

	Assessment Task 2 **Performance Criteria 1:** Select appropriate personal protective equipment as per job requirement **Performance Criteria 2:** Select tools and equipment as per the job requirement. **Performance Criteria 3:** Select required material as per job. **Performance Criteria 4:**Prepare base / parent metal for welding as per standards **Performance Criteria 5:** Ignite the torch and make desire flame **Performance Criteria 6:** Maintain the gap and angle between gas nozzle and base metal as per the job requirements / specification following standard procedures. **Performance Criteria 7:** Check welded objects as per SOPs **Performance Criteria 8:**Identify t Oxy-Fuel Equipment **Performance Criteria 9:**Read Structural drawings **Performance Criteria 10:**Measure and mark the rebar to be cut **Performance Criteria 11:**Cut the rebar by Oxy-Fuel Equipment **Performance Criteria 12:**Handle the rebar efficiently using the machine **Performance Criteria 13:**Clean up the all Tools and accessories. **Performance Criteria 14:**Check all tools & accessories for any discrepancy, tag and report. **Performance Criteria 15:**Clear work area and dispose of wastage accordance with workplace requirements.

Assessors Judgment Guide

Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature: ....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code:..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1	**Description of Assessment Task 1** Perform arc welding according to job assigned by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Select appropriate personal protective equipment as per job requirement			
2.	Select tools and equipment as per the job requirement.			
3.	Select required material as per job.			
4.	Prepare base / parent metal for welding as per standard procedures.			
5.	Align and tack weld base / parent metal into position as per the job requirements			
6.	Maintain the gap and angle between electrode and base metal as per the job requirements.			
7.	Remove slag.			
8.	Check welded objects as per SOPs.			
9.	Check the connectivity of earthing with power equipment			
10.	Check leads and cable for any visual damage before use.			
11.	Tag damaged lead, cable and connection points and report to the supervisor.			
12.	Operate tools according to standard safety procedures.			
13.	Perform first aid treatment in simulated condition for eye injury.			
14.	Perform first aid treatment for a electrical shock			
15.	Calculate the cost of labor services.			
16.	Assign the task to the sub ordinates			
17.	Monitor the working of sub ordinates			

Competent ☐	Not Yet Competent ☐

Assessment Task 2	**Description of Assessment Task 2** Perform oxy-fuel welding according to job assigned by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Select appropriate personal protective equipment as per job requirement			
2.	Select tools and equipment as per the job requirement.			
3.	Select required material as per job.			
4.	Prepare base / parent metal for welding as per standards			
5.	Ignite the torch and make desire flame			
6.	Maintain the gap and angle between gas nozzle and base metal as per the job requirements			
7.	Check welded objects as per SOPs			
8.	Identify t Oxy-Fuel Equipment			
9.	Read Structural drawings			
10.	Measure and mark the rebar to be cut			
11.	Cut the rebar by Oxy-Fuel Equipment			
12.	Handle the rebar efficiently using the machine			
13.	Clean up the all Tools and accessories.			
14.	Check all tools & accessories for any discrepancy, tag and report.			
15.	Clear work area and dispose of wastage accordance with workplace requirements.			
Competent ☐		Not Yet Competent ☐		

Knowledge Assessment

Title of Qualification: National Vocational Certificate Level 3 in Steel Fixer& Erector	**CS Code:**	**Level:** 3	**Version:** 01
Competency Standard Title: Perform Welding Maintain safety at site Plan and organize work	**Assessment Date (DD/MM/YY):** **Assessment Time:**30 min		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

Candidate Details	Name: ..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor: ....

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. Define welding?	
2. What are Types of welding?	

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
3. Enlist the types of welding tools	
4. Define arcing?	
5. Difference between welding and cutting?	
6. Define tor steel?	
7. What is the use of mild steel?	
8. What are safeties wearing in welding?	
9. What are the electrical safety measures?	

ANSWER KEY

Sr.	Answers
1.	Welding is a fabrication process whereby two or more parts are fused together by means of heat, pressure or both forming a join as the parts cool..
2.	• Gas Metal Arc Welding (GMAW). • Gas Tungsten Arc Welding (GTAW), Stick • Shielded Metal Arc Welding (SMAW) • Flux-cored • Flux-cored Arc Welding
3.	• Auto-Darkening Welding Helmet. • Welding Gloves. • MIG Welding Pliers • Welding Magnets. • Chipping Hammer. • Welding Framing Jig • Speed Square. • Metal Brush.
4.	Arcing is occurring on electric transformer if the fuse link blow on any phase.
5.	Welding and Cutting Processes. Welding involves joining two or more pieces of metal together to form a single piece cutting processes involve separating or severing a piece of metal through intense heat generated to melt the metal.
6.	Tor steel is cold moved through structures to improve yield quality over hot rolled or hot worked bars.
7.	Mild steel is ductile, highly formable, and can be used for automobile body parts, plates, and wire products.
8.	flame-resistant outerwear, gloves to protect hands and lower parts of the arms, and welding hoods and goggles
9.	• Avoid contact with energized electrical circuits. ... • Treat all electrical devices as if they are live or energized. ... • Disconnect the power source before servicing or repairing electrical equipment. ... • Use only tools and equipment with non-conducting handles when working on electrical devices.