

BIOGAS PLANT TECHNICIAN FLOATING DRUM

Assesment Standards

National Vocational
Certificate Level 3

Version 1 - December 2014

Published by

National Vocational and Technical Training Commission
Government of Pakistan

Headquarter

Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan
www.navttc.org

Responsible

Director General Skills Standard and Curricula, National Vocational and Technical Training Commission
National Deputy Head, TVET Reform Support Programme, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Layout & design

SAP Communications

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This document has been produced with the technical assistance of the TVET Reform Support Programme, which is funded by the European Union, the Embassy of the Kingdom of the Netherlands, the Federal Republic of Germany and the Royal Norwegian Embassy and has been commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in close collaboration with the National Vocational and Technical Training Commission (NAVTTTC) as well as provincial Technical Education and Vocational Training Authorities (TEVTAs), Punjab Vocational Training Council (PVTC), Qualification Awarding Bodies (QABs) and private sector organizations.

Document Version

December, 2014
Islamabad, Pakistan

BIOGAS PLANT TECHNICIAN FLOATING DRUM

Assesment Standards

National Vocational
Certificate Level 3

Version 1 - December 2014



**ASSESSMENT
MATERIAL
EVIDENCE
GUIDE**

Qualification

Biogas Plant
Supervisor Floating
Drum

CS Code:

Level: 3

Credit: 5

Version: 1

**SELECTION OF SUITABLE TYPE AND
APPROPRIATE SIZE OF BIO-DIGESTER**

CONTENTS

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND
ASSESSOR
DETAILS**

Competent Not Yet Competent

Assessment Re-Assessment

Assessor's Name _____ Assessor's Code _____

Assessor's Signature _____ Date

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DD MM YYYY

**CANDIDATE
DETAILS**

Candidate's Name _____
First Name Last Name

Father's Name _____

Institute Name and District _____

CNIC/BFORM #

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Registration Number issued by Assessment Body _____

Gender Male Female Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature _____

**ASSESSMENT
RESULTS
SUMMARY FORM**

You can use this coversheet as an *Assessment Results Summary Form*. Simply post a photocopy of this completed coversheet to **NAVTTCC**

**NAVTTCC OFFICE
ONLY**

1. DATE FORM RECEIVED:

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DD MM YYYY

2. DATE ENTERED INTO DATABASE:

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DD MM YYYY

1

ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: SELECTION OF SUITABLE TYPE AND APPROPRIATE SIZE OF BIO-DIGESTER		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> Select suitable type and appropriate size of floating-drum bio-digester for biogas plant. 		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> Answer all questions your Assessor may have during the practical assessment. 		
Other Requirements			✓		<ul style="list-style-type: none"> N/A 		

2

CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one hour** timeframe:

- Select the size and design of floating drum bio-digester for biogas plant.
- Carry out calculations for materials required for installation of floating drum bio-digester for biogas plant.

Important Note: The following general performance criteria will be followed and performed in all the tasks (where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p>1. Complete practical task of selection of suitable type and appropriate size of bio-digester under observation by an assessor</p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> • Select the size and design for floating drum bio-digester for biogas plant <ul style="list-style-type: none"> ✓ Select the size of floating type bio-digester for biogas plant to fulfil the requirements of 10 persons of the family ✓ Select the size of floating type bio-digester for biogas plant when there are 10 cattle for feeding purpose ✓ Select the design of floating drum bio-digester according to the locality of biogas plant • Carry out calculations for materials required for installation of floating drum bio-digester for biogas plant <ul style="list-style-type: none"> ✓ Calculate the quantity of feeding material (cattle dung) from 10 cattle for biogas plant ✓ Quantify the quantity of gas produced from feeding materials of 10 cattle for biogas plant ✓ Calculate the quantity of gas required for a family with 10 family members ✓ Calculate the quantity of gas required by the family on the basis of end-use applications of the gas ✓ Estimate the quantity of other materials (other than cattle dung) for installation of floating drum bio-digester for biogas plant ✓ Calculate the cast for installation of floating drum bio-digester depending upon the material required (other than cattle dung) ✓ Calculate the HRT for floating drum digester of biogas plant with 100 cubic feet volume of the digester and 2 cubic feet input • General Performance Criteria <ul style="list-style-type: none"> ✓ Follow precautionary procedures as per requirements of the given tasks ✓ Select, use and maintain equipment/ tools as per requirement of the task ✓ Report to supervisor in case of any emergency after taking necessary actions ✓ Complete the work by following sequence of the operations ✓ Perform task(s) within standard timeframe
<p>2. Other requirements</p>	<ul style="list-style-type: none"> • N/A
<p>3. Answer any questions your assessor may have during the practical assessment</p>	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

3

ASSESSOR JUDGEMENT GUIDE

Candidate's Name Father's Name.....

INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
1. Complete practical task of selection of suitable type and appropriate size of bio-digester under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Select the size and design for floating drum bio-digester for biogas plant	Selected the size of floating type bio-digester for biogas plant to fulfil the requirements of 10 persons of the family			
	Selected the size of floating type bio-digester for biogas plant when there were 10 cattle for feeding purpose			
	Selected the design of floating drum bio-digester according to the locality of biogas plant			
Carry out calculations for materials required for installation of floating drum bio-digester for biogas plant	Calculated the quantity of feeding material (cattle dung) from 10 cattle for biogas plant			
	Quantified the quantity of gas produced from feeding materials of 10 cattle for biogas plant			
	Calculated the quantity of gas required for a family with 10 family members			
	Calculated the quantity of gas required by the family on the basis of end-use applications of the gas			
	Estimated the quantity of other materials (other than cattle dung) for installation of floating drum bio-digester for biogas plant			
	Calculated the cast for installation of floating drum bio-digester depending upon the material required (other than cattle dung)			
	Calculated the HRT for floating drum digester of biogas plant with 100 cubic feet volume of the digester and 2 cubic feet input			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
2. Other requirements	N/A			

3. Answer any questions the assessor may have during the practical assessment

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRUCTIONS	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> Context of the assessment List of required tools and equipment. List of consumable items required during the service
1. Context of Assessment	This task will be performed in real time environment.

2. List of tools and equipment required (for five candidates)		
S. No	Items	Quantity
1	Personal protective equipment (PPE)	05
2	Calculator	05

3. List of consumable items required (for five candidates)		
S. No	Items	Quantity
1	Plastic Gloves (Pairs)	05
2	Scale	05
3	Measuring Tape	05
4	Note Books	05
5	Pencils, Rubber, sharpener	05
6	Drafting Chart	05



**ASSESSMENT
MATERIAL
EVIDENCE
GUIDE**

Qualification

Biogas Plant
Supervisor
Fixed Dome

CS Code:

Level: 3

Credit: 5

Version: 1

**SELECT CONSTRUCTION MATERIAL AND
CONSTRUCTION SITE**

CONTENTS

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND
ASSESSOR
DETAILS**

Competent	<input type="checkbox"/>	Not Yet Competent	<input type="checkbox"/>
Assessment	<input type="checkbox"/>	Re-Assessment	<input type="checkbox"/>

Assessor's Name _____ Assessor's Code _____

Assessor's Signature _____ Date

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DD MM YYYY

**CANDIDATE
DETAILS**

Candidate's Name _____
First Name Last Name

Father's Name _____

Institute Name and District _____

CNIC/BFORM #

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Registration Number issued by Assessment Body _____

Gender Male Female Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature _____

**ASSESSMENT
RESULTS
SUMMARY FORM**

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1

ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: SELECT CONSTRUCTION MATERIAL AND CONSTRUCTION SITE		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> Select construction material and construction site for the construction of fixed dome biogas plant. 		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> Answer all questions your Assessor may have during the practical assessment. 		
Other Requirements			✓		<ul style="list-style-type: none"> N/A 		

2

CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one hour** timeframe:

- Check and calculate the quality and quantity of materials required for the construction of fixed dome biogas plant (size given by assessor)

Important Note: The following general performance criteria will be followed and performed in all the tasks (where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
1. Complete practical task of selecting construction material and construction site under observation by an assessor	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> • Check and calculate the quality and quantity of materials required for the construction of fixed dome biogas plant (size given by assessor) <ul style="list-style-type: none"> ✓ Check and calculate the quality and quantity of bricks to be used for the construction of fixed dome biogas plant ✓ Calculate the quantity of cement bags to be used for the construction of fixed dome biogas plant ✓ Check and calculate the quality and quantity of sand to be used for the construction of fixed dome biogas plant ✓ Check and calculate the quality and quantity of gravel (crush) to be used for the construction of fixed dome biogas plant ✓ Calculate the quantity of iron rods to be used for the construction of fixed dome biogas plant ✓ Calculate the quantity of acrylic emulsion for the construction of fixed dome biogas plant • General Performance Criteria <ul style="list-style-type: none"> ✓ Follow precautionary procedures as per requirements of the given tasks ✓ Select, use and maintain equipment/ tools as per requirement of the task ✓ Report to supervisor in case of any emergency after taking necessary actions ✓ Complete the work by following sequence of the operations ✓ Perform task(s) within standard timeframe
2. Other requirements	<ul style="list-style-type: none"> • N/A
3. Answer any questions your assessor may have during the practical assessment	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

3

ASSESSOR JUDGEMENT GUIDE

Candidate's Name Father's Name.....

INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
1. Complete practical task of selecting construction material and construction site under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Check and calculate the quality and quantity of materials required for the construction of fixed dome biogas plant (size given by assessor)	Checked and calculated the quality and quantity of bricks to be used for the construction of fixed dome biogas plant			
	Calculated the quantity of cement bags to be used for the construction of fixed dome biogas plant			
	Checked and calculate the quality and quantity of sand to be used for the construction of fixed dome biogas plant			
	Checked and calculated the quality and quantity of gravel (crush) to be used for the construction of fixed dome biogas plant			
	Calculated the quantity of iron rods to be used for the construction of fixed dome biogas plant			
	Calculated the quantity of acrylic emulsion for the construction of fixed dome biogas plant			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
2. Other requirements	N/A			

3. Answer any questions the assessor may have during the practical assessment

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRUCTIONS	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> Context of the assessment List of required tools and equipment. List of consumable items required during the service
1. Context of Assessment	This task will be performed in real time environment.

2. List of tools and equipment required (for five candidates)		
S. No	Items	Quantity
1	White board	5
2	Prototype biogas digester	1
3	Flip chart	5
4	calculator	5

3. List of consumable items required (for five candidates)		
S. No	Items	Quantity
1	Pencils	5
2	Flip chart	5
3	Writing pad	5



**ASSESSMENT
MATERIAL
EVIDENCE
GUIDE**

Qualification
Biogas Plant
Supervisor
Fixed Dome
CS Code:
Level: 3
Credit: 5
Version: 1

**SUPERVISE THE INSTALLATION OF PIPELINE,
APPLIANCES AND ELECTRO-MECHANICAL
COMPONENTS**

CONTENTS

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND
ASSESSOR
DETAILS**

Competent	<input type="checkbox"/>	Not Yet Competent	<input type="checkbox"/>																					
Assessment	<input type="checkbox"/>	Re-Assessment	<input type="checkbox"/>																					
Assessor's Name	_____	Assessor's Code	_____																					
Assessor's Signature	_____	Date	<table border="1"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>DD</td><td>MM</td><td colspan="4"></td><td>YYYY</td><td colspan="4"></td> </tr> </table>											DD	MM					YYYY				
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**CANDIDATE
DETAILS**

Candidate's Name _____
First Name Last Name

Father's Name _____

Institute Name and District _____

CNIC/BFORM #

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Registration Number issued by Assessment Body _____

Gender Male Female Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature _____

**ASSESSMENT
RESULTS
SUMMARY FORM**

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1

ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: SUPERVISE THE INSTALLATION OF PIPELINE, APPLIANCES AND ELECTRO-MECHANICAL COMPONENTS		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> Supervise the installation of pipeline and electromechanical components of fixed dome biogas plant. 		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> Answer all questions your Assessor may have during the practical assessment. 		
Other Requirements			✓		<ul style="list-style-type: none"> N/A 		

2

CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one hour** timeframe:

- Supervise the installation of pipeline and electromechanical components for fixed dome biogas plant at farm/house

Important Note: The following general performance criteria will be followed and performed in all the tasks (where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
1. Complete practical task of supervising the installation of pipeline, appliances and electro-mechanical components under observation by an assessor	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> • Supervise the Installation of pipeline and electromechanical components for fixed dome biogas plant at farm/house <ul style="list-style-type: none"> ✓ Monitor the installation of pipeline for fixed dome biogas plant with provision of moisture removal at farm/house ✓ Check the pressure gauge, biogas flow meter in the gas pipeline of fixed dome biogas plant ✓ Observe the checking of leakage of pipeline of fixed dome biogas plant at farm/house ✓ Monitor the installation of temperature gauge in the digester chamber of the fixed dome biogas plant at farm/house ✓ Monitor the Installation of moisture trap and hydrogen sulphide scrubber in the pipe line of fixed dome biogas plant at farm/house ✓ Observe the installation of stove, lamps for using biogas from fixed dome biogas plant at farm/house ✓ Check the installation of compressor in the pipe line of fixed dome biogas plant to increase pressure if biogas is to be used for running generator at farm/house • General Performance Criteria <ul style="list-style-type: none"> ✓ Follow precautionary procedures as per requirements of the given tasks ✓ Select, use and maintain equipment/ tools as per requirement of the task ✓ Report to supervisor in case of any emergency after taking necessary actions ✓ Complete the work by following sequence of the operations ✓ Perform task(s) within standard timeframe
2. Other requirements	<ul style="list-style-type: none"> • N/A
3. Answer any questions your assessor may have during the practical assessment	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

3

ASSESSOR JUDGEMENT GUIDE

Candidate's Name Father's Name.....

INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
1. Complete practical task of supervising the installation of pipeline, appliances and electro-mechanical components under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Supervise the installation of pipeline and electromechanical components for fixed dome biogas plant at farm/house	Monitored the installation of pipeline for fixed dome biogas plant with provision of moisture removal at farm/house			
	Checked the pressure gauge, biogas flow meter in the gas pipeline of fixed dome biogas plant			
	Observed the checking of leakage of pipeline of fixed dome biogas plant at farm/house			
	Monitored the installation of temperature gauge in the digester chamber of the fixed dome biogas plant at farm/house			
	Monitored the installation of moisture trap and hydrogen sulphide scrubber in the pipe line of fixed dome biogas plant at farm/house			
	Observed the installation of stove, lamps for using biogas from fixed dome biogas plant at farm/house			
	Checked the installation of compressor in the pipe line of fixed dome biogas plant to increase pressure if biogas is to be used for running generator at farm/house			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
2. Other requirements	N/A			

3. Answer any questions the assessor may have during the practical assessment

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRUCTIONS	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> Context of the assessment List of required tools and equipment. List of consumable items required during the service
1. Context of Assessment	This task will be performed in real time environment.

2. List of tools and equipment required (for five candidates)		
S. No	Items	Quantity
1	Hexa-frame and blade sets	5
2	Pipe wrench – 9” and 12”	5
3	Plier/slide wrench	5
4	Spanners	5
5	Measuring tape	5

3. List of consumable items required (for five candidates)		
S. No	Items	Quantity
1	Biodigester drawing	5
2	Ball pen	5
3	Pencils	5
4	Writing pad/note book	5



**ASSESSMENT
MATERIAL
EVIDENCE
GUIDE**

Qualification

Biogas Plant
Supervisor
Fixed Dome

CS Code:

Level: 3

Credit: 4

Version: 1

**ENSURE EFFECTIVE OPERATION AND TIMELY
MAINTENANCE OF INSTALLED BIOGAS PLANT**

CONTENTS

1. Assessment Summary and Record
2. Candidate Assessment
3. Assessor Judgment Guide
4. List of required tools/equipment, material and context of assessment

**ASSESSMENT AND
ASSESSOR
DETAILS**

Competent Not Yet Competent

Assessment Re-Assessment

Assessor's Name _____ Assessor's Code _____

Assessor's Signature _____ Date

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DD MM YYYY

**CANDIDATE
DETAILS**

Candidate's Name _____
First Name Last Name

Father's Name _____

Institute Name and District _____

CNIC/BFORM #

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Registration Number issued by Assessment Body _____

Gender Male Female Transgender

Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal.

Candidate's Signature _____

**ASSESSMENT
RESULTS
SUMMARY FORM**

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2. DATE ENTERED INTO DATABASE:

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DD MM YYYY

1

ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF COMPETENCY STANDARD: ENSURE EFFECTIVE OPERATION AND TIMELY MAINTENANCE OF INSTALLED BIOGAS PLANT		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> Supervise the operations and maintenance tasks of fixed dome biogas plant. 		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> Answer all questions your Assessor may have during the practical assessment. 		
Other Requirements			✓		<ul style="list-style-type: none"> N/A 		

2

CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **one hour** timeframe:

- Supervise the operation activity of fixed dome biogas plant at farm/house

Important Note: The following general performance criteria will be followed and performed in all the tasks (where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
1. Complete practical task of ensuring effective operation and timely maintenance of installed biogas plant under observation by an assessor	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> • Supervise the operation activity of fixed dome biogas plant at farm/house <ul style="list-style-type: none"> ✓ Check the process of dung and water feeding to fixed dome biogas plant ✓ Observe the pressure testing and gas leakage test for fixed dome biogas plant at farm/house ✓ Monitor the removal of water from moisture traps of fixed dome plant at farm/house • General Performance Criteria <ul style="list-style-type: none"> ✓ Follow precautionary procedures as per requirements of the given tasks ✓ Select, use and maintain equipment/ tools as per requirement of the task ✓ Report to supervisor in case of any emergency after taking necessary actions ✓ Complete the work by following sequence of the operations ✓ Perform task(s) within standard timeframe
2. Other requirements	<ul style="list-style-type: none"> • N/A
3. Answer any questions your assessor may have during the practical assessment	<p>My answers to questions are correct and demonstrate my understanding of the topics and their application.</p>

3

ASSESSOR JUDGEMENT GUIDE

Candidate's Name Father's Name.....

INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
1 Complete practical task of ensuring effective operation and timely maintenance of installed biogas plant under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Supervise the operation activity of fixed dome biogas plant at farm/house	Checked the process of dung and water feeding to fixed dome biogas plant			
	Observed the pressure testing and gas leakage test for fixed dome biogas plant at farm/house			
	Monitored the removal of water from moisture traps of fixed dome plant at farm/house			
General Performance Criteria	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
2. Other requirements	N/A			

3. Answer any questions the assessor may have during the practical assessment

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRUCTIONS	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> Context of the assessment List of required tools and equipment. List of consumable items required during the service
1. Context of Assessment	This task will be performed in real time environment.

2. List of tools and equipment required (for five candidates)		
S. No	Items	Quantity
1	Personal protective equipment (PPE)	05
2	Wheel barrow	05
3	Pressure meter	05
4	pH meter	05
5	Shovel	05

3. List of consumable items required (for five candidates)		
S. No	Items	Quantity
1	Plastic Gloves (Pairs)	05
2	Grease Packet	05
3	Lubricant oil bottle	05



ASSESSMENT MATERIAL EVIDENCE GUIDE	<h1>BIOGAS PLANT SUPERVISOR FIXED DOME</h1>
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Qualification
Biogas Plant Supervisor Fixed Dome
CS Code:
Level: 3
Credit: 26
Version: 1

CONTENTS	<ol style="list-style-type: none"> 1. Assessment Summary and Record 2. Candidate Assessment 3. Assessor Judgment Guide 4. List of required tools/equipment, material and context of assessment
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ASSESSMENT AND ASSESSOR DETAILS	Competent <input type="checkbox"/>	Not Yet Competent <input type="checkbox"/>																				
	Assessment <input type="checkbox"/>	Re-Assessment <input type="checkbox"/>																				
	Assessor's Name _____ Assessor's Code _____																					
	Assessor's Signature _____ Date	<table border="1" style="display: inline-table; text-align: center;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2">DD</td> <td colspan="2">MM</td> <td colspan="6">YYYY</td> </tr> </table>											DD		MM		YYYY					
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CANDIDATE DETAILS	Candidate's Name _____ <small style="display: flex; justify-content: space-between; width: 100%;"> First Name Last Name </small> Father's Name _____ Institute Name and District _____ CNIC/BFORM # <table border="1" style="display: inline-table; text-align: center;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> Registration Number issued by Assessment Body _____ Gender Male <input type="checkbox"/> Female <input type="checkbox"/> Transgender <input type="checkbox"/> Candidate's Consent I agree to the time and date of the assessment and am aware of the requirements of the assessment. I fully understand my rights of appeal. Candidate's Signature _____																				

ASSESSMENT RESULTS SUMMARY FORM	You can use this coversheet as an <i>Assessment Results Summary Form</i> . Simply post a photocopy of this completed coversheet to NAVTTTC
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NAVTTTC OFFICE ONLY	1. DATE FORM RECEIVED: <table border="1" style="display: inline-table; text-align: center;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2">DD</td> <td colspan="2">MM</td> <td colspan="6">YYYY</td> </tr> </table>											DD		MM		YYYY						2. DATE ENTERED INTO DATABASE: <table border="1" style="display: inline-table; text-align: center;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2">DD</td> <td colspan="2">MM</td> <td colspan="6">YYYY</td> </tr> </table>											DD		MM		YYYY					
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1

ASSESSMENT SUMMARY & RECORD

ACTIVITY	METHOD				DESIRED OUTCOMES	RESULT	
	WRITTEN	ORAL	PORTFOLIO	OBSERVATION		COMPETENT	NOT YET COMPETENT
NATURE OF ACTIVITY					DESIRED OUTCOMES FOR SUCCESSFUL ASSESSMENT OF QUALIFICATION: BIOGAS PLANT SUPERVISOR FIXED DOME		
Practical Skill Demonstration				✓	<ul style="list-style-type: none"> Perform as a supervisor of fixed dome biogas plant. 		
Knowledge Assessment	✓	✓			<ul style="list-style-type: none"> Answer all questions your Assessor may have during the practical assessment. 		
Other Requirements			✓		<ul style="list-style-type: none"> N/A 		

2

CANDIDATE ASSESSMENT

Candidate's Name..... Father's Name

ALL WORK ASSESSED IN THIS COMPETENCY STANDARD MUST BE YOUR OWN WORK.

GUIDANCE TO CANDIDATE

To meet this standard you are required to complete the following tasks within **five hours** timeframe:

- Calculate the size of fixed dome biogas plant at farm/house
- Check and calculate the quality and quantity of materials required for the construction of fixed dome biogas plant (size given by assessor)
- Supervise the construction of digester of fixed dome biogas plant at farm/house as per drawing
- Supervise the construction of gas holder and turret of fixed dome biogas plant at farm/house as per drawing
- Supervise the construction of main hole, hydraulic chamber and slurry outlet of fixed dome biogas plant at farm/house as per drawing
- Supervise the construction of feeding inlet, slurring collection and composting pit of fixed dome biogas plant at farm/house as per drawing
- Supervise the installation of pipeline and electromechanical components for fixed dome biogas plant at farm/house
- Supervise the operation activity of fixed dome biogas plant at farm/house

Important Note: The following general performance criteria will be followed and performed in all the tasks (where applicable by the candidate in order to meet this standard:

- Follow precautionary procedures as per requirements of the given tasks
- Select, use and maintain equipment/ tools as per requirement of the task
- Report to supervisor in case of any emergency after taking necessary actions
- Complete the work by following sequence of the operations
- Perform task(s) within standard timeframe

ACTIVITIES	CANDIDATE RESPONSE
<p>1. Complete practical task of biogas plant supervisor fixed dome under observation by an assessor</p>	<p>During a practical assessment, under observation by an assessor, I will correctly :</p> <ul style="list-style-type: none"> • Calculate the size of fixed dome biogas plant at farm/house <ul style="list-style-type: none"> ✓ Estimate the quantity of feeding material required for fixed dome biogas digester at farm/house ✓ Quantify the biogas produced by biogas plant at farm/house ✓ Calculate the size of fixed dome biogas plant at farm/house on the basis of feeding material, biogas quantity produced and retention time • Check and calculate the quality and quantity of materials required for the construction of fixed dome biogas plant (size given by assessor) <ul style="list-style-type: none"> ✓ Check and calculate the quality and quantity of bricks to be used for the construction of fixed dome biogas plant ✓ Calculate the quantity of cement bags to be used for the construction of fixed dome biogas plant ✓ Check and calculate the quality and quantity of sand to be used for the construction of fixed dome biogas plant ✓ Check and calculate the quality and quantity of gravel (crush) to be used for the construction of fixed dome biogas plant ✓ Calculate the quantity of iron rods to be used for the construction of fixed dome biogas plant ✓ Calculate the quantity of acrylic emulsion for the construction of fixed dome biogas plant • Supervise the construction of digester of fixed dome biogas plant at farm/house as per drawing <ul style="list-style-type: none"> ✓ Observe the marking the land for excavation of pit for construction of fixed dome biogas plant at farm/house ✓ Monitor the foundation preparation of digester of fixed dome biogas plant ✓ Check the construction walls of digester of fixed dome biogas plant as per drawing ✓ Observe the fixation inlet pipe in the digester wall of fixed dome biogas plant

	<ul style="list-style-type: none"> ✓ Monitor plastering of walls of digester of fixed dome biogas plant as per predetermined sand-cement ratio • Supervise the construction of gas holder and turret of fixed dome biogas plant at farm/house as per drawing <ul style="list-style-type: none"> ✓ Monitor the preparation of scaffolding and frameworks for dome casting as per drawing of fixed dome biogas plant ✓ Monitor the use of template as per drawing before casting of dome of fixed dome biogas plant ✓ Ensure casting of the dome of as per drawing to ensure required thickness and strength ✓ Monitor the plastering with subsequent layers of acrylic emulsion inside the dome of fixed dome biogas plant to make it impermeable to air/gas. • Supervise the construction of main hole, hydraulic chamber and slurry outlet of fixed dome biogas plant at farm/house as per drawing <ul style="list-style-type: none"> ✓ Observe the construction of main hole of fixed dome biogas plant as per given drawing ✓ Monitor the construction of outlet of fixed dome biogas plant as per drawing ✓ Monitor the plumbing of walls of main hole and outlet during construction ✓ Observe the preparation and fixation of slabs on outlet chamber of fixed dome biogas plant • Supervise the construction of feeding inlet, slurring collection and composting pit of fixed dome biogas plant at farm/house as per drawing <ul style="list-style-type: none"> ✓ Monitor construction platform of feeding inlet of fixed dome biogas plant as per drawing ✓ Observe the construction of walls of inlet and fix mixing device in the inlet tank ✓ Monitor excavation of slurry collection pit of fixed dome biogas plant for slurry collection and composting ✓ Observe the checking of leakage of dome of fixed dome biogas plant at farm/house ✓ Monitor the curing time after each step of construction of fixed dome biogas plant at farm/house • Supervise the Installation of pipeline and electromechanical components for fixed dome biogas plant at farm/house <ul style="list-style-type: none"> ✓ Monitor the installation of pipeline for fixed dome biogas plant with provision of moisture removal at farm/house ✓ Check the pressure gauge, biogas flow meter in the gas pipeline of fixed dome biogas plant ✓ Observe the checking of leakage of pipeline of fixed dome biogas plant at farm/house ✓ Monitor the installation of temperature gauge in the digester chamber of the fixed dome biogas plant at farm/house ✓ Monitor the Installation of moisture trap and hydrogen sulphide scrubber in the pipe line of fixed dome biogas plant at farm/house ✓ Observe the installation of stove, lamps for using biogas from fixed dome biogas plant at farm/house ✓ Check the installation of compressor in the pipe line of fixed dome biogas plant to increase pressure if biogas is to be used for running generator at farm/house • Supervise the operation activity of fixed dome biogas plant at farm/house <ul style="list-style-type: none"> ✓ Check the process of dung and water feeding to fixed dome biogas plant ✓ Observe the pressure testing and gas leakage test for fixed dome biogas plant at farm/house ✓ Monitor the removal of water from moisture traps of fixed dome plant at farm/house • General Performance Criteria <ul style="list-style-type: none"> ✓ Follow precautionary procedures as per requirements of the given tasks ✓ Select, use and maintain equipment/ tools as per requirement of the task ✓ Report to supervisor in case of any emergency after taking necessary actions ✓ Complete the work by following sequence of the operations ✓ Perform task(s) within standard timeframe
2. Other requirements	<ul style="list-style-type: none"> • N/A
3. Answer any questions your assessor may have during the practical assessment	My answers to questions are correct and demonstrate my understanding of the topics and their application.

3

ASSESSOR JUDGEMENT GUIDE

Candidate's Name Father's Name.....

INSTRUCTIONS FOR ASSESSOR

This section contains minimum evidence requirements. Oral questioning may be used to clarify candidate understanding of the topic and its application.

ACTIVITIES	MINIMUM EVIDENCE REQUIRED	YES	NO	ASSESSOR COMMENTS
1. Complete practical task of biogas plant supervisor fixed dome under observation by an assessor	During a practical assessment, under observation by an assessor, the candidate correctly carried out the following tasks:			
Calculate the size of fixed dome biogas plant at farm/house	Estimated the quantity of feeding material required for fixed dome biogas digester at farm/house			
	Quantified the biogas produced by biogas plant at farm/house			
	Calculated the size of fixed dome biogas plant at farm/house on the basis of feeding material, biogas quantity produced and retention time			
Check and calculate the quality and quantity of materials required for the construction of fixed dome biogas plant (size given by assessor)	Checked and calculated the quality and quantity of bricks to be used for the construction of fixed dome biogas plant			
	Calculated the quantity of cement bags to be used for the construction of fixed dome biogas plant			
	Checked and calculate the quality and quantity of sand to be used for the construction of fixed dome biogas plant			
	Checked and calculated the quality and quantity of gravel (crush) to be used for the construction of fixed dome biogas plant			
	Calculated the quantity of iron rods to be used for the construction of fixed dome biogas plant			
	Calculated the quantity of acrylic emulsion for the construction of fixed dome biogas plant			
Supervise the construction of digester of fixed dome biogas plant at farm/house as per drawing	Observed the marking the land for excavation of pit for construction of fixed dome biogas plant at farm/house			
	Monitored the foundation preparation of digester of fixed dome biogas plant			
	Checked the construction walls of digester of fixed dome biogas plant as per drawing			
	Observed the fixation inlet pipe in the digester wall of fixed dome biogas plant			
	Monitored plastering of walls of digester of fixed dome biogas plant as per predetermined sand-cement ratio			
Supervise the construction of gas holder and turret of fixed dome biogas plant at farm/house as per drawing	Monitored the preparation of scaffolding and frameworks for dome casting as per drawing of fixed dome biogas plant			
	Monitored the use of template as per drawing before casting of dome of fixed dome biogas plant			
	Ensured casting of the dome of as per drawing to ensure required thickness and strength			
	Monitored the plastering with subsequent layers of acrylic emulsion inside the dome of fixed dome biogas plant to make it impermeable to air/gas.			
Supervise the construction of main hole, hydraulic chamber and slurry outlet of fixed	Observed the construction of main hole of fixed dome biogas plant as per given drawing			
	Monitored the construction of outlet of fixed dome biogas plant as per drawing			

dome biogas plant at farm/house as per drawing	Monitored the plumbing of walls of main hole and outlet during construction			
	Observed the preparation and fixation of slabs on outlet chamber of fixed dome biogas plant			
Supervise the construction of feeding inlet, slurring collection and composting pit of fixed dome biogas plant at farm/house as per drawing	Monitored construction platform of feeding inlet of fixed dome biogas plant as per drawing			
	Observed the construction of walls of inlet and fix mixing device in the inlet tank			
	Monitored excavation of slurry collection pit of fixed dome biogas plant for slurry collection and composting			
	Observed the checking of leakage of dome of fixed dome biogas plant at farm/house			
Supervise the installation of pipeline and electromechanical components for fixed dome biogas plant at farm/house	Monitored the curing time after each step of construction of fixed dome biogas plant at farm/house			
	Monitored the installation of pipeline for fixed dome biogas plant with provision of moisture removal at farm/house			
	Checked the pressure gauge, biogas flow meter in the gas pipeline of fixed dome biogas plant			
	Observed the checking of leakage of pipeline of fixed dome biogas plant at farm/house			
	Monitored the installation of temperature gauge in the digester chamber of the fixed dome biogas plant at farm/house			
	Monitored the Installation of moisture trap and hydrogen sulphide scrubber in the pipe line of fixed dome biogas plant at farm/house			
	Observed the installation of stove, lamps for using biogas from fixed dome biogas plant at farm/house			
Supervise the operation activity of fixed dome biogas plant at farm/house	Checked the installation of compressor in the pipe line of fixed dome biogas plant to increase pressure if biogas is to be used for running generator at farm/house			
	Checked the process of dung and water feeding to fixed dome biogas plant			
	Observed the pressure testing and gas leakage test for fixed dome biogas plant at farm/house			
General Performance Criteria	Monitored the removal of water from moisture traps of fixed dome plant at farm/house			
	Followed precautionary procedures as per requirements of the given tasks			
	Selected, used and maintained equipment/ tools as per requirement of the task			
	Reported to supervisor in case of any emergency after taking necessary actions			
	Completed the work by following sequence of the operations			
	Performed task(s) within standard timeframe			
2. Other requirements	N/A			

3. Answer any questions the assessor may have during the practical assessment

Candidate's answers to questions are correct and demonstrate understanding of the topics and their application.

Assessor to document below all questions asked and candidate answers. Use extra sheets if required and attach.

4

LIST OF TOOLS, EQUIPMENT, MATERIAL AND CONTEXT OF ASSESSMENT

INSTRUCTIONS	<p>This section contains information regarding;</p> <ul style="list-style-type: none"> Context of the assessment List of required tools and equipment. List of consumable items required during the service
1. Context of Assessment	This task will be performed in real time environment.


2. List of tools and equipment required (for five candidates)		
S. No	Items	Quantity
1	Computer	1
2	Multimedia	1
3	White board	1
4	Prototype biogas digester	1
5	Flip chart	1
6	Camera	1
7	Construction video	1
8	Calculators	5
9	Measuring tap	5
10	Plumb- bob	5
11	Water level	5
12	Mason's Trowel	5
13	Plastering trowel	5
14	Pointing trowel	5
15	Pick axe with handle	5
16	Wheel barrow	5
17	Chisel sets 9" and 12"	5
18	Mason's hammer	5
19	Templates (different sizes according to size of fixed dome biogas plant)	5
20	Straight edge	5
21	Thread roll	5
22	Lime powder for layout chalking	5kg
23	Iron trough/mortar pan	10
24	Spirit level	3
25	Brushes (wire brush, painting brush)	10
26	Shovel with handle	5
27	Builders square	5
28	Lines and pins	LS
29	Striker for horizontal and vertical joints	5
30	Steel float – small, medium and large	5
31	Wooden float – small, medium and large	5
32	Mason's Tool bag	25
33	Hexa-frame and blade sets	5
34	Pipe wrench – 9" and 12"	5
35	Plier/slide wrench	5
36	Spanners	5
37	Helmet	5
38	Dungaree (Working uniform)	5

39	Safety belt	5
40	Boots	5
41	Gloves	5
42	Rain coats	5
43	Pressure gauge	5
44	Biogas flow meter	5
45	Temperature gauge	5


3. List of consumable items required (for five candidates)		
S. No	Items	Quantity
1	Flip chart paper	5
2	Meta cards – different colours	5
3	Marker pens (Permanent and board marker)	10
4	Masking tape (rolls)	5
5	Cello tape	5
6	Biodigester drawing	5
7	Ball pen	5
8	Pencils	5
9	Erasers	5
10	Writing pad/note book	5
11	Glue stick	5
12	Cement	50
13	Bricks	7500
14	Sand	2500 cuft
15	Aggregates 20mm	2500 cu ft
16	Inlet pipes PVC 110 mm diameter 3 m long	5
17	MS Rod 10 mm diameter	25kg
18	Binding wire	1 kg
19	Scaffolding	5
20	PVC/GI pipe and fittings as per site condition	5 sets
21	Biogas filters (CO2 scrubber, H2S remover, moisture remover)	5 sets
22	Biogas appliances (as per sit condition and users' need)	5 sets
23	Control valves – as per site condition	5
24	Main gas pipe – GI 1.5" diameter, 1 m long with reducing elbow	5
25	Teflon tape	5


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