Assessment Guide – Assistant Bar Bender & Steel Fixer L2

Sector: Construction

Occupation: Bar bending and fixing

Reference id: CON/Q0202 ver. 1.1

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1. Qualification structure

To achieve full certification as an Assistant Bar Bender & Steel Fixer, trainees must complete all **seven** units, attempt and pass assessments on practical skills, viva and multiple choice synoptic test.

Sl. no	Unit No.	Title	Assessment method
001	CON/N0214	Read and understand reinforcement bar details from hand sketches	The assessment for the practical skill part should be based on the competency of the trainee to correctly read and understand details provided in the hand sketches. Technical and professional knowledge should be judged on the basis of theory, viva-voice or through observation.
002	CON/N0215	Use and maintain materials, tools and equipment relevant to reinforcement works	The assessment for the practical skill part should be based on the competency of the trainee to select and use materials, tools and equipment based on the type of activity. Technical and professional knowledge should be judged on the basis of theory, viva-voice or through observation.
003	CON/N0216	Perform cutting and manual bending of rebar for simple shape	The assessment for the practical skill part should be based on the competency of the trainee to perform cutting and manual bending of rebar to the required shapes as per the requirement. Technical and professional knowledge should be judged on the basis of theory, viva-voice or through observation.
004	CON/N0217	Assist in fabrication, placing and fixing of rebar for pre-fabricated and in-situ RCC structures	The assessment for the practical skill part should be based on the competency of the trainee to fabricate place and fix rebar for different RCC elements like slab, beam and column as per the sketches. Technical and professional knowledge should be judged on the basis of theory, viva-voice or through observation.

005	CON/N0101	Erect and dismantle temporary scaffold of 3.6 meter height	The assessment for the practical skill part should be based on the competency of the trainee to erect and dismantle temporary scaffold using system and conventional scaffold. Technical and professional knowledge should be judged on the basis of theory, viva-voice or through observation.
006	CON/N8001	Work effectively in a team to deliver desired results at the workplace	The assessment for the practical skill part should be based on the competency of the trainee to work effectively in a team including proper reporting, communication, documentation, problem solving etc. Technical and professional knowledge should be judged on the basis of theory, viva-voice or through observation.
007	CON/N9001	Work according to personal health, safety and environment protocol at construction site	The assessment for the practical skill part should be based on the competency of the trainee to demonstrate PPE, identify and report hazards, pollution control, and safety standards based on the type of activity. Technical and professional knowledge should be judged on the basis of theory, viva-voice or through observation.

2. Guidance for assessors

This qualification provides the performance criteria, skills and knowledge required to perform for the position of an Assistant Bar Bender & Steel Fixer at Level 2 in the Construction Sector. The role is referred to as 'Assistant Bar Bender & Steel Fixer'.

Brief job description: Assistant Bar Bender & Steel Fixer is responsible for identification, handling and use of tools and tackles, materials and equipment. The responsibilities also include reading and understanding reinforcement bar details from hand sketches and bar bending schedule, perform cutting and manual bending of rebar and fabricating, placing and fixing of reinforcement bar at the desired location using correct ties within specified time and tolerance. The individual should have good knowledge about the environment, health, safety and safe working practices and handling of rebar properly.

Personal attributes: The individual is expected to be physically fit and should be able to work across various locations and withstand extreme conditions while working. The individual shall be able to work within a team to handle various bar bending tools and materials and work under instructions and close supervision.

Introduction to assessments:
Trainees will be able to make an informed decision about their aptitude for work in this sector with an awareness of the options for career development.

The emphasis is on 'learning-by-doing' and practical demonstration of skills and knowledge based on the performance criteria. For this reason, trainees are required to complete a number of assignments to show their attainment of practical skills, viva and underpinning knowledge.

Overview of the assessments
The weightage of skill/performance assessment is 80% and for knowledge and understanding is 20% for each NOS.

The assessment consists of two categories:
1. Performance /Skill Assessment
2. Knowledge Assessment

Mode of Assessment
1. Demonstration/Practical for Performance /Skill Assessment
2. Synoptic multiple choice question test
3. Viva

} For Knowledge Assessment

Grading and weightage for assessments
Trainees are graded Pass or Fail.

The passing percentage for each QP will be 50%. To pass the Qualification Pack, every trainee should score a minimum of 50% individually in each NOS.

Sl. no	Type of Assessment	Weightage Out of 100
1	Skill Assessment by Practical observation	80 %
2	Knowledge Assessment by Synoptic MCQ Test	10 %
3	Knowledge Assessment by Viva	10

2.1 Performance/Skill Assessments

The performance/skill assessment will be conducted through demonstration/practical
Demonstration /Practical Assessment

There will be **four** practical task for core NOS (i.e. N0215 – N0217, N0101) which the trainee must attempt and pass to demonstrate the occupational skills acquired. Also the practical skill for NOS – N8001 and N9001 would be judged while carrying out practical task for core NOSs. Practical assessment is externally set and externally marked.

Trainees must attempt and pass the practical test which is assessed through a given task. The basis for practical task is the performance criteria checklist given is section 5.

The practical task is of **05 hours** duration (per trainee).The trainee has to score **280 marks** to pass the practical observation test. The grading criteria are defined below.

Grading criteria for Performance/Skill Assessments

NOS No.	Title	Performance Assessment Duration (Min)	Min. Passing marks out of 80	Assessment Result(Total Passing Marks)
CON/N0214	Read and understand reinforcement bar details from hand sketches	15	40	280≥ Pass 280< Fail
CON/N0215	Use and maintain materials, tools and equipment relevant to reinforcement works	45	40	
CON/N0216	Perform cutting and manual bending of rebar for simple shape	60	40	
CON/N0217	Assist in fabrication, placing and fixing of rebar for pre-fabricated and in-situ RCC structures	120	40	
CON/N0101	Erect and dismantle temporary scaffold of 3.6 meter height	60	40	
CON/N8001	Work effectively in a team to deliver desired results at the workplace	*	40	
CON/N9001	Work according to personal health, safety and environment protocol at construction site	*	40	
Total		5 hrs	280/560	

The assessment will be conducted in a simulated working environment. Due to this fact, the assessors must note that the naturally occurring evidence of competence is unavailable or infrequent. Simulation must be undertaken in a Realistic Working Environment which provides an environment that replicates the key characteristics of the workplace in which the skill to be assessed is normally employed.

This assessment guide has a section for trainees-*Section 3*. For each assessment, the marking and grading criteria are intended only for faculty and assessors.

Scheduling of the practical observations is flexible but to retain integrity of the assessment, they should be carried out as closely as possible to the written assessments.

Trainees are **not** permitted to use the observation checklist to work when completing the practical tasks but may familiarise themselves with it prior to an assessment.

Introducing the practical assessment to trainees
It will be beneficial to take trainees through what is required in the practical assessments and the way in which each part will be graded. Trainees should have an opportunity to familiarise themselves with the way the tasks are graded.

Trainees may refer to their faculty for guidance on parts of the practical assignments only, though they should be aware that, especially for the practical assessments, the amount of guidance and support they are given may be reflected in the feedback and performance.

2.2 Knowledge Assessment

The knowledge assessments are conducted through written test and viva.

1. Synoptic multiple choice question (MCQ) test

Synoptic test is an MCQ (Multiple Choice Question) test to assess the underpinning knowledge. The synoptic MCQ tests are externally set and externally marked. This test is to be taken by the trainee after completion of all the units under controlled and invigilated conditions as closed-book test under the supervision of an assessor. Trainees can only achieve whole marks; half marks for partially answered questions are not permitted. Selection of two or more options will be marked as wrong. The answers should to be marked by pen only.

Synoptic test is of 45 minutes duration and carries **70 marks**. The test may be conducted by the assessor in the oral mode, if required, considering the lack of reading and comprehending acumen (skills) of trainees. In such cases, the assessor will mention it on top of the MCQ submitted.

2. Viva

Trainees are required to take the viva test **along with** their practical observation test which is an extended part of the practical observation and assessment. Viva test is of 30 minutes duration per learner and carry **70 Marks**. The viva assessments are externally set and externally marked. For further guidance on viva, assessors can refer to *Section 5 Viva Guidance.*

The trainee has to score **70 marks** to pass the Knowledge assessment test.
The grading criteria is as defined below

Grading criteria for Knowledge assessment

NOS No.	Duration of Assessment (Min)	Knowledge Assessment		Min Passing marks	Assessment Result(Total Passing Marks
		MCQ test	Viva		
CON/N0214		10	10	10	≥ 70-Pass

CON/N0215		10	10	10	< 70-Fail
CON/N0216		10	10	10	
CON/N0217		10	10	10	
CON/N0101		10	10	10	
CON/N8001		10	10	10	
CON/N9001		10	10	10	
Total	120 min			70/140	

2.3 Question papers for synoptic test

The question paper of the synoptic test is a confidential document. It will be held under the custody of Assessment body. Every assessment body should prepare the question papers and get it approved from CSDCI. The centres need to follow the indenting process to obtain the question paper to administer the test.

2.4 Authenticity

Centres are reminded to check for authenticity of work where trainees may be using texts and the internet to complete tasks.

2.5 Feedback

Assessors must provide feedback on every occasion when a skills observation takes place. A pro forma for feedback is included in this assessment guide (see *Section 4*).

2.6 Trainee records of coursework

Trainees should be encouraged to keep their work carefully in a portfolio or scrapbook. This may be an unfamiliar form of record keeping for some but it is a good discipline which will benefit them when they progress in their learning and training.

2.7 Recording sheets

The recording sheets are also provided in *Section 4 Assessments*.

2.8 Codes of practice

Safe working practices, health and safety and codes of practice associated with the industry must always be adhered to.

2.9 Health and safety

The requirement to follow safe working practices is an integral part of all assessments and it is the responsibility of centres to ensure that all relevant health and safety requirements are in place before trainees start practical assessments.

Should a trainee fail to follow health and safety practice and procedures during an assessment, the assessment must be stopped and the trainee advised of the reasons why. In case of doubts, guidance should be sought from the SSC.

2.10 Verification of assignments

By using marking checklists, verifiers can check that evidence for an assignment is complete and can ensure that allocation of marks has been fair and beyond dispute.

2.11 Internal quality assurance

Approved centres must have effective quality assurance systems to ensure optimum

delivery and assessment of qualifications.

Quality assurance includes initial centre approval, qualification approval and the centre's own internal procedures for monitoring quality. Centres are responsible for internal quality assurance and CSDCI and Assessment body are jointly responsible for external quality assurance.

Full details and guidance on the internal and external quality assurance requirements and procedures, are provided by CSDCI from time to time.

The Assessment bodies are required to retain copies of trainees' assessment records and photographic evidence (in presence of trainee performing task) for three years after assessment.

2.12 Evidence Collection by the Assessor

1. The assessor needs to collect a copy of the attendance for the training done. The attendance sheet needs to be signed by the Training Centre Head.
2. The centre head also needs to declare that all the students appearing in the assessments have a minimum attendance of 80% for the training.
3. The assessor needs to verify the authenticity of the candidate by checking the photo ID card issued by the institute as well as any one Photo ID card issued by the Central/ State Government. The same needs to be mentioned in the attendance sheet. Where ever required, the assessor can authenticate and cross verify trainee's credentials in the enrolment form.
4. The assessor needs to punch the trainee's roll number on all the final job pieces of learners. Different sections can have alpha numbering such as if a student's roll number is 123 then the three pieces submitted by that student can be numbered as 123a, 123b and 123c.
5. The assessor needs to take a group photograph of all the students along with the assessor standing in the middle and with the centre name/banner at the back, as evidence.
6. The assessor needs to carry a camera to click photographs of the trainees working on the job and giving theory exam as evidence.
7. The assessor also needs to carry a photo ID card.
8. In the Assessment Evidence Form (provided after the practical marks sheet), the assessor should place the final photographic evidence in the space provided as evidence, from appropriate angles/sides of the final job piece submitted.

3. Trainee guidance

3.1 Information for trainees

The assessment requires a trainee to perform a combination of tasks as given below:
The trainee will be required to:

- Demonstrate the occupational skills and competencies as mentioned in the Qualification Pack.
- Demonstrate knowledge, understanding and skills as mentioned in the Occupational Packs.

Before the final assessments

The training partner (TP) will intimate that the trainees are ready for the assessment. The date and time of assessment would be intimated by the CSDCI.

The trainee is required to reach the assessment venue at the scheduled date and time. TP is required to circulate/download the information regarding the assessment to the trainee. Failure to reach the assessment venue for the theory or the practical test as per the schedule would be considered absent. In exceptional cases, an assessor can give a maximum of half hour concession time for late coming.

The trainee is required to carry their Institutes photo ID card as well as a government issued photo ID card for verification on all days of assessments.

Any misbehaviour/unethical practice by a trainee would lead to disqualification of the trainee.

The assessment consists of two categories:

1. Knowledge/Theory Assessment
2. Performance /Skill Assessment

The first day of assessment will have the theory test followed by practical and viva in smaller batches. (20-30 trainee)

Assessment Brief

Details of the three categories of assessments are mentioned below.

1. Theory (Synoptic multiple choice question)

Synoptic test is a Multiple Choice Question (MCQ) test to assess the underpinning knowledge and skills and is to be taken by the trainee at the start of the assessment under controlled and invigilated conditions as a closed-book test.

The synoptic test comprise of 31 questions and of 45 minutes duration.

2. Viva

Trainees are required to take the viva test **along with** their practical observation test which is an extended part of the practical observation and assessment. Viva test is of **30 minutes** duration per learner and carry 70 Marks.
A trainee has to score at least **70 marks** to pass the knowledge assessment.

Grading criteria for Knowledge assessments

NOS No.	Duration of Assessment (Min)	Knowledge Assessment		Min Passing marks	Assessment Result(Total Passing Marks
		MCQ test	Viva		
CON/N0214		10	10	10	≥ 70-Pass

CON/N0215	120 min.	10	10	10	< 70-Fail
CON/N0216		10	10	10	
CON/N0217		10	10	10	
CON/N0101		10	10	10	
CON/N8001		10	10	10	
CON/N9001		10	10	10	
Total	120 min			70/140	

3. Performance/Skill Assessments

Trainees will be briefed on the practical observation and checklist to familiarise them on observation methodology. The trainees would be assessed on their working as well as their final product. Trainees are suggested to read the Qualification Pack to familiarise on Performance Criteria, Knowledge, Understanding and Skills.

The practical task is for **05 hours per trainee**. A trainee has to score at least **280 marks** to pass the practical observation test.

Grading criteria for Performance/Skill Assessments

NOS No.	Title	Performance Assessment Duration (Min)	Min. Passing marks out of 80	Assessment Result(Total Passing Marks)
CON/N0214	Read and understand reinforcement bar details from hand sketches	15	40	280≥ Pass 280< Fail
CON/N0215	Use and maintain materials, tools and equipment relevant to reinforcement works	45	40	
CON/N0216	Perform cutting and manual bending of rebar for simple shape	60	40	
CON/N0217	Assist in fabrication, placing and fixing of rebar for pre-fabricated and in-situ RCC structures	120	40	
CON/N0101	Erect and dismantle temporary scaffold of 3.6 meter height	60	40	
CON/N8001	Work effectively in a team to deliver desired results at the workplace	*	40	
CON/N9001	Work according to personal health, safety and environment protocol at construction site	*	40	
Total		5 hrs	280/560	

4. Assessments

Assessments for the job role of Assistant Bar Bender & Steel Fixer are conducted to gauge and assess the trainees competencies and professional expertise as well as their skill and knowledge in the specified area (Bar bending and fixing).

During the practical task, trainees will be assessed on their workmanship, quality of finished product, time management, etc., based on the performance criteria (PC), knowledge and understanding and their professional and soft skills as specified in the qualification pack. They will be graded for all their assessments based on the approved assessment strategy which is signed off by CSDCI.

The performance criteria checklist as a guide for all qualifications are given in section 5.0. Assessment tools in the form of a sample set of practical, theory & viva questions for each NOS is given as a guide in section 6 to 7.The assessment evidence, overall summary and NOS wise summary is given in section 8 to 10.

5. Performance Criteria Checklist

Assistant Bar Bender & Steel Fixer		
1. Learner Name: _____ 2. Enrolment No: _____ 3. Centre: _____		
Guidance to assessors: **1. Assessor must exhibit the observation checklist to the learners before the commencement of the practical and explain them how the learners will be observed and graded during the practical assessment. However the learners are not allowed to use the practical observation checklist during the course of the assessment or task.** **2. Assessor must ensure that all the tools listed in the "List of Tools" are made available by the centre to every learner being assessed.**		
Practical	**Details**	**MARKS**
CON/N0214: Read and understand reinforcement bar details from hand sketches		
1	PC1. Read and understand rebar details from hand sketches: • Read and understand rebar details from hand sketch for beam, column and slab (assessor to produce different hand sketch attached in the annexure).	
	PC2. Identify diameter, cutting length, number and shape of rebar from hand sketch: • Interpret and list the information given in rebar sketch. • Identify the diameter, number, shape and cutting length of rebar to be used for the given task.	
	PC3. Identify cover for rebar from hand sketch: • Read cover details for rebar from hand sketch for given task (beam, column and slab). • **Calculate** the cutting length of stirrups for column, and beam with respect to the cover.	
	PC4. Read spacing detail for stirrups, main and secondary rebar, bar chairs, spacer bar from hand sketch: • Read spacing details from hand sketch for stirrups, main and secondary rebar with respect to the task. • **Calculate** number of rebar required from hand sketch for beam, column and slab.	
	PC5. Calculate cutting length of rebar for stirrups, hanger bar and chairs: • **Calculate** cutting length of stirrups (circular and rectangle/square) using correct formula. • **Calculate** cutting length of rebar for chair.	
	PC6. Calculate cutting length of rebar for simple shapes • **Calculate** cutting length of rebar for L shape rebar. • **Calculate** cutting length of rebar for U shape rebar.	
	Total Marks	**80**
CON/N0215: Use and maintain materials, tools and equipment relevant to reinforcement works		
2	PC1. Use materials such as binding wire, bar connecting coupler, thread protection cap • **Select** correct type of binding wire for given task. • Check the gauge of binding wire using SWG. • **Identify** and demonstrate the use of bar connecting coupler and thread protection cap.	

	PC2. Use different types of rebar as per instructions • **Identify** different types of rebar (Tor steel, TMT, Mild steel, Wire mesh etc.). • **Identify** different diameter rebar (Assessor to display different diameter rebar) • **Identify** the parts of rebar (Rib and knot) and information provided in the rebar (Steel grade, brand name, bar size)	
	PC3. Use hand tools such as lever, hook, measurement tape, gauge, sledge hammer, chisel, pin plate and other relevant tools used in reinforcement works • **Identify** and demonstrate the use of hand tools for given task. • Chisel and hammer – to cut rebar • Binding hook – to tie rebar • Bending lever – to bend the rebar • Masons line – to align the rebar • Hack saw – to cut rebar	
	PC4. Use power tools such as hand held rebar cutting machine, circular rebar cutting machine and shearing machine for cutting of rebar • **Identify** and demonstrate the use of hand held rebar cutting machine. • **Identify** and demonstrate the use of circular rebar cutting machine. • **Identify** and demonstrate the use of rebar shearing machine. • Follow proper ergonomic principles while using rebar cutting machine. • Ensure pre checks on machine and follow safety precautions while operating cutting machine.	
	PC6. Use bending machine for rebar bending using different types of bushes and other accessories under supervision • **Identify** and use different types of bushes and other accessories with respect to the diameter of rebar. • Demonstrate rebar bending operation using bending machine. • Follow proper ergonomic principles while using rebar bending machine. • Ensure pre checks on machine and follow safety precautions while operating bending machine.	
	PC7. Use different types of slings, shackles and lifting belts for lifting and shifting of rebar's • Ensure pre checks on lifting appliances/accessories (check for damage, safe loading capacity, manufacturer instructions) and follow industry safety. • **Identify** and demonstrate the use of different types of slings (Chain, wire rope, synthetic web, etc.). • **Identify** and demonstrate the use of different shackles (Bow shackles, D shackles). • **Identify** and demonstrate the use of different lifting belts (Synthetic, fibre reinforced etc.).	
	PC8. Use personal protective equipment such as safety shoes, gloves, helmets, ear, plugs, nose mask, safety goggles as per requirements • **Select and identify** the parts of PPEs used by a bar bender. • Demonstrate the use of all PPEs used by bar bender (Helmet, shoe, gloves, ear plugs, safety goggle, shoulder pack etc.).	
	PC9. Wear full and half body safety harness as per requirement • **Select and identify** the parts of full and half body safety harness. • Ensure pre checks while selecting full and half body safety harness. • Demonstrate how to wear/use full and half body harness. • **Explain** the activities/scenario where full and half body safety harness to be used.	

	PC10. Perform basic maintenance of hand tools • Clean and secure hand tools after every use. • Check for any damages before and after use. • Ensure basic maintenance of hand tool as per manufacturer and company instruction. • Ensure hand tools are stored in a designated tool kit.	
	PC11. Perform basic maintenance of power tools • Fill maintenance check list for power tool (check for fuel/oil level, condition of cable and other electrical fixtures, earthing, safety guard, condition of blades and bit). • Clean and secure power tools after every use (ensure proper covering for machine) • Apply grease and oil after use based on instruction. • Check for any damages before and after use. • Ensure basic maintenance of power tool as per manufacturer and company instruction.	
	Total Marks	**80**
CON/N0216: Perform cutting and manual bending of rebar for simple shape		
3	PC1. Select type of rebar as per instruction • **Identify and select** rebar as per the sketch • Check and confirm the diameter using gauge. • Check and confirm the information provided in rebar. (Grade, diameter, make)	
	PC2. **Select** hand tool or power tool for cutting of rebar as per the requirement • **Identify and select** hand tool and power tools used to cut rebar (Hammer and chisel, hand held cutting machine).	
	PC3. Use measurement tape and mark cutting length on rebar as per instruction • **Calculate** and mark the cutting length of circular ring on rebar using measurement tape and white chalk or marker (Use sharp end white chalk). • **Calculate** and mark the cutting length of square/rectangle/triangle/hanger bar/chair bar (any two) on rebar using measurement tape and white chalk or marker.	
	PC4. Operate hand or power tool for cutting of rebar maintaining correct body posture • Ensure required PPEs (Safety helmet, safety shoe, hand glows, safety goggles). • Ensure pre checks on machine (for machine earthing, safety guard, electrical connection and abrasive blade for proper functioning). • Follow proper ergonomic principles while operating cutting machine (maintain safe distance from the machine) • Follow trade safety and company policy while handling rebar cutter.	
	PC5. Straight rebar using appropriate tools before bending if required • **Select** required tool to straight rebar (hammer, steel base and bending lever. • Place the steel base in a firm and level surface. • Place rebar on steel base and straight rebar using hammer and bending lever. • Ensure correct body posture while performing this activity.	
	PC6. Maintain correct body posture while bending rebar manually • **Select** tools required to bend rebar manually (bending lever, bending table with pin and plate) • Ensure correct body posture while bending rebar.	

	• Maintain correct and safe distance from bending table. • Follow trade safety and guidelines while bending rebar manually.	
	PC7. Mark on rebar, use lever or pipe of suitable diameter for bending the rebar • Mark on rebar where bending is required for circular ring. • Mark on rebar where bending is required for square/rectangular stirrup. • Mark on rebar where bending is required for chair/hanger bar. • **Select** appropriate bending lever to bend 10mm rebar (12 to 16mm).	
	PC8. Mark on bending bench for making stirrups, chairs, hanger bars • Mark on bending bench for circular stirrup using measurement tape and white chalk (ensure measurement from outer face of the pin). • Mark on bending bench for square/rectangular stirrups using measurement tape and white chalk. • Mark on bending bench for chair/hanger bar using measurement tape and white chalk.	
	PC9. Place the rebar into a pipe of specified diameter • **Select** appropriate pin and plate to bend 10mm rebar. • Place rebar between the pin as per the measurement done. • **Select** correct bending lever to bend 10mm rebar.	
	PC10. Bend bars to required shape and angle manually as per criteria laid down on code sheets • For right hander - Hold rebar in left hand and rebar lever in right hand. For left hander – hold rebar in right hand and rebar lever in left hand. • Hold rebar and lever firmly and bend to required angle in same plane (circular ring, square/rectangle, and chair/hanger bar). • While bending, bending plane/direction may change. If so correct the same and proceed to next bend. • Follow trade safety and precautions while bending.	
	PC11. Check bent rebar for its shape, angle & length • Check the shape, angle, hook length, and dimension for circular ring. • Check the shape, angle, hook length, and dimension for square/rectangle/triangle stirrup. • Check the shape, angle, and dimension for chair/hanger bar.	
	Total Marks	**80**
CON/N0217: Assist in fabrication, placing and fixing of rebar for pre-fabricated and in-situ RCC structures		
4	PC1. Follow correct method for insertion/ fixing of rebar as per the types of structure (column, beam, slab and wall) • **Read** rebar hand sketch and understand the position of bottom bar, top bar and chair for slab reinforcement.	
	PC2. Place and fix rebar on its positions as per marking and instructions <u>For slab:</u> • Mark centre to centre spacing as specified in X axis (along provided length of bar for bottom layer. • Mark centre to centre spacing as specified in Y axis (along provided length of bar) for bottom layer. • Mark centre to centre spacing as specified on bottom layer(mark after the bottom layer tied) along both direction (X and Y) • Mark location of chair on bottom layer <u>For column:</u> • Mark the dimension (overall) of column on PCC. • Mark main rebar (as specified) by ensuring specified cover from all sides. • Mark stirrup spacing (as specified) on all 4 main bars.	

	• Check the horizontal alignment of stirrups using spirit level. For Beam: • Mark centre to centre spacing as specified (stirrup spacing) on top rebar. • Mark on bottom layer with respect to the top reinforcement. • Check the vertical alignment of stirrups using spirit level.	
	PC3. Maintain uniform spacing between the bars, stirrups, links as per marking and instructions For slab: • Place and adjust bottom layer in X axis to maintain uniform spacing throughout the length Place and adjust bottom layer in Y axis to maintain uniform spacing throughout the length • Maintain uniform spacing for top layer on both the direction. • Ensure that the intersection of rebar in two direction should be in 90 degree. For column: • Ensure 40mm cover to main rebar from all four sides. • Ensure uniform centre to centre spacing as specified for stirrup throughout the height of column. For Beam: • Ensure specified cover from all four sides. • Ensure uniform centre to centre spacing as specified on either end. • Ensure uniform centre to centre spacing as specified on centre of the beam	
	PC4. Stagger the lap to avoid more than 50% of splicing For slab: • Stagger the lap to avoid more than 50% of splicing (Assessor to instruct candidate to use cut length rebar to perform this step). For column: • Lap main bars in different lapping zone (within L/3) to stagger the lap to avoid more than 50% of splicing (Assessor to instruct candidate to use cut length rebar to perform this step). For Beam: • Lap main bars in different lapping zone (within L/3) to stagger the lap to avoid more than 50% of splicing (Assessor to instruct candidate to use cut length rebar to perform this step).	
	PC5. Tie reinforcement with approved binding wires and use ties such as hairpin tie, ring hairpin tie, ring slash tie, crown tie as per instructions: For slab: • Select black annealed 16 gauge binding wire to tie rebar. • Tie bottom layer using ring slash tie. • Tie top layer using slash tie. • Lap rebar using splice tie. • Assessor to instruct candidate to demonstrate crown, hairpin and ring hairpin tie while performing this task. For column: • Select black annealed 16 gauge binding wire to tie rebar. • Tie stirrups using crown, hairpin and ring hairpin tie. • Lap rebar using splice tie. • Assessor to instruct candidate to demonstrate slash and ring slash tie while performing this task. For Beam: • Select black annealed 16 gauge binding wire to tie rebar. • Tie stirrups using crown, hairpin and ring hairpin tie. • Lap rebar using splice tie.	

	• Assessor to instruct candidate to demonstrate slash and ring slash tie while performing this task.	
	PC6. Place and tie cover blocks at regular interval <u>For slab:</u> • Select PVC cover block as specified. • Place and tie cover blocks at regular intervals • Ensure that the cover blocks tied to bottom rebar of bottom layer. • Assessor to instruct candidate to identify different sizes of cover blocks. <u>For column:</u> • Select PVC cover block as specified. • Place and tie cover blocks at regular intervals • Ensure that the cover block tied to main reinforcement. • Assessor to instruct candidate to identify different sizes of cover blocks. <u>For Beam:</u> • Select PVC cover block as specified. • Place and tie cover blocks at regular intervals • Ensure that the cover block tied to main reinforcement. • Assessor to instruct candidate to identify different sizes of cover blocks.	
	PC7. Place and fix spacer bars to maintain proper gap between double layer rebar as per instruction <u>For Beam:</u> • Cut spacer bar of 25mm diameter. • Place and tie spacer bar between two layers (two in either end and one at centre of bottom layer).	
	PC8. Place and fix chairs at specified spacing to maintain correct thickness in case of slab reinforcement <u>For Beam:</u> • Fabricate chair bar by considering slab thickness 175mm (deduct diameter of rebar used in top and bottom layer). • Ensure cover for top and bottom layer of slab reinforcement as specified. • Place and tie chair bars to bottom and top layer (4 numbers).	
	PC9. Follow sequence of tying for different types of pre-fabricated and in-situ R.C.C structures <u>For slab:</u> • Place and tie corner bar first and mark spacing on same. • Check spacing and angle between bars. • Place and tie cover blocks. • Tie and complete the bottom layer. • Place and tie chair bar on bottom layer. • Place four corner bar on chair bar and mark spacing on the same. • Tie top layer as per the spacing detail. <u>For column:</u> • Mark column dimension and rebar. • Place main bars and support it from all four sides. (use vertical prop to support) • Mark spacing on corner bar (main bar). • Insert and tie stirrups as per the marking. • Lap main rod at lapping zone and tie stirrups. <u>For Beam:</u> • Place/hang top reinforcement using vertical support. • Mark spacing on top reinforcement. • Insert required number of stirrups.	

	• Tie stirrups to top layer as per the marking. • Insert bottom rebar's from one end. • Adjust the position of bottom bar and tie stirrups to the bottom layer. • Place and tie spacer bar on bottom layer. • Place second layer of bottom bar over the spacer bar and tie the stirrups.	
	PC10. Use binding wire economically for tying of rebar • Select correct type of tie based on the element. • Use slash and ring slash tie for slab, wall and raft. • Use crown, hairpin and ring hairpin tie for column and beams. • Use splice tie for lapping. • Cut required length of binding wire based on the diameter of rebar. • Collect fallen down binding wires and reuse the same.	
	Total Marks	**80**
CON/N0101: Erect and dismantle temporary scaffold of 3.6 meter height		
5	PC1. Level area where scaffold needs to be erected and checked for ground compactness if required • Remove unwanted material and clean the area where the scaffold needs to be erected. • Level and compact the area where scaffold needs to be erected. • Use required tools to level and compact the ground. • Ensure that the ground is dry and stabilized properly.	
	PC2. Shift and stack required materials, components ,tools and tackles for scaffold at the instructed location • Is able to follow proper sequence while shift and stack required materials. • Shift and stack required scaffold components near the work location (standard frames, ledger or bracings, platform materials, clamps, screw jack, base plate, sloe board etc.). • Shift and stack required material near the work location (Ladder, safety net, barricading material). • Shift and stack tools and tackles (spanner, hammer, key lever, spirit level, line string, plumb bob etc.). • Ensure proper handling techniques while handling the material and components.	
	PC3. Wear and use required safety gadgets and follow trade safety • **Identify and select** safety gadgets required to perform the task. • Wear and use required safety gadgets (safety shoe, helmet, harness, hand gloves). • Barricade the area where the scaffold needs to be erected. • Follow trade safety while erecting scaffold.	
	PC4. Place base plates and sole boards on the ground as per markings and instructions • Set out the position and place the sole plate on firm ground by considering required distance between scaffold unit and structure • Place sole board by ensuring no gap between ground and sloe boards. • Place and adjust base plate on the centre of sole board. • Ensure base plate is nailed on the sole plate.	
	PC5. Use proper components and follow standard procedure for erection of 3.6 m temporary scaffold • Select required materials and components to erect scaffold as per the sequence (Standard frames, ledger or bracings, platform materials, ladder, clamps, screw jack, base plate, etc.) • Stand a unit frame on each sole plate with a set of screw jack to the lowest adjustment, fitted inside the base of each leg of unit frame. • Fix the ends of a cross bracing to the frame on one side and then	

	attach the other end of the brace to the other unit frame on the same side • Fix another cross bracing to the other side of the same bay.	
	PC6. Check verticality of scaffold at first level of erection and correct it (if required) before moving to the next level • Check verticality of scaffold at first level (use plumb bob or spirit level to check verticality). • Place spirit level on the top of two frames and adjust the level by using adjustable jack. • Tighten the wedges of cross bracing once the level found correct. • Repeat the process to reach required height.	
	PC7. Check for rigidity, stability and support of erected scaffold • Connect all the ledgers/bracings. • Tie supports at required interval. • Ensure clamps are tightened properly. • Ensure diagonal bracings as per the drawing. • Use swivel clamps to provide diagonal bracing.	
	PC8. Fix walk-boards, guard rails, toe-boards and other components on working platform • *Place and tie ladder to the scaffold (not more than 75 degree).* • *Deck the platform with scaffold boards for full length of the scaffold.* • *Tie all the scaffold boards to the unit frame to avoid any displacement* • *Ensure there is no gap between the walk boards* • *Ensure the periphery of scaffold is covered by guard rails as per the drawing.* • *Ensure toe board is fixed properly.*	
	PC9. Follow standard procedure for dismantling of 3.6 m temporary scaffold • *Barricade the area where scaffold needs to be dismantled.* • *Ensure reverse order of erection.* • *Remove toe board and hand rails.* • *Remove and shift plat form board to below unit frame.* • *Remove external support and bracings.* • *Dismount the unit frame and complete the dismantling process.*	
	PC10. Remove guard rails, toe boards, walk boards and other components sequentially • Dismantle and shift material to ground without damaging the materials. • Ensure materials should not be thrown from top.	
	PC11. Clean and stack all components properly after dismantling • Clean the material after dismantling. • Check for any damages. • Stack all the components in a specified location.	
	PC12. Maintain tidiness at work location • Clean the area. • Ensure proper housekeeping at work place. • Collect and dispose the wastes.	
	Total Marks	**80**
CON/N8001: Work effectively in a team to deliver desired results at the workplace		
6	PC1. Pass on work related information/ requirement clearly to the team members • Communicate work related information clearly to the team members while performing task.	

	Assessor to observe this skill while task is being performed by assesse (Scaffold erection and dismantling)	
	PC2. Inform co-workers and superiors about any kind of deviations from work • Inform any kind of deviation to the instructor while performing the task. • Is able to escalate any kind of deviations to assessor/instructor. Assessor to observe this skill while task is being performed by assesse (Scaffold erection and dismantling)	
	PC3. Address the problems effectively and report if required to immediate supervisor appropriately • Address the problems to the assessor/instructor (damaged or unguarded machineries, damaged electrical cables, material shortage etc.). Assessor to observe this skill while task is being performed by assesse.	
	PC4. Receive instructions clearly from superiors and respond effectively on same • Adhere to the instructions given by assessor/instructor while performing the task. • Is able to receive instructions clearly. Assessor to observe this skill while task is being performed by assesse	
	PC5. Communicate to team members/subordinates the appropriate work technique and method • Communicate work related information/techniques clearly to the team members while performing task. Assessor to observe this skill while task is being performed by assesse (Scaffold erection and dismantling)	
	PC6. Seek clarification and advice as per requirement and applicability • Is able to seek clarification and advice as per requirement. Assessor to observe this skill while task is being performed by assesse.	
	PC7. Hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams • Hand over the required materials to the interfacing team. • Hand over the tools and tackles to interfacing team. • Hand over the machineries and equipment to interfacing team. • Hand over work fronts timely to interfacing team. Assessor to observe this skill while task is being performed by assesse.	
	PC8. Work together with co-workers in a synchronized manner • Work together with co-worker. (Performing scaffold erection and dismantling) • Work as a team member to complete the task within the stipulated time. • Have clear communication with the team member while performing the task. • Help and motivate co-workers to complete the task. • Advice team member on work techniques. • **Resolve conflict** raised within the team Assessor to observe this skill while task is being performed by assesse.	
	Total Marks	**80**
CON/N9001: Work according to personal health, safety and environment protocol at construction site		
7	PC1. **Identify and report** any hazard, risks or breaches in site safety to the appropriate authority • **List** possible hazards while performing different task (Bending and steel fixing, scaffold erection) • **Identify** work place hazards while executing the task. (damaged cable, damaged tools) • Fill an incident form. (assessor to provide incident form)	

	PC2. Follow emergency and evacuation procedures in case of accidents, fires, natural calamities • List different types of emergency situation (Fire, flood, building collapse, war etc.) • Ensure proper method to respond in case of any emergency. (Candidate to perform role play based on the scenario given by assessor)	
	PC3. Follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable • Follow safe practice while shifting rebar from yard to work place by manually. • Follow safe practice while handling hand and power tools. • Follow safe practice while shifting scaffold materials to the work place. • Ensure proper method to lift materials while erecting scaffold.	
	PC4. Participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site: • **List** different types of emergency situation (Fire, flood, building collapse, war etc.) • Ensure proper method to respond in case of any emergency. (Assessor to ask viva questions to assess the knowledge) • **Name** different safety awareness program. • **List** the benefits of attending safety awareness program.	
	PC5. Identify near miss, unsafe condition and unsafe act • **List** unsafe condition found while performing the task (Lack of illumination, inadequate ventilation, overcrowded and congested work places, unguarded and faulty machineries, defective tools and equipment etc.) • **List** unsafe act found while performing the task (Not wearing safety gadgets, bullying team member, using faulty machineries etc.).	
	PC6. Use appropriate Personal Protective Equipment (PPE) as per work requirements including: • **Select and identify** the parts of PPEs used by a bar bender. • Demonstrate the use of all PPEs used by bar bender (Head protection (Helmets), ear protection, fall protection, foot protection, face and eye protection, hand and body protection.	
	PC7. Handle all required tools, tackles, materials & equipment safely. • Follow safe practice while handling hand tools and power tools (assessor to observe while performing the task) • Follow safe practice while shifting rebar from yard to work place by manually. • Follow safe practice while shifting scaffold materials to the work place. • Ensure proper method to lift materials while erecting scaffold.	
	PC8. Follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines • Follow safe disposal of harmful waste. • Follow MSDS while handling harmful waste (waste shuttering oil, chemical etc.) • Dispose hazardous waste into designated container.	
	PC9. Install and apply properly all safety equipment as instructed • **Identify** and demonstrate the use of air breathing equipment. • **Identify** and demonstrate the use of fire extinguisher. • **Identify** and demonstrate the use of fire blanket.	
	PC10. Follow safety protocol and practices as laid down by site EHS department. • **Identify** and list the information provided in emergency preparedness	

	plan. • **Describe** safe assembly point. • List emergency services with contact number (Fire, ambulance etc.). • **List** the components of first aid box. • **Describe** first aid procedure for different accidents. • List hygienic practice to be followed.	
	PC11. Collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes • Collect the waste into designated yard or container based on the type of waste (waste binding wire, metal dust found while cutting operation, waste rebar, concrete waste, organic waste etc.). • Follow correct method to shift waste materials to the designated yard (chute system, wheel barrow, mortar pan, tractor etc.)	
	PC12. Apply ergonomic principles wherever required. • Follow proper ergonomic principles while using rebar cutting machine. • Follow proper ergonomic principles while using rebar bending machine. • Follow proper ergonomic principles while bending rebar manually. • Follow proper ergonomic principles while tying rebar. • Follow proper ergonomic principles while erecting and dismantling scaffold.	
	Total Marks	**80**
	Grand Total	**560**

6. Tools, materials and consumable list

Below tools list is prepared based on the practical questions for the NOS CON/N0215, CON/N0216, CON/N0217 and CON/N0101

	Tools and consumables required			
Category	**Sl.no.**	**Particular**	**Specification**	**Quantity**
Tools	1	Chisel	Flat toughened	15
	2	Hammer	5 Lb, 7 Lb	15
	3	Bar tying lever	8mm (tor steel)	15
	4	Bending lever 8mm, 10mm 12mm, 16mm, 20mm	Two headed (Iron)	15
	6	Line string (line dori)	2mm Nylon string	15
	7	Gauge measure	MS gauge box	05
	8	Podger spanner	17mm-19mm	05
	9	Hack saw blade with frame	Type B	10
Measuring instruments	1	Steel scale	30 cm	25
	2	Try square	150 X150 mm	15
	3	Spirit level	3 meter	02
	4	Plumb bob	Brass (150 gram)	04
General requirements	1	10mm rebar	Tor steel	As required
	2	12mm rebar	Tor steel	As required
	3	8mm, 16mm, 20mm, 25mm, 32mm (1 meter	Tor steel	As required
	4	Binding wires	19 gauge	1.5kg
	5	PVC cover block	20, 25, 40 mm	As required
	6	Cup lock scaffold/ Frame scaffold/ Pipe & coupler scaffold (Including all the components and accessories)	Any reputed brand	05 set
	7	Wooden planks	350 X 50 mm	As required
	8	Rebar cutter	Any reputed brand	05
	9	Bar shearing machine	Any reputed brand	02
	10	Bar bending machine	Any reputed brand	02
	11	Rebar tying machine	Any reputed brand	05
	12	Lifting appliance • Sling • Shackle • Belt	Any reputed brand	2 set
	13	Mobile lifting equipment	Any reputed brand	01
Consumables	1	Safety helmet	Any reputed brand	1 per learner
	2	Cotton gloves	Any reputed brand	As required

	3	Face shield	Any reputed brand	As required
	4	Safety goggles plain	Any reputed brand	As required
	5	Apron	Any reputed brand	As required
	6	Safety shoes and socks	Any reputed brand	1 per learner
	7	Dust mask	Any reputed brand	As required
	8	White colour chalk piece	Any reputed brand	2 boxes
	9	Drawing pencil, pencil sharpener, scale and rubber	Any reputed brand	20 each
	10	White paper A4 size	Any reputed brand	1 bundle
Others	1	3 phase power supply points	Any reputed brand	As required
	2	Single phase power supply points	Any reputed brand	As required
	3	Fire extinguishers (mechanical foam, DCP, CO_2 and sand buckets with stand)	Any reputed brand	As required
	4	First aid kit	Any reputed brand	As required
	Note Above list is for the batch size of 20 trainees **Guidelines to conduct the assessment** 1. Explain the task to be completed by the trainee. 2. Confirm whether he/she has understood the task by asking a few questions. 3. Provide the required tools and materials to the trainee. 4. Observe the processes followed at each stage. 5. Grade the trainee according to the practical observation checklist. **6. Necessary arrangements should be ensured based on the task.** 7. **Assessor can modify the task based on the infrastructure available without deviating performance criteria**.			

7. Assessment Methods/Tools

7.1 CON/N0214: Read and understand reinforcement bar details from hand sketches

A. Practical questions **Total Marks: 80**
Duration: 15 Min

Assessor to assess this NOS while learner is performing practical's of NOS N0216 and N0217

1. Interpret and list the following information given in rebar hand sketch: **Marks : 20**
   - Type of rebar.
   - Diameter of rebar.
   - Number of rebar.
   - Shape of the rebar.
2. Cover details for slab, column and beam. **Marks : 12**
3. Spacing detail for slab, column and beam. **Marks : 12**
4. Cutting length of circular stirrups **Marks : 08**
5. Cutting length of Square/rectangular/triangular stirrups. **Marks : 08**
6. Cutting length of chair/U rod. **Marks : 16**
7. Identify the lapping zone and lapping length for slab, column and beam. **Marks : 04**

B. Multiple choice questions **Total Marks: 10**
(Preferably written but oral is also permitted) **Duration: 5 Min**

1. Identify the item from the image given below. 2 Marks

   a. Three legged stirrup
   b. One legged stirrup
   c. Two legged stirrup
   d. Four legged stirrup

2. What is the spacing detail mentioned in the rebar information statement, "T-10 @ 100 c/c"? 2 Marks
   .
   a. 100mm centre to centre
   b. 10mm centre to centre
   c. 100cm centre to centre
   d. 100dm centre to centre

3. To bend rebar to an angle of 90 degree, which one of the following should be suggested to deduct while calculating cutting length with respect to elongation? 2 Marks
   a. 2 Diameter
   b. 1 Diameter
   c. 6 Diameter
   d. 5 Diameter

4. What is standard size of reinforcement steel bar? 2 Marks
   a. 8 meter
   b. 11 meter
   c. 12 meter
   d. 10 meter

5. What is the diameter and spacing of rebar mentioned in the rebar information statement, “T-12 @ 125 c/c”? 2 Marks
   a. 12 mm, 100 mm
   b. 10 mm, 100 mm
   c. 12 mm, 125 mm
   d. 10 mm, 125 mm

C. Viva Question **Total Marks: 10**

(These questions could be asked during practical observation) **Duration: 5 Min**

1. What are the information’s that can be found in a rebar hand sketch? 3 Marks
   Possible answers
   a. Type of rebar.
   b. Diameter of rebar.
   c. Number of rebar.
   d. Shape of rebar.
   e. Spacing of rebar.
   f. Cover for rebar.

2. State the general cover ensured for different RCC elements? 3 Marks
   Possible answers
   a. For beam – 20 to 25 mm.
   b. For slab – 15 to 20 mm.
   c. For column – 30 to 40 mm.
   d. For footings – 40 to 50 mm.
   e. For RCC wall – 20 to 25 mm.

3. Explain the procedure to calculate the cutting length of rectangular stirrups? 4 Marks
   Possible answers
   a. Deduct the cover of structure.
   b. Add the length of all four sides.
   c. Deduct 2d (diameter) for number of bends.
   d. Add 9d (Diameter) on either end of the stirrups.

7.2 CON/N0215: Use and maintain materials, tools and equipment relevant to reinforcement works

A. Practical question **Total Marks: 80**
Duration: 45 min

Use and maintain materials, tools and equipment relevant to reinforcement works

1. Identify and explain the purpose of following material in bar bending trade. **Marks: 12**
   - Binding wire
   - Bar connecting coupler
   - Thread protection cap
2. Identify different types of rebar (Tor steel, TMT, Mild steel, Wire mesh etc.). **Marks: 04**
3. Identify and demonstrate the use of hand tools used in bar bending (any three) **Marks: 20**
   - Chisel and hammer – to cut rebar
   - Binding hook – to tie/untie rebar*
   - Bending lever – to bend the rebar*
   - Masons line – to align the rebar
   - Hack saw – to cut rebar
4. Identify and demonstrate the use of power tools used in bar bending (any one) **Marks: 20**
   - Hand held rebar cutting machine.
   - Circular rebar cutting machine.
   - Rebar shearing machine.
   - Bar bending machine.
5. Identify and demonstrate the use of different lifting appliances. **Marks: 12**
   - Slings (Chain, wire rope, synthetic web, etc.)
   - Shackles (D, bow shackle)
   - Lifting belts
6. Perform basic maintenance of hand tool. **Marks: 04**
7. Perform basic maintenance of power tool. **Marks: 08**
   - Fill maintenance checklist.

B. Theory questions **Total Marks: 10**
(Preferably written but oral is also permitted) **Duration: 5 Min**

1. What is the purpose of rebar threading? 2 Marks
   a. To lap rebar by welding
   b. To lap rebar by tying with binding wire
   c. To lap rebar mechanically
   d. To lap rebar by brazing

2. Which one of the following power tools is used to bend and shape the rod as per the required profile? 2 Marks
   a. Drilling machine
   b. Bar bending machine
   c. Grinding machine
   d. Bar cutting machine

3. While shifting rebar manually, which group of basic PPEs must be used? 3 Marks
   a. Safety shoe, safety helmet, hand glows, shoulder pack
   b. Safety shoe, safety helmet, safety belt, shoulders pack
   c. Safety shoe, safety helmet, safety belt, safety goggle

d. Safety shoe, safety helmet, ear plug, safety goggle

4. Which of the following is the right method for storing sharp tools? 3 Marks
   a. Store sharp tools along with other tools
   b. Store sharp tools in a designated tool kit
   c. Wrap sharp tool in paper
   d. Store sharp tools in a secret place

C. Viva questions **Total Marks: 10**
(These questions could be asked during practical observation) **Duration: 5 Min**

1. What are the common types of binding wire used in reinforcement work? 2 Marks
   Possible answers
   a. Mild steel.
   b. Galvanised iron.

2. What are the types of rebar used for reinforcement work? 2 Marks
   Possible answers
   a. Mild steel.
   b. TMT steel.
   c. CTD steel.
   d. CRS steel.
   e. Stainless steel rebar.
   f. Coated rebar (galvanised or epoxy coated).
   g. Welded wire mesh

3. What are the basic tools required for a bar bender and what are their uses? 2 Marks
   Possible answer
   a. Bar bending Lever: Bend and shape the rebar.
   b. Binding hook: Tie the rebar with binding wires.
   c. Hammer and chisel: To cut or straight the rebar.
   d. Measuring tape: Measure and mark the rebar.
   e. Pin and plate: To bend and shape the rebar.
   f. Gauge: To measure the diameter of rebar

4. What are the common power tools used for cutting of rebar? 2 Marks
   Possible answers
   a. Hand held rebar cutting machine.
   b. Circular rebar cutting machine
   c. Rebar shearing machine.

5. What are the types of slings used in construction? 2 Marks
   Possible answers
   d. Chain slings.
   e. Wire rope slings.
   f. Fibre rope slings.
   g. Synthetic web slings.

7.3 CON/N0216: Perform cutting and manual bending of rebar for simple shape

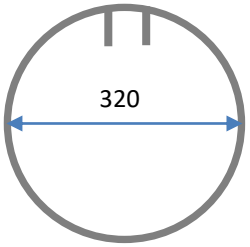
A. Practical question

Total Marks: 80
Duration: 60 Min

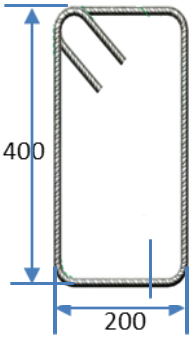
Measure, mark, cut and bend rebar for simple shapes

1. Identify the shape, diameter and dimension of rebar to be cut and bend. **Marks: 10**
2. Select hand and power tool for cutting and bending. **Marks: 10**
3. Prepare circular stirrups within the tolerance limit. **Marks: 20**
4. Prepare any one stirrup from 1b-1e within the tolerance limit. **Marks: 20**
5. Prepare any one stirrup from 1f-1g within the tolerance limit. **Marks: 20**

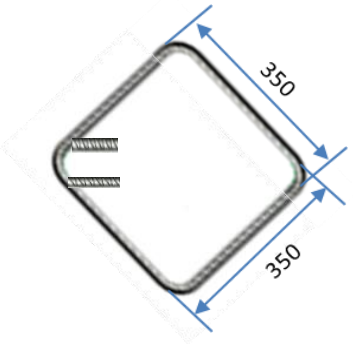
1a.



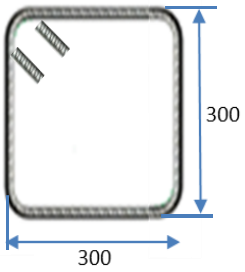
1b.



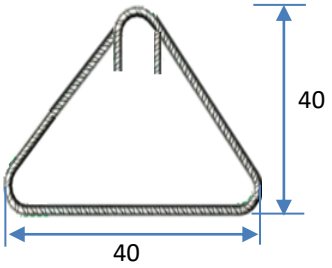
1c



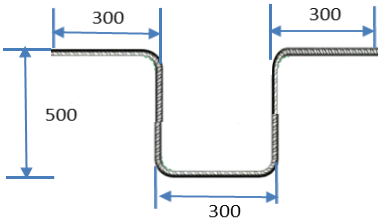
1.d



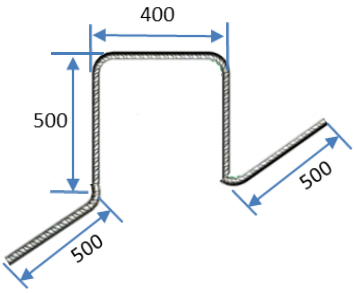
1.e



1f.



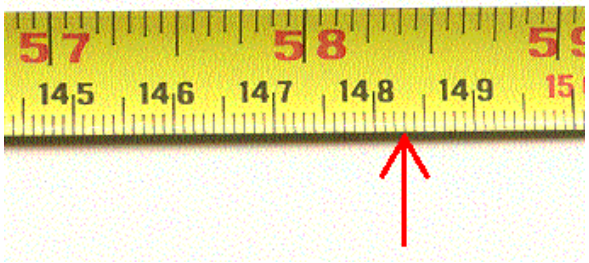
1g.



Title:	Cut and bend rebar for simple shapes as per the drawing
Material:	10mm Tor steel
General tolerance:	**Refer Annexure 1**
Quantity:	1 number each
Scale:	Not to scale
Unit:	All dimensions are in mm

B. Theory questions **Total Marks: 10**
(Preferably written but oral is also permitted) **Duration : 10 Min**

1. Choose the measurement marked in the image given below. 3 Marks



a. 148.3mm
b. 148.8mm
c. 148.3cm
d. 1483cm

2. To manually straighten bent bars with a hammer, which one of the following surface should be used? 2 Marks
   a. Concrete surface
   b. Wooden surface
   c. Surface of stone
   d. Cast iron surface

3. Which one of the following key tools used to bend bars manually? 3 Marks
   a. Bar bending lever and hammer
   b. Bar bending lever and pin-plate
   c. Pin-plate and hammer
   d. Binding hook and hammer

4. What is the hook length for 8mm stirrups? 2 Marks
   a. 50mm
   b. 75mm
   c. 100mm
   d. 60mm

C. Viva questions **Total Marks: 10**
(These questions could be asked during practical observation) **Duration : 5 Min**

1. State any three standard diameter of rebar used for reinforcement work? 2 Marks
   Possible answers
   a. 6mm
   b. 8mm.
   c. 10mm.
   d. 12mm.
   e. 16mm.
   f. 20mm.
   g. 25mm.
   h. 32mm

2. What are the common hand tools used to cut rebar? 2 Marks
   Possible answers
   a. Hammer and chisel.

b. Hacksaw blade.

3. What are the precautionary steps to be taken before using a rebar cutting machine? 2 Marks

Possible answers

a. Ensure required PPE.
b. Ensure that the tool is in good working condition.
c. Ensure that the machine has safety guard.
d. Ensure machine placed on a dry and firm surface.
e. Ensure there is no damaged wire used for power supply.
f. Do not work with oily/greasy hands.

4. What are the tools required to mark on bending bench? 2 Marks

Possible answers

c. Measurement tape.
d. Chalk or marker.
e. Tri square.
f. Straight edge.

5. What are the checks to be done after a stirrup fabricated? 2 Marks

Possible answers

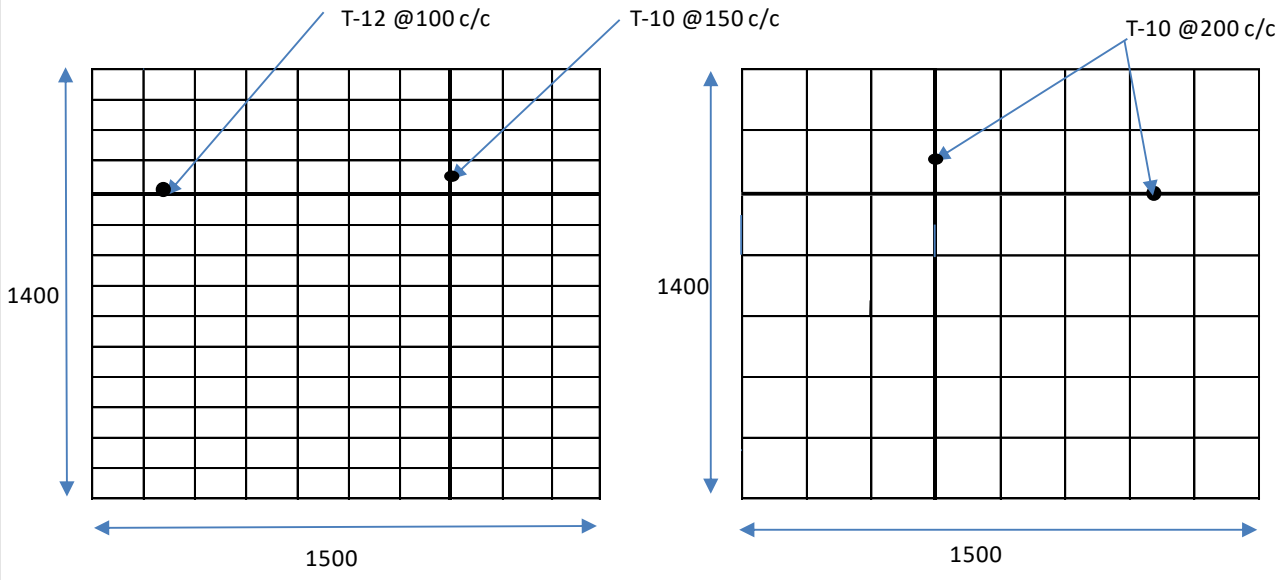
a. Length of the stirrup.
b. Angle of the bend.
c. Shape of the stirrup.
d. Hook length.
e. Check for any damages

7.4 CON/N0217: Assist in fabrication, placing and fixing of rebar for pre-fabricated and in-situ RCC structures

A. Practical question

Total Marks: 80
Duration: 120 Min

Practical 7.4.a: Fabricate, place and fix rebar using different types of ties as per the drawing (Assessor can ask trainee to perform any of three Practical 7.4.a, 7.4.b, and 7.4.c)



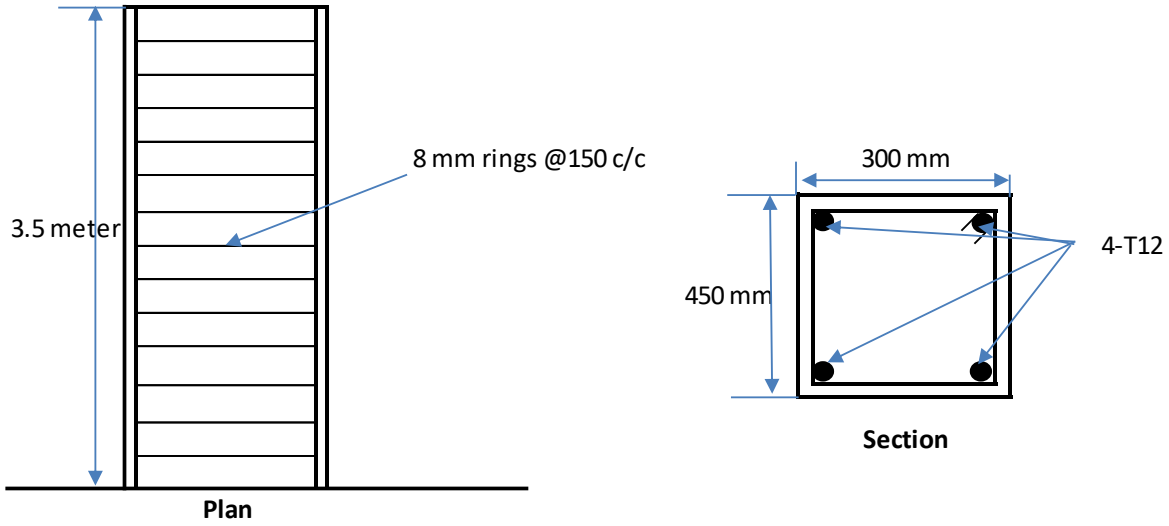
Title:	Fabricate, place and fix rebar for slab using different types of ties
Material:	10mm, 12mm Tor steel
Thickness of slab:	175 mm
Scale:	Not to scale
General tolerance	**Refer Annexure 2**
Unit:	All dimensions are in mm
Cover:	20mm cover for all sides

Note: Candidates should demonstrate slash, hair pin, crown, ring slash, ring hairpin, splice tie while performing this task. Required number and size of chairs should be fabricated and fixed

Note: Candidate to use cut length rebar for top layer (any one direction) to perform lapping.

Practical 7.4.b: Fabricate, place and fix rebar for column using different types of ties as per the drawing (Assessor can ask trainee to perform any of three Practical 7.4.a, 7.4.b, 7.4.c)

Total Marks: 80
Duration: 120 Min



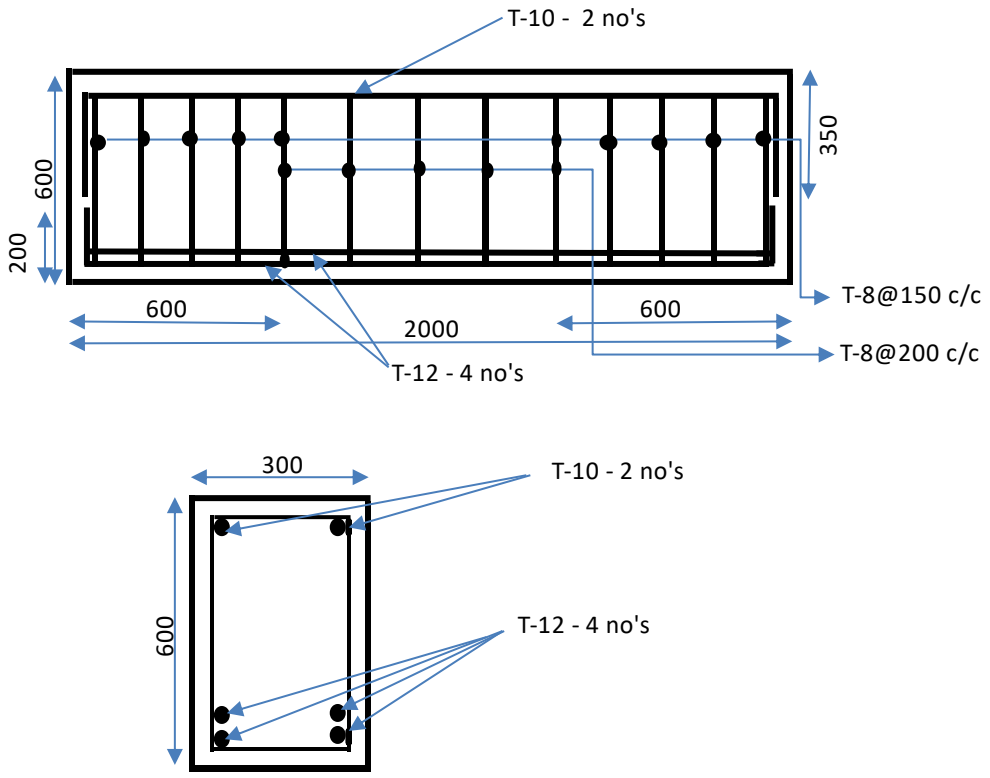
Title:	Fabricate, place and fix rebar for column using required ties
Material:	8mm, 10mm Tor steel
Scale:	Not to scale
General tolerance	**Refer Annexure 3**
Unit:	All dimensions are in mm
Cover:	40mm cover for all sides

Note: Candidates should demonstrate slash, hair pin, crown, ring slash, ring hairpin, splice tie while performing this task. Required number and size of chairs should be fabricated and fixed

Note: Candidate should perform rebar lapping while performing this task (calculate the cutting length by ensuring lapping).

Practical 7.4.c: Fabricate, place and fix rebar for beam using different types of ties as per the drawing (Assessor can ask trainee to perform any of three Practical 7.4.a, 7.4.b, 7.4.c)

Total Marks: 80
Duration: 120 Min



Title:	Fabricate, place and fix rebar for beam using appropriate ties
Material:	12mm, 10mm, 8mm Tor steel
Scale:	Not to scale
General tolerance	**Refer Annexure 4**
Unit:	All dimensions are in mm
Cover:	25mm cover for all sides

Note: Candidate should perform rebar lapping while performing this task (calculate the cutting length by ensuring lapping).

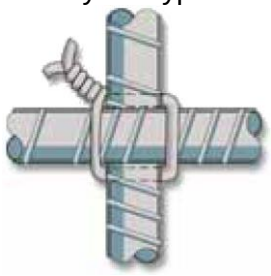
B. Theory questions **Total Marks: 10**

(Preferably written but oral is also permitted) **Duration: 10 Min**

1. To lap rebar to extend the column, which one of the following statements is incorrect? 2 Marks
   a. Lap length about 50 times the diameter of the bar is considered safe
   b. At one cross section, a maximum of 50% bars can be lapped
   c. Lap should not be staggered and should be provided at one level
   d. Bars can be lapped with couplers or can be welded

2. What is the minimum lap length to be ensured while lapping 16mm diameter rebar to extend a column? 2 Marks
   a. 1200mm
   b. 400mm
   c. 800mm
   d. 600mm

3. Identify the type of tie from the image given below. 2 Marks



   a. Ring slash or wall tie
   b. Hair pin or saddle tie
   c. Crown tie or figure 8 tie
   d. Slash or snap tie

4. What is the function of spacer bar? 1 Marks
   a. To provide gap between concrete edge and the rebar
   b. To provide gap between rebar chairs
   c. To provide gap between double layer rebar
   d. To provide gap between stirrups

5. Which one of the following is not the purpose of using chair bars in slab reinforcement? 1 Marks
   a. To maintain correct level and thickness of rebar layers
   b. To avoid displacement of bottom and top layer
   c. To maintain proper cover to the top layer
   d. To maintain proper cover to the bottom layer

6. Which one of the following statements is incorrect while tying the cages? 2 Marks
   a. Ensure that all twisted ends of ties are bent inwards away from concrete face
   b. Check cover to reinforcement is correct at all locations
   c. All the rebar are positioned with equal spacing by considering line and level
   d. Alternate intersections of vertical and horizontal rebar can be tied

C. Viva questions **Total Marks: 10**

(These questions could be asked during practical observation) **Duration: 5 Min**

1. State the location of stirrups for different RCC elements 2 Marks

   Possible answers

   a. For column – outer face of the main bar.
   b. For beam – outer face of the main bar.
   c. For retaining wall – inner face of the main bar.

2. Why the lapping should be staggered? 2 Marks

   Possible answers

   d. To achieve required strength and for structural requirement.
   e. To avoid reinforcement congestion.
   f. To improve concrete consolidation and reduce segregation.
   g. Easy load transfer between rebar and increase structural stability.

3. State different types of ties and their places of use. 2 Marks

   Possible answers

   a. Slash tie – used for footing, wall and slab.
   b. Hair pin tie – used for column and beams.
   c. Crown tie – used for column and beams.
   d. Ring slash tie – used for footing, wall and slab.
   e. Ring hairpin tie – used for column and beams.
   f. Splice tie – used for lapping

4. Why should you ensure proper cover while fixing rebar in RCC structure. 2 Marks

   Possible answers

   a. Cover blocks are placed to prevent the steel bars from getting exposed to the atmosphere.
   b. Cover blocks are used to place and position the rebar as per the requirement.
   c. To avoid corrosion of the rebar used in RCC.
   d. To provide fire protection to the rebar used in RCC.
   e. To increase life of structure decrease the maintenance cost.

5. How to use binding wire economically? 2 Marks

   Possible answers

   a. Select proper type of tie based on the element.
   b. Ensure correct length of binding wire while cutting.
   c. Cut required quantity of binding wire form bundle which can consume in a day.
   d. Use proper tool to cut binding wire.
   e. Tie, pack and stack the binding wire bundle in a safe place.
   f. Collect fallen binding wire and reuse.

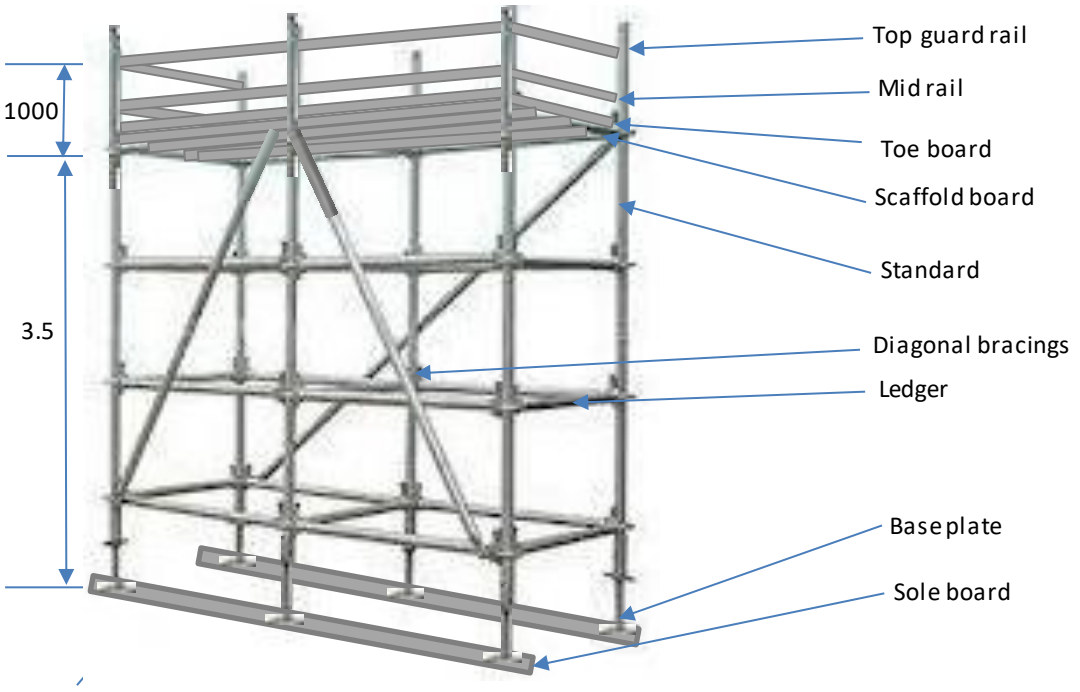
7.5 CON/N0101: Erect and dismantle temporary scaffold of 3.6 meter height

A. Practical question

Total Marks: 80
Duration: 60 Min

Erect and dismantle temporary scaffold using required components and tools as per the drawing.

1. Check for ground compactness and levelling. **Marks: 08**
2. Check for all required scaffolding material, hand tools and consumables. **Marks: 08**
3. Wear and use required safety gadgets following trade safety. **Marks: 08**
4. Place and position sole boards as per marking. **Marks: 08**
5. Erect and dismantle scaffold of 3.6 meter height within tolerance limit. **Marks: 40**
6. Carryout proper housekeeping. **Marks: 08**



Title:	Erect and dismantle temporary scafoold using required components and tools as per the drawing
Material:	Conventional/System scaffold with required components as per the drawing
Scale:	Not to scale
Unit:	All dimensions are in mm
Tolerance :	**Refer Annexure 5**

B. Theory questions **Total Marks: 10**

(Preferably written but oral is also permitted) **Duration: 5 Min**

1. Which of the following areas is not suitable for erecting scaffold? 2 Marks
   a. Over concrete surface
   b. Over filled and compacted soil
   c. Over loose soil
   d. Over hard soil

2. Which of the following components is used to adjust the level of scaffold base? 3 Marks
   a. Screw jack
   b. Nonadjustable base plate
   c. Swivel clamp
   d. Guard rail

3. Which of the following is not a reason to maintain tidiness at work location? 2 Marks
   a. To increase the quality of work
   b. To reduce accidents
   c. To get rewards
   d. To avoid material damage

4. What types of coupler used in scaffolding to provide diagonal bracing? 3 Marks
   Possible answers
   a. Rigid coupler.
   b. Swivel coupler.
   c. Putlog coupler.
   d. Sleeve coupler.

B. Viva questions **Total Marks: 10**

(These questions could be asked during practical observation) **Duration: 5 Min**

1. What are the tools used in scaffold erection work? 2 Marks
   Possible answers
   a. Podgier spanner
   b. Ring spanner.
   c. Claw hammer.
   d. Mash hammer.
   e. Masons line.
   f. Plumb bob
   g. Spirit level.
   h. Measuring tape.

2. What are mandatory safety gadgets used in scaffold erection work? 2 Marks
   Possible answers
   a. Safety shoe.
   b. Safety helmet.
   c. Body harness.
   d. Reflective jacket.
   e. Hand gloves.

3. Name and rearrange the scaffold components as per the sequence of erection. 4 Marks

Possible answer

a. Sole board.
b. Bas plate.
c. Ledger pipe
d. Platform board (prefabricated)

4. What are the pre checks to be ensured before starting scaffold dismantling? 2 Marks

Possible answers

a. Ensure that the work is completed for which the scaffold is erected.
b. Take prior approval from reporting senior.
c. Check for any damage on scaffold components.
d. Ensure that no support is been removed.
e. Ensure that no ledgers or bracings removed.
f. Ensure that the surroundings of dismantling area is properly barricaded.

CON/N8001: Work effectively in a team to deliver desired results at the workplace

A. Practical questions **Total Marks: 80**

Assessor is required to assess this NOS bases on his/her observation skill and knowledge to observe, ask questions and assess trainee while performing all core NOS's during the practical task for following points:

- How the candidate communicate work related information to team member or to assessor. . **Marks: 10**
    - Is candidate able to explain the process/sequence before performing every task? (cutting and bending sequence, fabrication of reinforcement cage)

- How the candidate escalate deviations to the seniors/assessor. **Marks: 15**
    - If size and numbers of stirrups provided is not as per requirement
    - If lapping length of reinforcement bar is not accurate

- How the candidate address and report problems. **Marks: 15**
    - If candidate noticed damaged tool or material (**Compulsory:** assessor to provide damaged tool or material to the candidate to assess this skill)
    - If candidate noticed shortage of materials while performing task (Assessor to provide less numbers of stirrups to assess this skill)
    - If trainee facing problem with shortage of working space
    - If trainee found lack of illumination while performing the task.

- How a person receive and follow the instructions given by seniors/assessor. **Marks: 10**
    - Is candidate able to follow class room disciplines?
    - Is candidate able to follow instructions given by assessor?

- How a person seek clarifications and resolve the issues raised during performing the task. . **Marks: 15**
    - Is candidate able to clarify if the information given for particular task is insufficient? (**Compulsory:** Assessor to provide insufficient information related to number of stirrups to be used)

- How a person work as team like, proper cooperation, timely handing over tools and materials, helping and advising team members etc. **Marks: 15**
    - Is candidate able to take support of team member (other candidate), if he needs to move heavy materials to clear the work area?
    - Is candidate able to hand over the tools timely to other candidate? (Ex. Binding hook, measurement tape, bending lever etc.)

B. Theory question **Total Marks: 10**
(Preferably written but oral is also permitted) **Duration : 5 Min**

1. What should be done if there is material shortage while executing a task? 2 Marks
    a. Wait for other team members to escalate
    b. Use damaged materials and complete the task
    c. Address reporting senior
    d. Inform to the higher management

2. From whom should an assistant bar bender receive instructions? 2 Marks
   a. From customer
   b. From co-worker
   c. From reporting senior
   d. From interfacing team

3. What should be done if there are different opinions found in a team while executing task? . 3 Marks
   a. Discuss with team member and resolve the conflict
   b. Do not bother about others opinion and argue with them
   c. Stop the work and protest with the team member
   d. Escalate it to the management and wait for the action

4. If a colleague is found to be in a problem while executing a task, what best can be done? . 3 Marks
   a. Motivate him to do it himself
   b. Inform to the customer about this
   c. Complain to the reporting senior and continue with the job
   d. Work as a team and help him with known skills

C. Viva questions **Total Marks: 10**
(These questions could be asked during practical observation) **Duration : 5 Min**

1. What is the benefit of passing on information to colleagues? 2 Marks
   Possible answers
   a. Ensures that information will reach every person of a team
   b. Any deviations, or change of plan will be updated
   c. Fulfils inline organizational requirements
   d. No chance of misunderstanding within the team
   e. Positive effect on progress

2. What is the advantages of getting clarification and advice? 2 Marks
   Possible answers
   a. Clarity on task to be executed.
   b. Improve knowledge and skill.
   c. Avoid material wastage.
   d. Effective usage of resources.
   e. Timely completion of task.
   f. Better bond between the team.

3. How can one team co-operate with interfacing teams? 3 Marks
   Possible answers
   g. Timely handing over the tools and equipment to the interfacing teams.
   h. Timely handing over the work fronts to the interfacing teams.
   i. Share useful information's with interfacing team.
   j. Receive and share feedback with interfacing teams.
   k. Strictly follow the schedule, which is planned mutually with the interfacing teams.

4. What is the appropriate action you will be taking when your team has heavy work load but you were able to finish your part of work early? 3 Marks

Possible answers

a. Extend help to team mates to complete their work.
b. Ask for any required help to finish the work.
c. Motivate the team to complete their task
d. Try to accelerate the speed by providing required resources in time.

7.6 CON/N9001: Work according to personal health, safety and environment protocol at construction site

A. Practical questions **Total Marks: 80**

Assessor is required to assess this NOS bases on his/her observation skill and knowledge to observe, ask questions and assess trainee while performing all core NOS's during the practical task for following points (If particular outcome is not covered in any of the core NOS's, assessor need to insist candidate to perform the activities):

- How person identify hazards, risks in site safety and report to seniors **Marks: 10**
  Is candidate able to escalate hazards, risks to the senior? (Ex. Damaged tools, unguarded machineries, inadequate illumination, co-worker working at height without using safety harness, damaged electrical cables etc.)

- How a person respond to emergency and evacuation procedures in case of accidents, fires. **Marks: 8**
  Is candidate able to explain the emergency evacuation procedure in case of different emergencies? (Ex. Fire, building collapse, flood etc.)

- Use of personal protective equipment based on the particular activity.). **Marks: 30**
  - (Use of PPEs specified at NOS is mandatory for all the assesse and candidate should score 100% mark in this particular outcome.)
  - Is candidate able to demonstrate the use of all personal protective equipment's? (Ex. Helmet, **harness**, safety goggles, safety shoes, hand gloves, earplug, dust mask, **reflective jacket**, **shoulder pack**, etc.
  - Is the candidate able to list PPE's as per the particular task? (Ex. While handling reinforcement steel, cutting, bending, working at heights etc.)

- Identification and explanation of operation procedure for fire extinguishers. **Marks: 8**
  - Is candidate able to identify different types of fire extinguishers? (Ex. DCP, CO2, Foam etc.).
  - Is candidate able to explain the operating procedure for different types of fire extinguishers? (Assessor to insist candidate to perform this task)

- Handling technique of tools, materials and equipment. **Marks: 8**
  - Is candidate able to explain the handling techniques of tools, materials and equipment? (Ex. Reinforcement steel, binding wire, cutting & bending tools etc.)

- Adhere to safe working practices while working at height, using tools and equipment, material shifting, working with hazardous materials etc. **Marks: 8**
  - Is candidate able to place ladder safely?
  - Is candidate able to follow precautionary measures in disposal of harmful chemicals?

- Ensure cleaning, housekeeping and waste disposal. **Marks: 8**
  - Is candidate able to plan housekeeping while performing the task?
  - Is candidate able explain the method to shift waste to designated yard? (Ex. Through wheel barrow, through chute, through open dump etc.)

B. Theory question **Total Marks: 10**
(Preferably written but oral is also permitted) **Duration: 5 Min**

1. Which of the following type of helmet is used by an assistant bar bender? 2 Marks
   a. White helmet
   b. Green helmet
   c. Yellow helmet
   d. Red helmet

2. Which one of the following is not a safety requirement for a power tool? 2 Marks
   a. Make sure that the machine is in good working condition
   b. Make sure that the machine has safety guards
   c. Make sure that the operator is trained properly
   d. Make sure that the machine is brand new

3. What should be done after assembling at the safe assembly point? 3 Marks
   a. Do not re-enter the site until instructions are given
   b. Re-enter the site and continue to work
   c. Leave the site without informing senior
   d. Join emergency rescue team and help them

4. Which of the following is a correct practice to deposit reinforcement waste? 3 Marks
   a. Do not collect and deposit
   b. Deposit into identified container
   c. Mix and deposit with other construction waste
   d. Mix with usable reinforcement

C. Viva question **Total Marks: 10**
(These questions could be asked during practical observation) **Duration: 5 Min**

1. What are the actions to be taken in case the fire alarm gets activated? 2 Marks

   Possible answers
   a. Be alert and wait for the announcement.
   b. Inform and help team members to evacuate.
   c. Follow escape routes to exit.
   d. Use staircase, do not use lift.
   e. Assemble in designated assembly point.
   f. Give attendance to the emergency response team.
   g. Re-enter the site if ERT instructs the same.

2. State any two type's fire extinguishers. 2 Marks

   Possible answers
   a. Carbon dioxide fire extinguisher.
   b. Dry chemical powder fire extinguisher.
   c. Halon fire extinguisher.
   d. Soda acid fire extinguisher.
   e. Gas pressure extinguisher.
   f. Constant pressure type extinguisher.

3. State any two unsafe working conditions. 2 Marks

Possible answers

a. Improper illumination.
b. Inadequate ventilation.
c. Untidy workplace and surroundings.
d. Overcrowded and congested work places.
e. Working under extreme weather conditions.
f. Unguarded and faulty machineries.
g. Defective tools and equipment.

4. State any two points mentioned in the organization's fire emergency procedures 2 Marks

Possible answers

a. "Inform the authorized person if you notice any fire"
b. "Assemble at the safe assembly point"
c. "Use the right fire extinguisher"
d. "Be familiar with fire alarms"

5. State the purpose of waste disposal 2 Marks

Possible answers

a. To maintain cleanliness
b. To avoid accidents
c. To avoid mixing of useful materials with waste
d. To avoid fire hazards
e. To utilise the area effectively

8. Assessment Evidence Form

Trainee name: **Trainee roll number:**

Centre name/ Code Date:

This is to confirm that the trainee has handed over the final job to the assessor.
(For each task separate sheet can be used)

Assessor to affix photographs of the practical output (end product)

Trainee's signature: _____

Trainee's name (please print): _____

Assessor's signature: _____

Assessor's name (please print): _____

Centre Head's seal and signature: _____

9. Assessment summary

Assessor's comments

……

……

……

This is to confirm that the trainee has undertaken the assessment for the job role of Assistant bar bender and steel fixer.

Trainee's signature: _____

Trainee's name (please print): _____

Assessor's signature: _____

Assessor's name (please print): _____

Centre Head's seal and signature: _____

Trainee's photo ID (other than the Institute ID): _____

Assessment completion date: _____

10. Assessment Summary Sheets

ASSESSMENT SUMMARY
Qualification Pack - Assistant Bar Bender & Steel Fixer- 2

Training Provider :	**Testing Centre**
Affiliation No.	**Accreditation No.**

Candidate Detail						
	Roll No. : Batch: Name:	Roll No. : Batch: Name:	Roll No. : Batch: Name:	Roll No. : Batch: Name:	Roll No. : Batch: Name:	Roll No. : Batch: Name:

Assessment Summary :

NOS No.	Allotted (Marks)			Marks Marks Obtained			Marks Obtained			Marks Obtained			Marks Obtained			Marks Obtained		
	Skill (Practical)	Knowledge		Skill (Practical)	Knowledge		Skill (Practical)	Knowledge		Skill (Practical)	Knowledge		Skill (Practical)	Knowledge		Skill (Practical)	Knowledge	
		Theory	Viva		Theory	Viva		Theory	Viva		Theory	Viva		Theory	Viva		Theory	Viva
CON/N0214	80	10	10															
CON/N0215	80	10	10															
CON/N0216	80	10	10															
CON/N0217	80	10	10															
CON/N0101	80	10	10															
CON/N8001	80	10	10															
CON/N9001	80	10	10															
Total : 700	**560**	**70**	**70**															
Percentage weightage	**80%**	**10%**	**10%**															
Mimimum pass % to qualify	**50%**	**50%**	**50%**															
				Result : Passed/Failed			**Result : Passed/Failed**			**Result : Passed/Failed**			**Result : Passed/Failed**			**Result : Passed/Failed**		

Assessors Name: **Signature :**

Assessing Body Representative Name: **Signature :**

Assessment Agency : **Date**

	1. Roll No. & Name:	4. Roll No. & Name:	
	2. Roll No. & Name:	5. Roll No. & Name:	
	3. Roll No. & Name:	6. Roll No. & Name:	

Ref.QP Code- CON/Q0202	Assessment Sheet for NOS No. - CON/N0214		Marks Obtained by candidates					
QP & NOS Detail	**Skills (Total Marks = 80)**	**Allotted Marks**	1	2	3	4	5	6
QP : Assistant Bar Bender & Steel Fixer For	1.Interpret and list the following information given in rebar hand sketch:							
	• Type of rebar.	5						
CON/N 0214: Read and understand reinforcement bar details from hand sketches	• Diameter of rebar.	5						
	• Number of rebar.	5						
	• Shape of the rebar	5						
	2. Cover details for slab, column and beam.	12						
	3. Spacing detail for slab, column and beam.	12						
	4. Cutting length of circular stirrups	8						
	5. Cutting length of Square/rectangular/triangular stirrups	8						
	6. Cutting length of chair/U rod.	16						
	7. Identify the lapping zone and lapping length for slab, column and beam.	4						
	Total Marks	**80**						
	Knowledge -Theory (Total Marks =10)							
	1. Knowledge about different types of stirrups	2						
	2. Knowledge about information available in the drawing and BBS	2						
	3. Knowledge about deduction for calculation cutting length for duifferent angle	2						
	4. Knowledge about size, shape and length in which rebar are available	2						
	5. Knowledge about cutting length calculation	2						
	Total Marks	**10**						
	Knowledge - Viva (Total Marks =10)							
	1. Information available in rebar hand sketch	3						
	2. General cover provided for various RCC structural element	3						
	3. Knowledge about calculation of rebars based on spacing	4						
	Total Marks	**10**						

Batch No. & TP:	**Assessors Name:**	**Assessors Signature :**
Assessors Reg. No. :	**Assessors Body(AB) Representative Name:**	**AB Representative Signature :**
		Date :
Assessment Agency :		

	1. Roll No. & Name:	4. Roll No. & Name:	
	2. Roll No. & Name:	5. Roll No. & Name:	
	3. Roll No. & Name:	6. Roll No. & Name:	

Ref.QP Code- CON/Q0202	Assessment Sheet for NOS No. - CON/N0111		Marks Obtained by candidates					
QP & NOS Detail	**Skills (Total Marks = 80)**	**Allotted Marks**	1	2	3	4	5	6
QP : Assistant Bar Bender & Steel Fixer For	1. Identify and explain the purpose of following material in bar bending trade. **(Binding wire, Bar connecting coupler, Thread protection cap)**	12						
	2. Identify different types of rebar (Tor steel, TMT, Mild steel, Wire mesh etc.).	4						
CON/N 0215: Use and maintain materials, tools and equipment relevant to reinforcement works	3. Identify and demonstrate the use of hand tools used in bar bending (any three) **(Chisel and hammer, Binding hook, Bending lever, Masons line, Hack saw)**	20						
	4. Identify and demonstrate the use of power tools used in bar bending (any one) **(Hand held rebar cutting machine, Circular rebar cutting machine, Rebar shearing machine, Bar bending machine)**	20						
	5. Identify and demonstrate the use of different lifting appliances. **(Slings (Chain, wire rope, synthetic web, etc.), Shackles (D, bow shackle), Lifting belts)**	12						
	7. Perform basic maintenance of hand tool.	4						
	8. Perform basic maintenance of power tool.	8						
	*PPE with asterisk mark is mandatory to demonstrate.							
	Total Marks	**80**						
	Knowledge -MCQ (Total Marks =10)							
	1. Different method of tying and connetiong rebar	2						
	2. Different types of hand and power tools used in reinforcement work	2						
	3. PPEs used for steel reinforcement work	3						
	4. Methods for handling materials for reinfrocement work	3						
	Total Marks	**10**						
	Knowledge Viva (Total Marks =10)							
	1. Knowledge about types and size of binding wires	2						
	2. knowledge about types of rebar	2						
	3. Knowledge about types of tools used in reinforcement work	2						
	4. Knowledge about types of power tools used in reinforcement work	2						
	5. Lifting tools and devices used in reinforcement work	2						
	Total Marks	**10**						

Batch No. & TP:	**Assessors Name:**	**Assessors Signature :**
Assessors Reg. No. :	**Assessors Body(AB) Representative Name:**	**AB Representative Signature :**
		Date :
Assessment Agency :		

	1. Roll No. & Name:	4. Roll No. & Name:	
	2. Roll No. & Name:	5. Roll No. & Name:	
	3. Roll No. & Name:	6. Roll No. & Name:	

Ref.QP Code- CON/Q0202	Assessment Sheet for NOS No. - CON/N0112		Marks Obtained by candidates					
QP & NOS Detail	**Skills (Total Marks = 80)**	**Allotted Marks**	1	2	3	4	5	6
QP : Assistant Bar Bender & Steel Fixer For	1. Identify the shape, diameter and dimension of rebar to be cut and bend.	10						
	2. Select hand and power tool for cutting and bending.	10						
CON/N 0216: Use and maintain materials, tools and equipment relevant to reinforcement works	3. Prepare circular stirrups within the tolerance limit. • For circular stirrups • Linear dimension of bent bar (0 to 750) : +5mm/ – 10mm • Hook length : +/- 5mm • Curvature (outer surface of stirrups) : No undulation * Full mark to be given if done within tolerance limit.	20						
	4. Prepare any one stirrup from 1b-1e within the tolerance limit. • For square/ rectangular • Length of the stirrups (For both sides) : +/- 5mm • Breadth of the stirrups (For both sides) : +/- 5mm • Diagonal of the stirrups (For both side) : +/- 5mm • Hook length : +/- 5mm • Level of hook : Flat • Linear dimension of bent bar (0 to 750) : +3mm/ – 5mm * Full mark to be given if done within tolerance limit.	20						
	5. Prepare any one stirrup from 1b-1e within the tolerance limit. • For chair and U rod • Length of the chair rod (Leg) : +/- 5mm • Height of the chair : +3mm/ – 5mm • Linear dimension of bent bar • 0 to 750 mm length : +3mm/ – 5mm • 750 to 1500 mm length : +5mm/ – 10mm * Full mark to be given if done within tolerance limit.	20						
	Total Marks	**80**						
	Knowledge -MCQ (Total Marks =10)							
	1. Used of measurement and marking tools	3						
	2. Tools used for cutting and bending rebar manually	2						
	3. Standard size of bending levers	3						
	4. How to calculate hook length	2						
	Total Marks	**10**						
	Knowledge Viva (Total Marks = 10)							
	1. Process for stirrups making	2						
	2. Hand tools used for cutting rebar	2						
	3. Safety method adopted for cutting rebar	2						
	4. Material required for making bending bench	2						
	5. Quality check for stirrups	2						
	Total Marks	**10**						

Batch No. & TP:

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	1. Roll No. & Name:	4. Roll No. & Name:	
	2. Roll No. & Name:	5. Roll No. & Name:	
	3. Roll No. & Name:	6. Roll No. & Name:	

Ref.QP Code- CON/Q0202	Assessment Sheet for NOS No. - CON/N0113		Marks Obtained by candidates					
QP & NOS Detail	**Skills (Total Marks = 80)**	**Allotted Marks**	1	2	3	4	5	6
QP : Assistant Bar Bender & Steel Fixer For	**7.4.a:** Fabricate, place and fix rebar using different types of ties as per the drawing for slab **(any of three Practical 7.4.a, 7.4.b, and 7.4.c)**							
CON/N 0217: Assist in fabrication, placing and fixing of rebar for pre-fabricated and in-situ RCC structures	• Squareness of the cage : +/- 5mm	8						
	• Alignment of the cage : +/- 5mm	8						
	• Spacing of rebar : +/- 10mm/ 5 spacing	8						
	• level of rebar layers : +/- 5mm	8						
	• Cut length of main/ secondary bar : +/- 5mm	8						
	• Types of ties : As specified	8						
	• Stability of ties : Rigid (no shake of rods)	8						
	• Straightness of bars : Visibly straight	8						
	• Lap length : +/- 5mm	8						
	• Cover (for all sides) : +5mm/-3mm	8						
	Total Marks	**80**						
	Knowledge -MCQ (Total Marks =10)							
	1. Knowledge about lapping of reinforcement bar	2						
	2. Different types of ties	2						
	3. Use of spacer bar	2						
	4. Purpose of using chairs in slab reinfrocement	2						
	5. Sequence of placing and fixing slab reinforcement	2						
	Total Marks	**10**						
	Knowledge Viva (Total Marks = 10)							
	1. Sequence of placing and fixing reinforcement bar for different RCC structural element	2						
	2. Importance of staggering reinforcement bar	2						
	3. Use of different types of ties	2						
	4. Cover detail for slab, column,beam, wall,footing	2						
	5. How to utilise cutting rod	2						
	Total Marks	**10**						

Batch No. & TP:

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	2. Roll No. & Name:	5. Roll No. & Name:	
	3. Roll No. & Name:	6. Roll No. & Name:	

Ref.QP Code- CON/Q0202	Assessment Sheet for NOS No. - CON/N0113		Marks Obtained by candidates					
QP & NOS Detail	**Skills (Total Marks = 80)**	**Allotted Marks**	1	2	3	4	5	6
QP : Assistant Bar Bender & Steel Fixer For	7.4.b: Fabricate, place and fix rebar for column using different types of ties as per the drawing **(any of three Practical 7.4.a, 7.4.b, and 7.4.c)**							
CON/N 0217: Assist in fabrication, placing and fixing of rebar for pre-fabricated and in-situ RCC structures	• Square ness of the cage : +/- 5mm	4						
	• Alignment of the cage : +/- 5mm	8						
	• Spacing of stirrups :+/- 10mm/ 5 spacing	8						
	• level of stirrups : +/- 5mm	4						
	• Length of column : +/- 5mm	4						
	• Depth of column (Side) : +/- 5mm	4						
	• Width of column (Side) : +/- 5mm	4						
	• Diagonal of stirrups : +/- 5mm	4						
	• Cut length of main bar : +/- 5mm	4						
	• Types of ties : As specified	8						
	• Stability of ties : Rigid (no shake of rods)	8						
	• Straightness of bars (Plumb) : Visibly straight	4						
	• Lap length : +/- 5mm	8						
	• Cover (for all sides) :+5mm/-3mm	8						
	Total Marks	**80**						
	Knowledge -MCQ (Total Marks =10)							
	1. Knowledge about lapping of reinforcement bar	2						
	2. Different types of ties	2						
	3. Use of spacer bar	2						
	4. Purpose of using chairs in slab reinfrocement	2						
	5. Sequence of placing and fixing slab reinforcement	2						
	Total Marks	**10**						
	Knowledge Viva (Total Marks = 10)							
	1. Sequence of placing and fixing reinforcement bar for different RCC structural element	2						
	2. Importance of staggering reinforcement bar	2						
	3. Use of different types of ties	2						
	4. Cover detail for slab, column,beam, wall,footing	2						
	5. How to utilise cutting rod	2						
	Total Marks	**10**						

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	1. Roll No. & Name:		4. Roll No. & Name:						
	2. Roll No. & Name:		5. Roll No. & Name:						
	3. Roll No. & Name:		6. Roll No. & Name:						
Ref.QP Code- CON/Q0202	Assessment Sheet for NOS No. - CON/N0113			Marks Obtained by candidates					
QP & NOS Detail	Skills (Total Marks = 80)		Allotted Marks	1	2	3	4	5	6
QP : Assistant Bar Bender & Steel Fixer For	7.4.c: Fabricate, place and fix rebar for column using different types of ties as per the drawing **(any of three Practical 7.4.a, 7.4.b, and 7.4.c)**								
	• Square ness of the cage	: +/- 5mm	4						
CON/N 0217: Assist in fabrication, placing and fixing of rebar for pre-fabricated and in-situ RCC structures	• Alignment of the cage	: +/- 5mm	8						
	• Spacing of stirrups spacing	:+/- 10mm/ 5	8						
	• Verticality of stirrups	: +/- 5mm	4						
	• Length of beam	: +/- 5mm	4						
	• Depth of beam	: +/- 5mm	4						
	• Width of beam	: +/- 5mm	4						
	• Diagonal of stirrups	: +/- 5mm	4						
	• Cut length of main / secondary beam	: +/- 5mm	4						
	• Types of ties specified	: As	8						
	• Stability of ties shake of rods)	: Rigid (no	8						
	• Straightness of bars straight	: Visibly	4						
	• Lap length	: +/- 5mm	8						
	• Cover (for all sides)	:+5mm/-3mm	8						
	Total Marks		**80**						
	Knowledge -MCQ (Total Marks =10)								
	1. Knowledge about lapping of reinforcement bar		2						
	2. Different types of ties		2						
	3. Use of spacer bar		2						
	4. Purpose of using chairs in slab reinfrocement		2						
	5. Sequence of placing and fixing slab reinforcement		2						
	Total Marks		**10**						
	Knowledge Viva (Total Marks = 10)								
	1. Sequence of placing and fixing reinforcement bar for different RCC structural element		2						
	2. Importance of staggering reinforcement bar		2						
	3. Use of different types of ties		2						
	4. Cover detail for slab, column,beam, wall,footing		2						
	5. How to utilise cutting rod		2						
	Total Marks		**10**						

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Ref.QP Code- CON/Q0202	Assessment Sheet for NOS No. - CON/N0114		Marks Obtained by candidates					
QP & NOS Detail	Skills (Total Marks = 80)	Allotted Marks	1	2	3	4	5	6
QP : Assistant Bar Bender & Steel Fixer For	1. Check for ground compactness and levelling.	8						
	2. Check for all required scaffolding material, hand tools and consumables.	8						
CON/N 0101: Erect and dismantle temporary scaffold of 3.6 meter height	3. Wear and use required safety gadgets following trade safety.	8						
	4. Place and position sole boards as per marking.	8						
	5. Erect and dismantle scaffold of 3.6 meter height within tolerance limit.							
	• Horizontal alignment (less than 4 meter) : +/- 7mm	8						
	• Verticality/Level (less than 4meter) : +/- 5mm	8						
	• Ladder placing (75 degree from horizontal) : +/- 15 degree	8						
	• Stability of ties : Rigid (No shake of bracing • pipe)	8						
	• Gap between scaffold board : No gap	8						
	6. Carryout proper housekeeping.	8						
	Total Marks	80						
	Knowledge -MCQ (Total Marks =10)							
	1. How to check ground compactness physically/visually	2						
	2. How to adjust level of scaffold	2						
	3. Different types of coupler used for scaffolding works	3						
	4. Quality checks for erected scaffold	3						
	Total Marks	10						
	Knowledge Viva (Total Marks = 10)							
	1. Knowledge about tools used for scaffolding erection	2						
	2. PPEs reuired for scaffolding erection	2						
	3. Various component of scaffolding	4						
	4. Process for scaffolding erection and dismantling	2						
	Total Marks	10						

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	3. Roll No. & Name:	6. Roll No. & Name:	

Ref.QP Code- CON/Q0202	Assessment Sheet for NOS No. - CON/N8001		Marks Obtained by candidates					
QP & NOS Detail	Skills (Total Marks = 80)	Allotted Marks	1	2	3	4	5	6
QP : Assistant Bar Bender & Steel Fixer For	1. How the candidate communicate work related information to team member or to assessor	10						
	2. How the candidate escalate deviations to the seniors/assessor	15						
CON/N8001: Work effectively in a team to deliver desired results at the workplace	3. How the candidate address and report problems	15						
	4. How a person receive and follow the instructions given by seniors/assessor	10						
	5. How a person seek clarifications and resolve the issues raised during performing the task	15						
	6. How a person work as team like, proper cooperation, timely handing over tools and materials, helping and advising team members	15						
	Total Marks	**80**						
	Knowledge -MCQ (Total Marks =10)							
	1. Knowledge about the advantage of working in a team	2						
	2. Knowledge about the work schedule	2						
	3. Knowledge about the importance of communication with team	2						
	4. Knowledge about the escalation and reporting problems	2						
	5. Knowledge about the importance of inter team discussion	2						
	Total Marks	**10**						
	Knowledge Viva (Total Marks = 10)							
	1.Knowledge about the implementation of communication skill	5						
	2.Knowledge about the benefits of having good relationship between interfacing teams	5						
	Total Marks	**10**						

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	3. Roll No. & Name:	6. Roll No. & Name:	

Ref.QP Code- CON/Q0202	Assessment Sheet for NOS No. - CON/N9001		Marks Obtained by candidates					
QP & NOS Detail	**Skills (Total Marks = 80)**	**Allotted Marks**	1	2	3	4	5	6
QP : Assistant Bar Bender & Steel Fixer For	1. Is candidate able to escalate hazards, risks to the senior	10						
	2. Is candidate able to explain the emergency evacuation procedure in case of different emergencies	8						
CON/N9001: Work according to personal health, safety and environment protocol at construction site	3. Is candidate able to demonstrate the use of all personal protective equipment's	25						
	4. Is able to list PPE's for different activities for reinforcement work	5						
	5. Is candidate able to identify different types of fire extinguishers	3						
	6. Is able to demonstrate the operating procedure for different types of fire extinguishers	5						
	7. Is candidate able to explain the handling techniques of tools, materials and equipment	8						
	8. Is candidate able to place ladder safely	4						
	9. Is candidate able to follow precautionary measures in disposal of harmful chemicals.	4						
	10. Is candidate able explain the method to shift waste to a designated yard	8						
	Total Marks	**80**						
	Knowledge -MCQ (Total Marks =10)							
	1. Knowledge about unsafe working practices	2						
	2. Knowledge about the importance of site safety induction	1						
	3. Knowledge about safety goggles	1						
	4. Knowledge about the basic needs to operate a power tool	2						
	5. Knowledge about safe placing of ladder	2						
	6. Knowledge about safe manual lifting of load	2						
	Total Marks	**10**						
	Knowledge Viva (Total Marks = 10)							
	1. knowledge about the precautions to be taken while manual lifting	3						
	2. Knowledge about the precautions should be taken while using Fall Protection Equipment	3						
	3. Knowledge about the safety practices should be followed for working at heights	2						
	4. Knowledge about the types of construction waste materials and how can these be utilized	2						
	Total Marks	**10**						

Batch No. & TP:

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Annexure 1: Tolerances related to the practical task for Core NOS (CON/N0216)

Assistant Bar Bender & Steel Fixer				
1. Learner Name:_____ 2. Enrolment No:_____ 3. Centre: _____				
S.No	Description	Permitted tolerance	Observed variation	Assessments
CON/N0216: Perform cutting and manual bending of rebar for simple shape				
1	For circular stirrups			
	Linear dimension of bent bar (0 to 750)	+5mm/ – 10mm		
	Hook length	+/- 5mm		
	Curvature (outer surface of stirrups)	No undulation		
2	For square/ rectangular			
	Length of the stirrups (For both sides)	+/- 5mm		
	Breadth of the stirrups (For both sides)	+/- 5mm		
	Diagonal of the stirrups (For both side)	+/- 5mm		
	Hook length	+/- 5mm		
	Level of hook	Flat		
	Linear dimension of bent bar (0 to 750)	+3mm/ – 5mm		
3	For chair and U rod			
	Length of the chair rod (Leg)	+/- 5mm		
	Height of the chair	+3mm/ – 5mm		
	Linear dimension of bent bar			
	0 to 750 mm length	+3mm/ – 5mm		
	750 to 1500 mm length	+5mm/ – 10mm		
Assessor Comment:				
Assessor Name		Assessor Signature		

Annexure 2: Tolerances related to the practical task for Core NOS (CON/N0217)

Assistant Bar Bender & Steel Fixer				
1. Learner Name:_____ 2. Enrolment No:_____ 3. Centre: _____				
S.No	Description	Permitted tolerance	Observed variation	Assessments
CON/N0217: Assist in fabrication, placing and fixing of rebar for pre-fabricate slab (Practical 7.4.a)				
1	Square ness of the cage	+/- 5mm		
2	Alignment of the cage	+/- 5mm		
3	Spacing of rebar	+/- 10mm/ 5 spacing		
4	level of rebar layers	+/- 5mm		
5	Cut length of main/ secondary bar	+/- 5mm		
6	Types of ties	As specified		
7	Stability of ties	Rigid (no shake of rods)		
8	Straightness of bars	Visibly straight		
9	Lap length	+/- 5mm		
10	Cover (for all sides)	+5mm/-3mm		
Assessor Comment:				
Assessor Name		Assessor Signature		

Annexure 3: Tolerances related to the practical task for Core NOS (CON/N0217)

Assistant Bar Bender & Steel Fixer				
1. Learner Name:_____ 2. Enrolment No:_____ 3. Centre: _____				
S.No	Description	Permitted tolerance	Observed variation	Assessments
CON/N0217: Assist in fabrication, placing and fixing of rebar for pre-fabricate column (Practical 7.4.b)				
1	Square ness of the cage	+/- 5mm		
2	Alignment of the cage	+/- 5mm		
3	Spacing of stirrups	+/- 10mm/ 5 spacing		
4	level of stirrups	+/- 5mm		
5	Length of column	+/- 5mm		
6	Depth of column (Side)	+/- 5mm		
7	Width of column (Side)	+/- 5mm		
8	Diagonal of stirrups	+/- 5mm		
9	Cut length of main bar	+/- 5mm		
10	Types of ties	As specified		
11	Stability of ties	Rigid (no shake of rods)		
12	Straightness of bars (Plumb)	+/- 5mm		
13	Lap length	+/- 5mm		
14	Cover (for all sides)	+5mm/-3mm		
Assessor Comment:				
Assessor Name		Assessor Signature		

Annexure 4: Tolerances related to the practical task for Core NOS (CON/N0217)

Assistant Bar Bender & Steel Fixer				
1. Learner Name:_____ 2. Enrolment No:_____ 3. Centre: _____				
S.No	Description	Permitted tolerance	Observed variation	Assessments
CON/N0217: Assist in fabrication, placing and fixing of rebar for pre-fabricate beam (Practical 7.4.c)				
1	Square ness of the cage	+/- 5mm		
2	Alignment of the cage	+/- 5mm		
3	Spacing of stirrups	+/- 10mm/ 5 spacing		
4	Verticality of stirrups	+/- 5mm		
5	Length of beam	+/- 5mm		
6	Depth of beam	+/- 5mm		
7	Width of beam	+/- 5mm		
8	Diagonal of stirrups	+/- 5mm		
9	Cut length of main/ secondary beam	+/- 5mm		
10	Types of ties	As specified		
11	Stability of ties	Rigid (no shake of rods)		
12	Straightness of bars	Visibly straight		
13	Lap length	+/- 5mm		
14	Cover (for all sides)	+5mm/-3mm		
Assessor Comment:				
Assessor Name		Assessor Signature		

Annexure 5: Tolerances related to the practical task for Core NOS (CON/N0101)

Assistant Bar Bender & Steel Fixer				
1. Learner Name:_____ 2. Enrolment No:_____ 3. Centre: _____				
S.No	Description	Permitted tolerance	Observed variation	Assessments
3. CON/N0101: Erect and dismantle temporary scaffold of 3.6 meter height				
1	Horizontal alignment (less than 4 meter)	+/- 7mm		
2	Verticality/Level (less than 4meter)	+/- 5mm		
3	Ladder placing (75 degree from horizontal)	+/- 15 degree		
4	Stability of ties	Rigid (No shake of bracing pipe)		
5	Gap between scaffold board	No gap		
Assessor Comment:				
Assessor Name		Assessor Signature		

Annexure 6: Assessment sheet

Assessment sheet for each NOS should be prepared for practical, theory and viva.