



NYPUNYAM

SKILL FIESTA 2016



KASE

KERALA ACADEMY FOR SKILLS EXCELLENCE
Skill Development Mission of Government of Kerala



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SKILLS FOR TOMORROW

February 5-7 | **2016**, Thiruvananthapuram, Kerala

PLUMBING

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TEST PROJECT FORMAT – STATE LEVEL

Trade: PLUMBING

Duration of the Test: 6 Hours

Project Brief:

The Test project contains the following:

- 1- Task description
- 2- Installation drawing scale 1:10
- 3- Water pipe (GI & PVC)
- 4- Waste pipe (PVC)
- 5- GI fittings & valves
- 6- PVC fittings
- 7- EWC
- 8- Low level flushing cistern
- 9- Gyser 10 ltrs
- 10-Wall mixture

Your assignment is to plan and build the cold water line, hot water line and soil waste line on the basis of the architectural plan.

Candidate is supposed to present your skill about PVC pipe line and GI pipe line lying with various fittings and soil waste lying with various PVC fittings and installation of EWC & Gyser.

This project to be made by 1800mm x 1500mm x 75mm thick wooden "T" shape board frame which is designed by wooden plank 2"x3"x1800MM (The project board must be laid on floor of the workshop area)



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COMPETENCY AND SCOPE OF WORK :

1 - The individual needs to know and understand:

- The purposes, uses, maintenance and care of all equipment, together with their safety implications
- The purposes, uses, care and potential risks associated with materials
- The purposes and uses of manufacturers' specifications and drawings
- Search methods for specific and non-specific information, specifications and guidance
- The time available and associated with each activity
- The parameters within which activities need to be scheduled
- The health and safety standards applying at any one time
- The use of new technologies as a work aid
- Principles and their application to good housekeeping in the work environment
- Prepare and maintain a safe, tidy and efficient work area
- Select and use appropriate personal protective clothing in all circumstances
- Select and use appropriate hand tools to complete every task safely
- Use the specified precautions when manual handling items and for long and heavy items
- Schedule work to maximize efficiency and minimize disruption
- Plan, prepare and complete each task within the available time
- Restore the work area to an appropriate condition

2 - The individual needs to know and understand:

- Drawing notation and the symbols for pipe work, fittings and appliances
- The technical language associated with the skill



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3- The individual needs to know and understand:

The information requirement underpinning the design of any installation system:

- The principles and conventions used in specifications and drawings
- The range of specifications and drawings in use, and their purposes
- The uses and limitations of the generally available drawing tools

Estimate the requirement for equipment and materials

4 - Install plumbing pipe-work brackets and clips on prefabricate plywood board the required pipe-work layouts into sub-assemblies

1. The uses and limitations of the specified bending and jointing methods, materials and fittings in order to complete a leak-free installation
2. Methods of connection to services from utilities provider
3. The range and characteristics of jointing methods, materials and fittings
4. Properties of the piping material (MS- Mild Steel, PVC- polyvinyl chloride)
5. In order to handle, cut, joint and form sub-assemblies
6. The safe operation of the cutting, threading, and testing equipment if provided



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Final outcome expected from the candidate:

1. Competitor shall able to know read and interpret plumbing drawing & create freehand sketches for the purposes of pipe line assembling.
2. Utilizes the appropriate personal protective equipment for every work.
3. Fix the correct number and diameter of pipe brackets/clips in the configuration.
4. Determine the optimum way to use the given material to ensure module completion.
5. Limit and avoid scrap/wastages
6. Determine the correct position for cutting and safely the pipe material.
7. Measuring, setting out and marking of materials and pipe-work
8. Connecting by threading, clamping and push fitting
9. Competitor shall be able to know installation of EWC & Gyser

Repair, maintain or replace a range of plumbing appliances/Problem solving, innovation and creativity

The candidate able to know and understand:

- 1- Features of excellent for customer services
- 2- Handover the installation to the customer
- 3- Isolate and Drain the installation to enable repair or replace



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Materials, Tools & Equipments to be provided for each candidate as below:

Materials

Sl No	Material Descriptions	Quantity in Nos
1	GI Pipe ϕ 15 mm	2 M
2	GI Coupling 15 mm	2
3	GI Elbow 15 mm	5
4	GI union 15 mm	1
5	PVC Pipe ϕ 15 mm	7M
6	PVC Elbow (Brass Female thread) 15 mm	6
7	PVC Elbow push fit 15 mm	7
8	PVC 'T' push fit 15 mm	3
9	PVC Tee(Brass Female thread) 15 mm	1
10	PVC Brass adopter push fit(Female thread) 15 mm	3
11	PVC connector Pipe Brass holder 15mm	3
12	10 ltr Capacity Gyser	1
13	CP Brass Angle Cock 15mm	3
14	CP Wall mixture 15mm	1
15	CP Brass Bath shower 15mm	
16	EWS with seat cover	1
17	Flushing Cistern with low level Flush Bend	1set
18	Water Tap 15 mm	1
19	Hex Nipple 15 mm	1
20	110 mm PVC pipe 4 kg/cm ²	2 M
21	110 mm PVC coupling 4 kg/cm ²	1
22	110 mm PVC Tee 4 kg/cm ²	1
23	110 mm PVC vent cowl 4 kg/cm ²	1
24	PVC Clamp 110 mm	2
25	GI Clamp 25 mm for 15mm pipe	20

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26	GI coated Self threads Screw 6x20mm	60
27	12 mm Ply wood with 8'x4'	8
28	Wooden Batten 2"x1"x 1M	20
29	Wooden primer	2 Ltr
30	Marking Pencil	1
31	Permanent Marker	1
32	Tefflon Tape	2
33	Cutting oil	100 ml
34	Seal leak compound/Lead	50 g
35	Thread roll	1
36	Solvent liquid adhesive bond	200g

Tools & Equipments

Sr No	Description of Tools & Equipments	Qty
1	Steel Rule 600 mm	1
2	Steel Rule 300 mm	1
3	Hacksaw Frame 300 mm	1
4	Scriber 200 mm	2
5	Measuring Tap 5 mtrs	2
6	Centre Punch 100 mm	2
7	Engineers square 200mm	1
8	Hammer Ball peen/ Claw hammer 450 gms	1
9	Flat file Rough 300	1
10	Half round file 250 mm	1
11	Spirit Level 300 mm(Magnetic torpedo)	1
12	Plumb Bob 200 gms	1
13	Stilson Pipe Wrench 350 mm	2
14	Stilson Pipe Wrench 250 mm	1
15	Screw driver 10×250 mm	1
16	Srew Driver 8×200	1
17	Multigrip Plier 250 mm	1
18	Divider 200 mm	1



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19	Adjustable Spanner 250 mm	1
20	Divider Spring Type 200 mm	1
21	Pipe vice 75 mm with working table	1set
22	Bench Vice (jaw 150 mm)	1
23	Straight Edge	1
24	Pocker	1
25	oil Cane 200 ml	1
26	Bucket 10 lts for keeping waste materials	1
27	Electrical Drill Machine 12mm capacity	1
28	Hole saw cutter (120mm, 20mm, 25mm)	1set
29	Ratchet Die & diestock (15-25mm)	1set
30	Hydraulic Banding Machine upto 25mm capacity	1set

NB: These above tools & equipments along with materials to be verified by the expert.



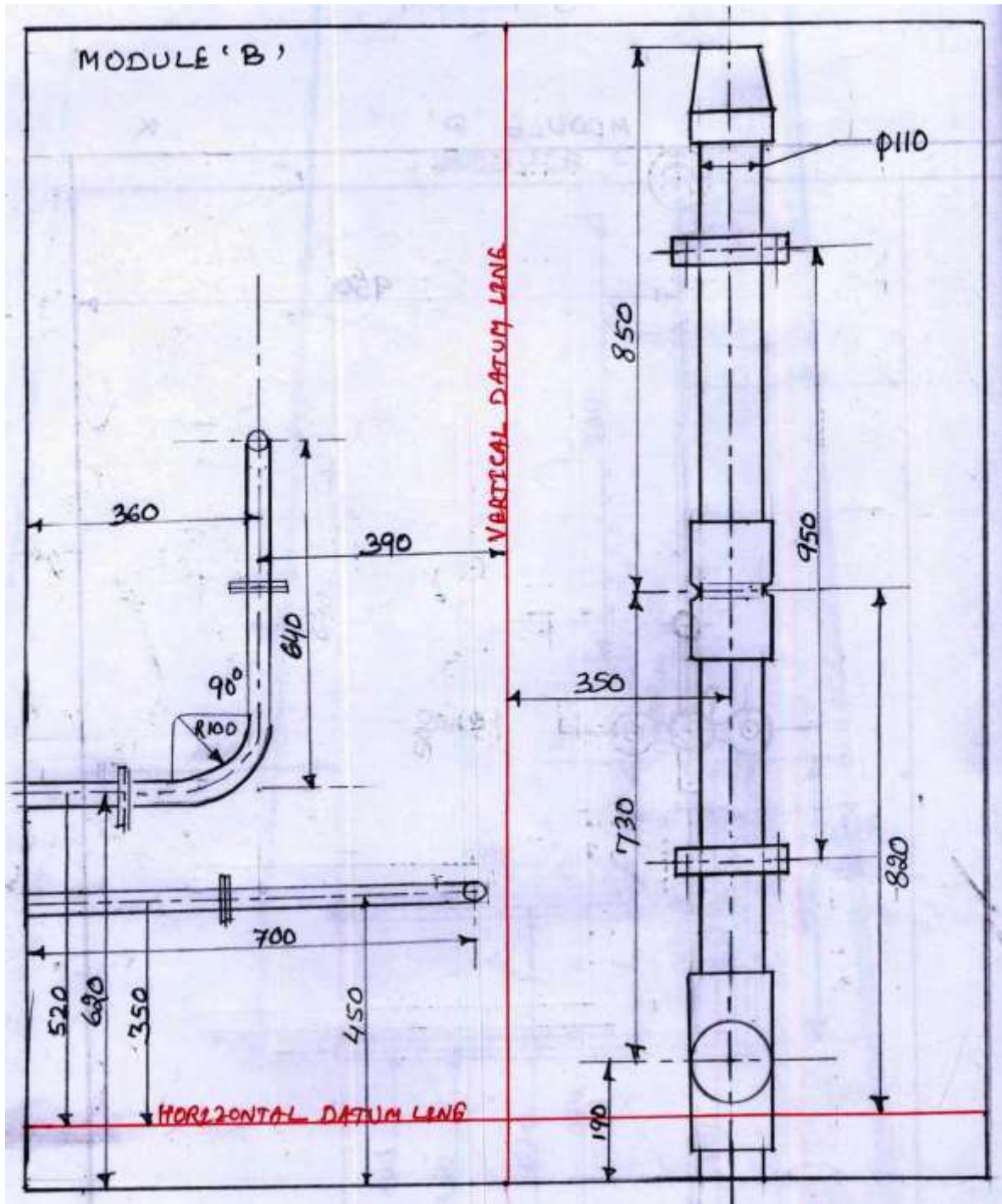
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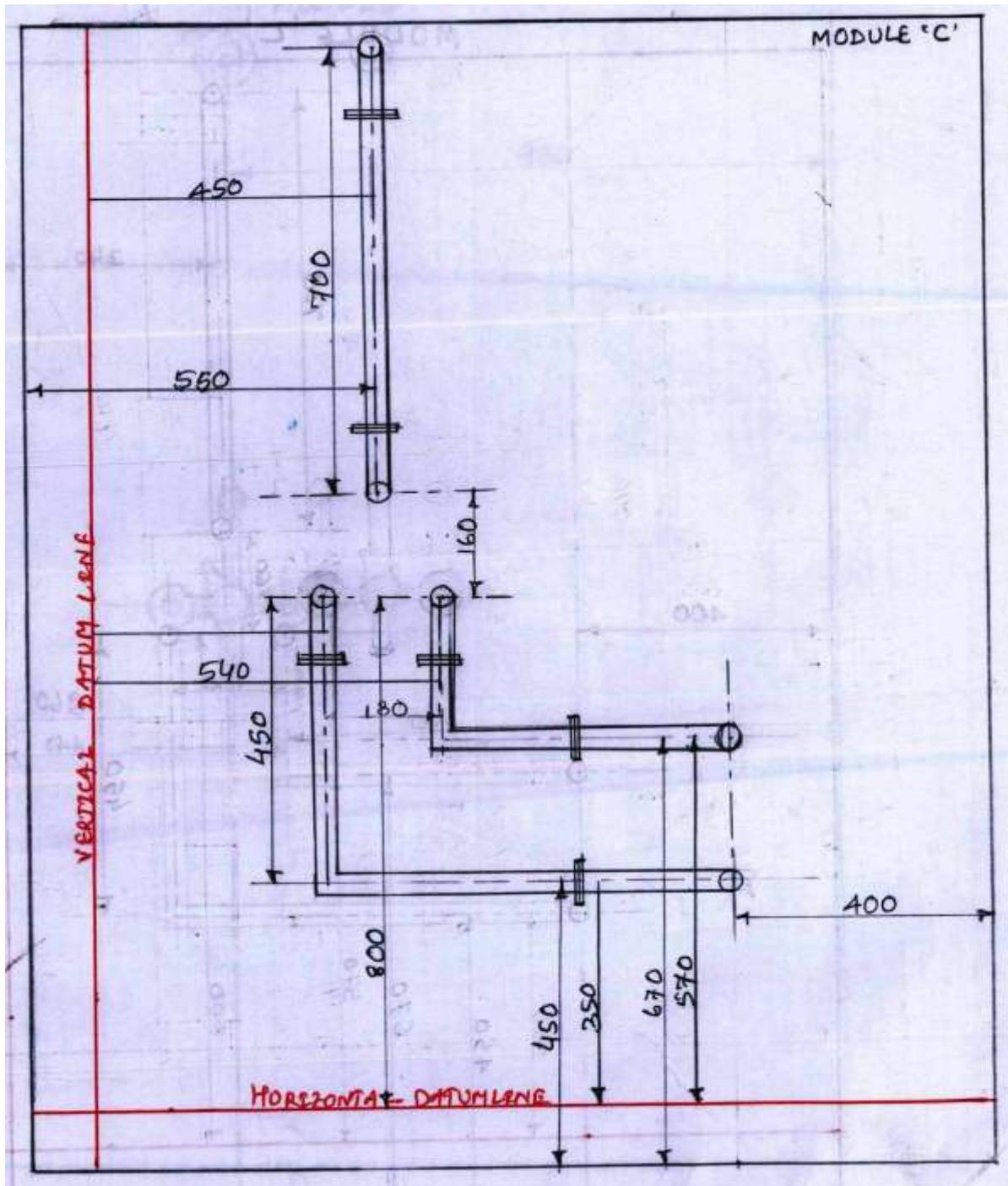
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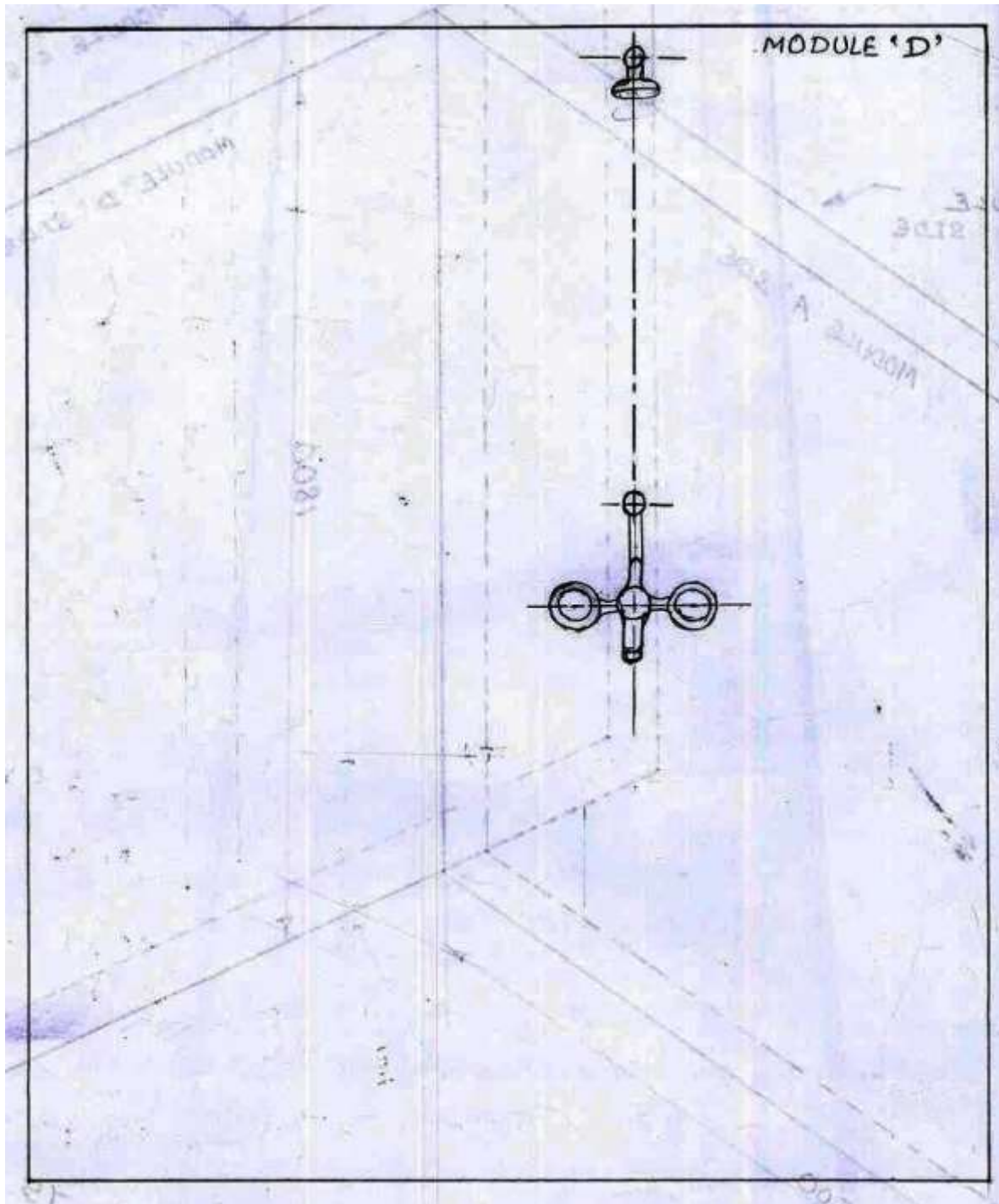
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NB: Do not scale the drawing(1:10)



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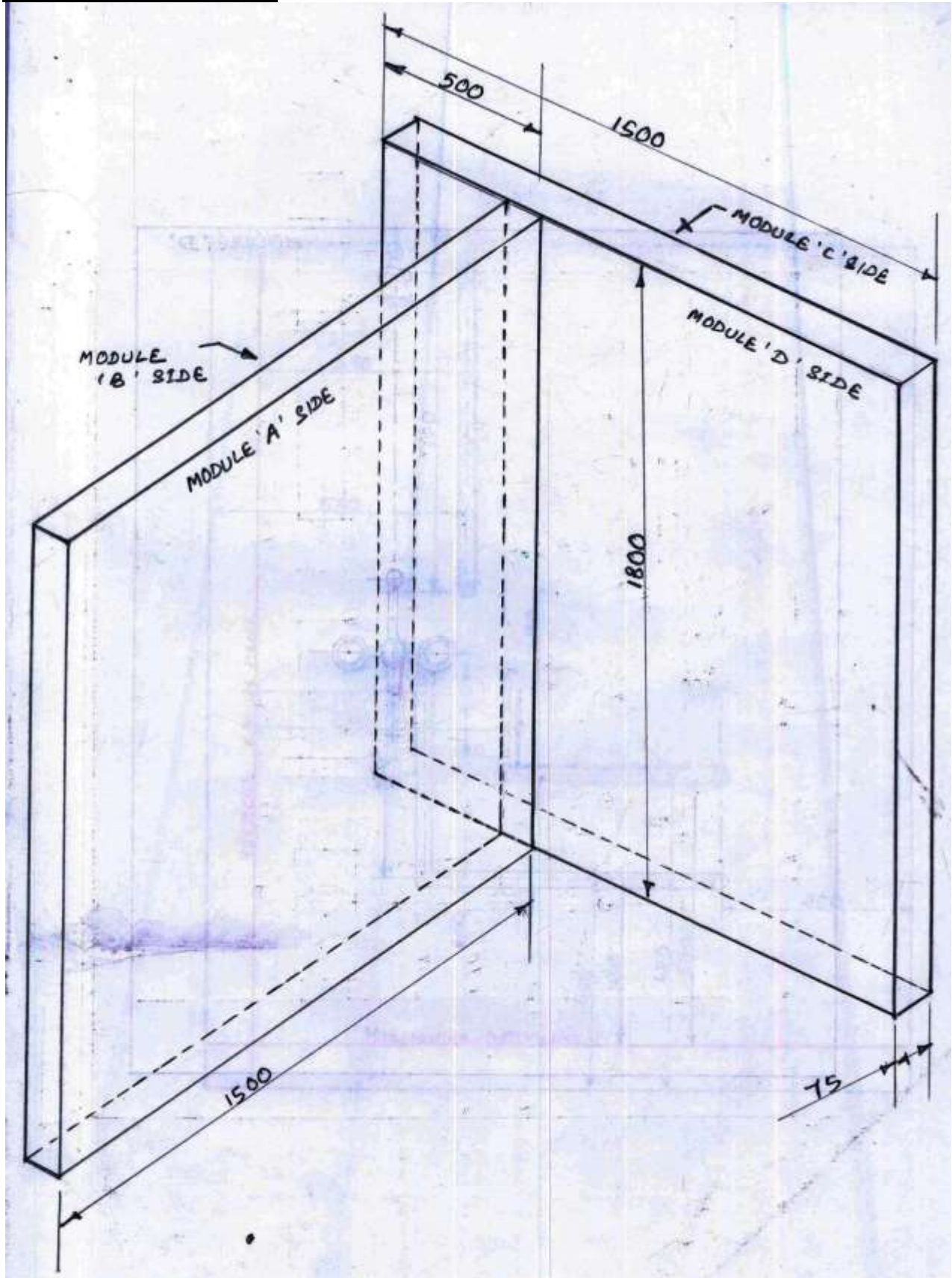
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TEST PROJECT BOARD



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NB: - Drill holes to be made on the ply board by the Team leader/Expert



TECHNICAL DETAILS:

The Test Project drawing may be changed 30% of dimensions as per expert team and workshop supervisor which is to be decided at the time of competition.

INSTRUCTIONS TO THE COMPETITOR:

- 1- Aware of technical description, rules, safety rules & test project
 - 2- Aware of evaluation criteria & competition time table
 - 3- Work station allotment will be by drawing
 - 4- Marking scheme including assessment criteria and all pre-filled objective and subjective marking forms for the test project
 - 5- Before competition starts, competitors shall have to prepare their work place and become familiar with tools, equipments, raw material and processes
 - 6- If anything missing as per infrastructure list, he must inform it to experts
 - 7- Before starting the competition, every competitor will get 15 minutes to discuss about test project
 - 8- After module 'A' finished, competitor should get 15 minutes time to discuss about next module
 - 9- Have the right to expect fairness, honesty and transparency during the competition in terms of :
 - a. Clear & explicit written instructions
 - b. All the competitor will be given test projects at a time
 - c. Marking schemes shall be uniform
 - d. All materials as per technical description and infrastructure list will be provided
 - e. No hindrance to the competitors from officials and spectators will be tolerated
- ✓ Avoid smoking & alcohol
 - ✓ Strictly follow decent mannerism
 - ✓ Present yourself in decent dress
 - ✓ Don't interfere in other's business

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MARKING SCHEME (OUT OF 100)

A. SUBJECTIVE MARKS

Subjective Test Module
Skill Competition

Skill Number _____ Skill Plumbing & Heating Competition Day 1

Competitor No _____ Competitor Name _____

Sub Criterion Method of working performance

Aspect ID	Max Mark	Aspect of Criterion - Description	Requirement or Normal Size	Result or actual value	Mark Awarded
1	2.0	Handling of Hacksaw	Yes/no		
2	2.0	Operating of Ratchet Die	Yes/no		
3	2.0	Personal Protective Equipments	Yes/no		
4	2.0	Method of using Tafflone Tape	Yes/no		
5	2.0	House Keeping	Yes/no		
6	3.0	Operation of Bending	Yes/no		
7	2.0	Using of Solvent cement	Yes/no		
8	1.0	Method of Deburring	Yes/no		

16.00

Maximum Marks for Sub criterion

Marks Awarded

Mark Awarded is the Max Mark minus any specified deductions for difference between Requirement and Result

Signature confirming the accuracy of this printed result

Compatriot Expert

Chief Expert

Date & Time	
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B. OBJECTIVE MARKS

Objective Test Module
Skill Competition

Skill Number _____ Skill Plumbing & Heating Competition Day 1

Competitor No _____ Competitor Name _____

Sub Criterion **Module 'A' - Dimension**

Aspect ID	Max Mark	Aspect of Criterion - Description	Requirement or Normal Size	Result or actual value	Mar Awarded
1	2.0	Horizontal datum line to centre of pvc pipe	1600		
2	2.0	Horizontal datum line to centre of pvc pipe Gyser line	1000		
3	2.0	Horizontal datum line to centre of water tap	200		
4	2.0	Vertical datum line to centre of left pvc pipe	700		
5	1.0	Vertical datum line to centre of Brass Elbow of Gyser inlet	510		
6	1.0	Vertical datum line to centre of Gyser outlet	390		
7	1.0	Horizontal datum line to centre of pvc elbow	450		

11.00

Maximum Marks for Sub criterion Marks Awarded

Mark Awarded is the Max Mark minus any specified deductions for difference between Requirement and Result

Signature confirming the accuracy of this printed result

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Chief Expert

Date & Time	
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Objective Test Module
Skill Competition

Skill Number _____ Skill Plumbing & Heating Competition Day 1

Competitor No _____ Competitor Name _____

Sub Criterion **Module 'B' - Dimension**

Aspect ID	Max Mark	Aspect of Criterion - Description	Requirement or Normal Size	Result or actual value	Mark Awarded
1	1.0	Horizontal datum line to centre of socket PVC 110mm	820		
2	2.0	Horizontal datum line to Top of Cowel PVC 110mm	1670		
3	2.0	Horizontal datum line to centre of PVC Clamp 110mm near TEE	400		
4	2.0	Horizontal datum line to centre of PVC Clamp 110mm near Cowel	1350		
5	2.0	Horizontal datum line to centre of GI Pipe 15 mm	520		
6	2.0	Horizontal datum line to centre of pvc Pipe 15 mm	350		
7	2.0	Vertical datum line to centre of PVC Pipe 110mm	350		
8	2.0	Vertical datum line to centre of GI Pipe 15mm	390		
		Centre to centre of GI Clamp			

15.0

Maximum Marks for Sub criterion

Marks Awarded

Mark Awarded is the Max Mark minus any specified deductions for difference between Requirement and Result

Signature confirming the accuracy of this printed result

Compatriot Expert

Chief Expert

Date & Time

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Objective Test Module
Skill Competition

Skill Number _____ Skill Plumbing & Heating Competition Day 1

Competitor No _____ Competitor Name _____

Sub Criterion **Module 'C' - Dimension**

Aspect ID	Max Mark	Aspect of Criterion - Description	Requirement or Normal Size	Result or actual value	Mark Awarded
1	1.0	Horizontal datum line to centre of PVC pipe 15mm	350		
2	1.0	Horizontal datum line to centre of GI pipe 15mm	570		
3	1.0	Horizontal datum line to centre of wall mixture	800		
4	1.0	Vertical datum line to centre of Bath shower pipe	450		
5	1.0	Vertical datum line to centre of GI pipe 15mm	360		
6	1.0	Vertical datum line to centre of PVC pipe 15mm	540		
		Centre to centre of GI Clamp			

_____ 6.0 _____ Maximum Marks for Sub criterion _____ Marks Awarded _____

Mark Awarded is the Max Mark minus any specified deductions for difference between Requirement and Result

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Chief Expert

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Objective Test Module
Skill Competition

Skill Number _____ Skill Plumbing & Heating Competition Day 1

Competitor No _____ Competitor Name _____

Sub Criterion **Module A , B & C - Plumb bob**

Aspect ID	Max Mark	Aspect of Criterion - Description	Requirement or Normal Size	Result or actual value	Mark Awarded
1	1.0	Plumb Bob to vertical PVC Pipe supply line Module A	Yes/No		
2	1.0	Plumb Bob to vertical PVC Pipe supply line Module B	Yes/No		
3	1.0	Plumb Bob to vertical GI Pipe supply line Module B	Yes/No		
4	1.0	Plumb Bob to vertical PVC Pipe Vent line Module B	Yes/No		
5	1.0	Plumb Bob to vertical PVC Pipe Bath shower line Module C	Yes/No		
6	1.0	Plumb Bob to vertical GI Pipe supply line Module C	Yes/No		

_____ 6.00 _____ Maximum Marks for Sub criterion _____ Marks Awarded _____

Mark Awarded is the Max Mark minus any specified deductions for difference between Requirement and Result

Signature confirming the accuracy of this printed result

Compatriot Expert

Chief Expert

Date & Time	
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Objective Test Module
Skill Competition

Skill Number _____ Skill Plumbing & Heating Competition Day 1

Competitor No _____ Competitor Name _____

Sub Criterion **Module A, B & C - Thread joint quality**

Aspect ID	Max Mark	Aspect of Criterion - Description	Requirement or Normal Size	Result or actual value	Mark Awarded
1	2.0	15mm GI socket Module A	Yes/no		
2	3.0	15mm Angle Cock 3 nos Module A	Yes/no		
3	2.0	15mm Elbow joint 2 nos Module B	Yes/no		
4	2.0	15mm Elbow joint 2 nos Module C	Yes/no		

_____ 9.00 _____ Maximum Marks for Sub criterion _____ Marks Awarded _____

Mark Awarded is the Max Mark minus any specified deductions for difference between Requirement and Result

Signature confirming the accuracy of this printed result

Compartriot Expert

Chief Expert

Date & Time	
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Objective Test Module
Skill Competition

Skill Number _____ Skill Plumbing & Heating Competition Day 1
Competitor No _____ Competitor Name _____

Sub Criterion Module 'A', 'B' & 'D'- Installation and Bending

Aspect ID	Max Mark	Aspect of Criterion - Description	Requirement or Normal Size	Result or actual value	Mark Awarded
1	2.0	15 mm GI pipe Bend -1 Nos	90°		
2	2.0	Installation of EWC	Yes /No		
3	2.0	Installation of Flush Bend with level	Yes /No		
4	2.0	Installation of Flushing Cistern with level	Yes /No		
5	2.0	Installation of Gyser with level	Yes /No		
6	2.0	Fitting of Connector Pipe	Yes /No		
7	1.0	Fitting of water Tap	Yes /No		
8	1.0	Fitting of Bath shower	Yes /No		
9	2.0	Fitting of Wall Mixture with level	Yes /No		

16.00

Maximum Marks for Sub criterion

Marks Awarded _____

Mark Awarded is the Max Mark minus any specified deductions for difference between Requirement and Result

Signature confirming the accuracy of this printed result

Compatriot Expert

Chief Expert

Date & Time	
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Objective Test Module
Skill Competition

Skill Number _____ Skill Plumbing & Heating Competition Day _____

Competitor No _____ Competitor Name _____

Sub Criterion Module 'A' & 'B' Material Uses

Aspect ID	Max Mark	Aspect of Criterion - Description	Requirement or Normal Size	Result or actual value	Mar Awarded
1	1.0	Extra material	Yes/no		
2	1.0	Extra joint	Yes/no		
3	2.0	Module 'A' & 'B' complete with in time	Yes/no		
4	2.0	Module 'C' & 'D' complete with in time	Yes/no		
5	2.0	Module complete as drawing	Yes/no		

8.00

Maximum Marks for Sub criterion

Marks Awarded _____

Mark Awarded is the Max Mark minus any specified deductions for difference between Requirement and Result

Signature confirming the accuracy of this printed result

Compatriot Expert

Chief Expert

Date & Time	
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Assessment Criteria

This section defines the assessment criteria and the number of marks (Subjective and Objective) awarded. The total number of all marks for all assessment criteria must be 100 marking

**Mark summary Form
Skill Development**

Competitor No		Skill	<u>Plumbing</u>	
Competitor Name				
Criterion I D	Criterion Description		Mark Awarded	Total Award
A	Dimension Module 'A'	Max Actual	11	
B	Dimension Module 'B'	Max Actual	15	
C	Dimension Module 'C'	Max Actual	6	
D	Plumb, Level	Max Actual	6	
E	GI Pipe Joint Quality Module 'A'	Max Actual	9	
F	PVC pipe joint Quality of all Module	Max Actual	8	
G	PVC vent pipe fittings Module 'B'	Max Actual	5	
H	Module 'A', 'B', 'C' & 'D' Material uses	Max Actual	8	
I	Installation of EWC & Gyser		16	
J	Method of working performance	Max Actual	16	
Result confirmed By _____				
Chief Expert-_____		Max	<input type="text"/>	100.00
Jury President _____		Actual	<input type="text"/>	<input type="text"/>
Compatriot Expert _____		Total		



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Marking Scheme

Section	Criterion	Marks
A	Dimension	18
	Dimension + / - 2 mm incl. Dimension + / - 4 mm incl. Dimension + / - above 4 mm incl.	Full Mark Half Mark No Marks
B	Joint Quality GI Pipe	10
	GI fittings after joint looking one thread GI fittings after joint looking two threads GI fittings after joint looking more than 2 threads If looking Teflon tape and seal leak compound around the pipe joints	Full Mark Half Mark No marks No marks
C	Joint Quality of PVC pipe	10
	PVC fittings insert length less than 2 mm PVC fittings insert length less than 4 mm PVC fittings insert length less than above 4 mm	Full marks Half marks No marks
D	Plumb and Level	4
	The measurement will be taken by a electronic Level. Dimension 0° +/- 0.5° Dimension 0° +/- above 0.5°	Full Marks No marks
E	Material Usage	5
	Each additional fittings for the task Each additional GI Pipe (0.5 m) Each additional PVC Pipe (0.5 m) Each additional fittings PVC/GI	Penalty 1 Penalty 1 Penalty 1 Penalty 2