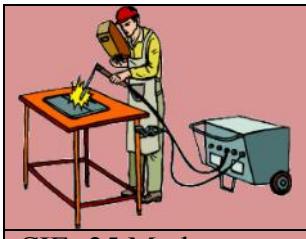
Government of Karnataka
Department of Technical Education
Board of Technical Examinations, Bengaluru

	Course Title: **BASIC WORK SHOP PRACTICE-I**	Course Code: **15ME14P**
	Credits (L:T:P) : **0:2:4**	Core/ Elective: **Core**
	Type of course: **Demonstration & Practice**	Total Contact Hours: **78**
CIE- 25 Marks		SEE-50 Marks

Prerequisites: NIL

COURSE OBJECTIVES

1. Students able to understand different tool &equipment for work shop practice.
2. Students acquire skills for the preparation of different Carpentry/fitting/welding models.
3. Students able to understand the safety precaution in the workshop
4. Student acquires skills of Application orientated tasks.

COURSE OUTCOMES

On successful completion of the course, the students will be able to attain CO:

Course Outcome		CL	Linked practices	Linked PO	Teaching Hrs
CO1	Ability to prepare simple wooden joints using wood working tools	***U/A***	ALL wood joint excises	1,2,3,4,5,8, 9,10	**22**
CO2	Ability to Produce Fitting jobs as per specified dimensions	***U/A***	ALL fitting joint excises	1,2,3,4,5,8, 9,10	**28**
CO3	Ability to prepare simple lap, butt, T-, joint and Corner joints using arc welding equipment.	***U/A***	ALL welded joint excises	1,2,3,4,5,8, 9,10	**28**
				Total sessions	**78**

COURSE-PO ATTAINMENT MATRIX

Course	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
BASIC WORK SHOP PRACTICE- I	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**3**	**3**	**3**

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.
If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3
If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2
If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1
If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

COURSE CONTENTS

UNIT:I	CARPENTRY PRACTICE	CONTACT HOURS:22 Hours

Study of the joints in roofs, doors, windows and furniture available in Polytechnic

Hands-on-exercise:

1. Demonstration of different wood working machines/ Power Tools of different wood working process, like planning, marking, Chiseling, Grooving, turning of wood etc.
2. Exercise on One simple Wood work joints like Mortise and tennon, dovetail joint by sawing, planning and cutting.

UNIT:II	FITTING SHOP	CONTACT HOURS:28 Hours

Hands-on-exercise

1. Demonstration of different fitting tools and drilling machines and power tool
2. Demonstration of different operations like chipping, filing, drilling, tapping, cutting etc.
3. Exercise on One simple fitting job involving practice of chipping, filing, drilling, tapping, cutting etc.

UNIT:III	WELDING PRACTICE	CONTACT HOURS:28 Hours

Hands-on-exercise

Study of the tools used in Arc and Gas welding practice.

1. Demonstration of different welding tools / machines.
2. Demonstration on Arc Welding, Gas Welding, gas cutting and rebuilding of broken parts with welding.
3. Exercise on One simple job involving butt, lap, Tee and corner joint.

NOTE: FOR PRACTICAL CLASSES BATCH STRENGTH IS LIMITED TO 15 TO 20.

REFERENCES

1. Ramesh Babu.V., "Engineering Practices Laboratory Manual", VRB Publishers Private Limited, Chennai, Revised Edition, 2013 – 2014.
2. Jeyachandran.K.,Natarajan.S. andBalasubramanian.S., "A Primer on Engineering PracticesLaboratory", Anuradha Publications, 2007.
3. Bawa.H.S., "Workshop Practice", Tata McGraw Hill Publishing Company Limited, 2007.
4. RajendraPrasad.A. andSarma.P.M.M.S., "Workshop Practice", SreeSai Publication, 2002.
5. Kannaiah.P. andNarayana.K.L., "Manual on Workshop Practice", Scitech Publications, 1999.

SUGGESTED LIST OF STUDENT ACTIVITYS

Note: the following activities or similar activities for assessing CIE (IA) for 10 marks (Any one)

1. Each student should do any one of the following type activity or any other similar activity related to the course and before conduction, get it approved from concerned Instructor and Foreman with an intimation to HOD
2. Each student should conduct different activity and no repeation should occur

1	Take the students for local body Carpentry works observe the carpentry practices followed in preparation of furniture/wood joints and Submit hand written report of 500 words
2	Take the students for local body Fitting works observe the fitting practices followed in preparation of fitting joints and Submit hand written report of 500 words
3	Take the students for local body welding works observe the welding practices followed in preparation of welding joints and Submit hand written report of 500 words

Course Delivery:

The course will be delivered through Demonstration and Shop practices

Course Assessment and Evaluation Scheme:

	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
Direct Assessment meth	CIE	IA	Students	Activities	10	Report	1,2,3
				Record- Average marks of all graded exercises to be computed.	15	Graded exercises	1,2,3
	SEE	End Exam		End of the course	50	Answer scripts at BTE	1,2,3
Indirect Assessment	Student Feedback on course		Students	Middle of the course		Feedback forms	1,2,3Delivery of course
	End of Course Survey			End of the course		Questionnaires	1,2, 3Effectiveness of Delivery of instructions & Assessment Methods

Note: 1. The activity related exercises shall be evaluated as per the Rubrics developed by the concerned department related to the course.

2. The course related graded exercises to be evaluated as per performance mentioned in SEE scheme of evaluation.

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No	**Bloom's Category**	**% Weightage**
1	**Understanding**	**40**
2	**Applying the knowledge acquired from**	**50**
3	**Analysis**	**05**
4	**Evaluation& Creating new knowledge**	**05**

Note to IA verifier*: *The following documents to be verified by CIE verifier at the end of semester

1. Student suggested activities report for 10 marks
2. Student feedback on course regarding Effectiveness of Delivery of instructions & Assessment Methods.

SCHEME OF VALUATION

Note: Questions for the Semester End Exam will consist of

i. One Welding Model. - **15 marks**

ii. Any One Model from Fitting OR Carpentry- **30 marks**

Sl. no.	Performance	Fitting/ carpentry	Welding	Max.Marks
1	Listing of tools and operations.	05	05	10
2	Planning and marking	05	---	05
3	Performing of basic operations.	10	10	20
4	Dimensional accuracy	10	-----	10
5	Oral	-----	-----	05
	TOTAL	**30**	**15**	**50**

Tools-Fitter Section

Sl. No.	Name of equipment(Fitting shop)	Numbers Required as per norms
1.	Flat file 14″ rough bastard file	20
2.	Try square 6″	20
3.	Triangular file 10″ rough	20
4.	Half round file 10″ rough	20
5.	Hack saw frame solid 12″	20
6.	Center punch	20
7.	Ball peen hammer 11/2 Lbs	20
8.	Flat chisel 6″	20
9.	Smooth file 10″ flat	20
10.	Bench vice 8″	20
11.	Leg vice 6″	10

12.	Power hack saw	01
13.	Bench grinding	01
14.	Bench drilling machine up to 12mm cap	01
15.	Drill bit up to 12mm straight shunk	04
16.	Tap set and die set up to 1″	01
17.	Vernier caliper	10
18.	Spring divider	20
19.	Steel scale	20
20.	Vernier height gauge	01
21.	Surface plate 2x3 feet	02
22.	Number punch	01
23.	Anvil	20
24.	V block	02

Carpentry Tools required for –

Sl. No	Name of equipment(Carpentry shop)	Numbers Required as per Norms
1.	Carpenter bench vice	20
2.	G or C clamp 6″	20
3.	Marking gauge	20
4.	Try square 19mmx4″	20
5.	Wooden mallet	20
6.	Firmer chisel 2″	20
7.	Firmer chisel 3/4″	20

8.	Mortise chisel 1/2″	20
9.	Metal jack plane 9″	20
10.	Beveled square 6″	20
11.	Hand saw or cross cut saw	20
12.	Steel scale 12″	20

Tools- welding

Sl. No.	Name of equipment(Welding shop)	Numbers Required as per norms
1.	Arc welding transformer up to 300Amps	03
2.	Welding shield	20
3.	Ball peen Hammer 11/2 Lbs	10
4.	Chipping Hammer	10
5.	Wire brush	10
6.	Anvil	01
7.	Hand Gloves	05
8.	Flat tongs	10
9.	Steel scale	10
10.	Flat file 14″ rough bastard file	10
11.	Oxygen cylinder	01
12.	Acetylene cylinder	01
13.	Gas welding torch	05
14.	Spark lighter	05
15.	Gas welding goggles	10
16.	Gas cutting torch	02

17.	Try square 6”	10

MODEL QUESTIONS FOR PRACTICE AND SEE

DEPARTMENT OF MECHANIACL ENGG.

COURSE TITTLE:**BASIC WORKSHOP PRACTICE-1**

TIME: 3 HOURS MARKS:50

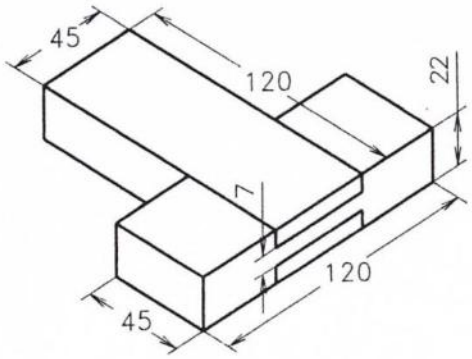
One Welding Model is compulsory and any one Model from Fitting OR carpentry

(Out of two models 30 marks for Fitting OR carpentry and 15 marks for welding)

FOR CARPENTRY SHOP

1.

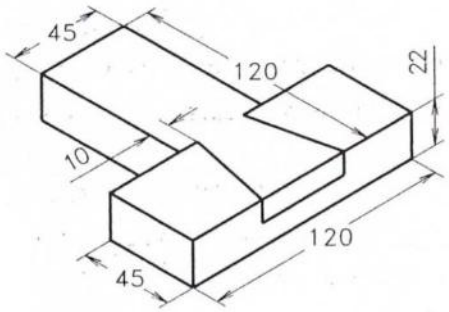
Figure shows drawing of a bridle joint. Copy the figure and make the joint using the given wooden piece.



2.

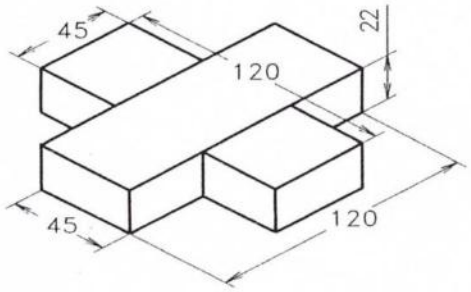
Make the following models, the allotted time is 3 hours:

Figure shows drawing of a dove-tail (halved) joint. Copy the figure and make the joint using the given wooden piece.



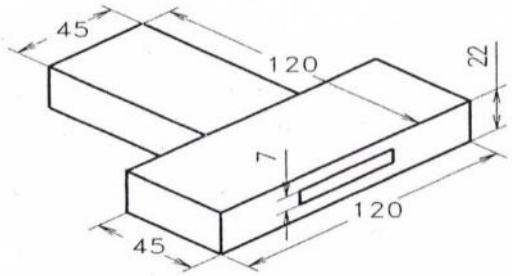
3.

Copy the sketch of the cross (halved) joint given in Figure ` and then make the joint using the given wooden piece.



4.

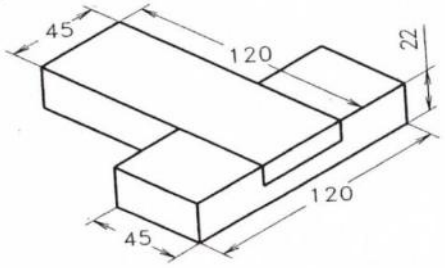
Make a mortise and tenon joint of size shown in Figure using the given wooden piece. Also prepare a dimensioned neat sketch of the joint.



5.

Example

Make a Tee (halved) joint of the dimensions given in Figure using the given wood piece. The time allotted is 3 hours.

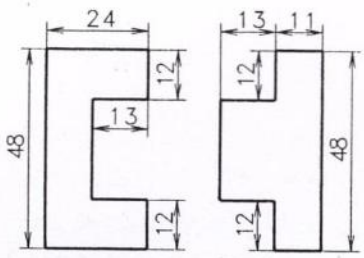


FOR FITTING SHOP

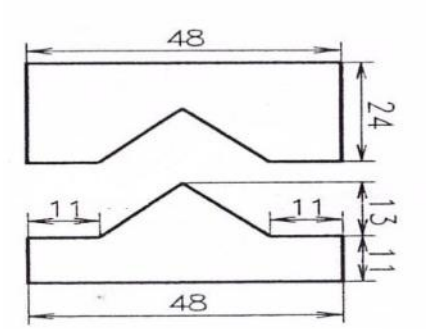
1.

Example

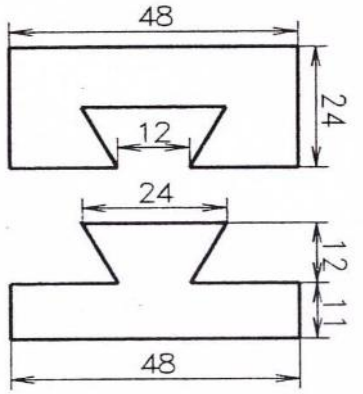
Make a square joint of the dimensions given in Figure using the given MS flat. The time alloted is 3 hours.



2.

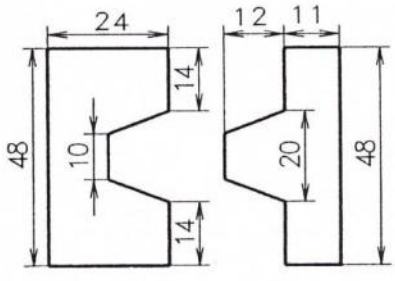


3.



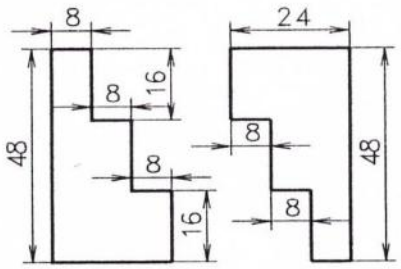
4.

Figure gives drawing of a trapezoidal joint. Copy the figure and make the model using the given MS flat piece.



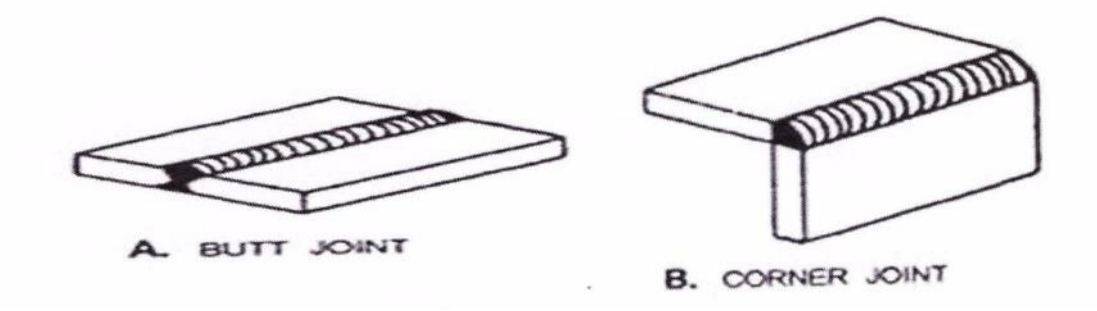
5.

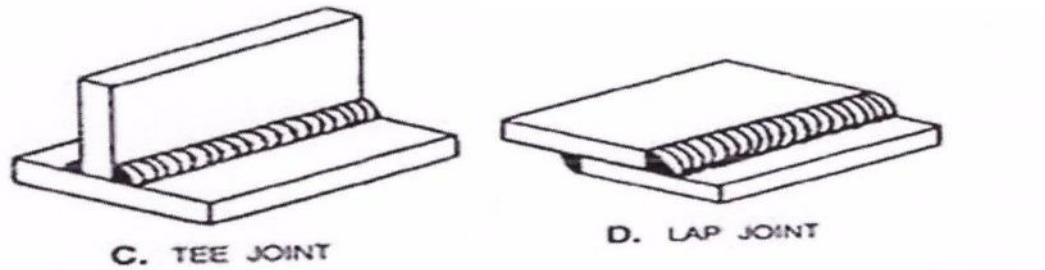
Copy the sketch of the stepped joint given in Figure Then make the joint using the given MS flat piece.



FOR WELDING SHOP

Copy the given sketch of the joint ,then make the joint using the given MS flat piece.





MODEL QUESTIONS FOR VIVA VOCE

CARPENTRY SHOP

1. Differentiate between soft wood and hard wood.
2. Give the list of the common names of timber suitable for carpentry work.
3. Describe the term plywood. How it is obtained as large size sheets.
4. What are the marking tools used in wood working.
5. What is meant by marking gauge? How it is used for marking.
6. Give a list of the saws used for cutting wood.
7. What is cross cut saw and tenon saw.
8. What are the types of chisels used for wood working?
9. What is meant by mallet? What is the use of mallet?
10. Give the list of the plaining tools used in carpentry shops.
11. Describe briefly the construction of use of a wooden jack plane.
12. Name the types of work holding devices used for carpentry work.
13. Explain the use of bench vice.
14. Describe the working principle of band saw and circular saw.
15. What are the common defects in timber?
16. Mention the important carpentry tools.
17. What are the marking and measuring tools used in carpentry?
18. Mention the different types of saws and explain.
19. What is spokes have?
20. What is boring tools? And its uses.
21. What are the striking tools and its uses?
22. What are the holding tools and its uses?
23. What is uses of the Rasps and Pincer
24. What are the carpentry processes used in wooden construction.
25. Mention the types carpentry joints

FITTING SHOP

1. Give a list of types of tools used in fitting operations.
2. Explain the types of work holding devices used in fitting.
3. Describe briefly the types of files used in fitting.
4. Explain the construction of a hack saw.
5. What are the types of cold chisels and for what purposes they are used.
6. Describe briefly the types of hammers used.
7. Define the term twist drill; distinguish a drill from a reamer.
8. What is a surface plate? For what purpose it is used.
9. What are the types of tools used for marking?
10. Explain the use of steel rule and a vernier caliper.
11. Explain the use of the different types of inside and outside calipers.
12. What is the use of combination set?
13. Describe how a micrometer is used for measuring a size.
14. Mention the commonly used in bench and fitting work.
15. Name the parts of a hand hammer.
16. What are the classifications of hammers?
17. What is the use of the flat, cross-cut, half round, diamond point, side chisels.
18. What is chipping?
19. Name the different parts of a file.

20. What is single cut and double cut of a file.
21. Mention the most commonly used shapes in files.
22. What is filing and mention the method of filing.
23. What is cross filing, straight filing and draw filing
24. What is a scraper and mention types of scraper.
25. What is the use of hacksaw and mention its types.
26. Mention the tools used for making.
27. What are the uses of Surface plate, Scriber, Punch, V-block, Angle plate, andtrysquare?

WELDING SHOP

1. What is welding
2. How u classify welding.
3. What is arc welding
4. What is an arc
5. What is the equipment used for arc welding.
6. How you set the voltage in arc welding
7. What is normal temperature for arc welding?
8. What are latest techniques used in arc welding.
9. What is an edge preparation?
10. Which type of electrode used in arc welding?
11. What is gas welding?
12. Name the different gases used in gas welding.
13. What are the applications of gas welding?
14. What is the equipment used in gas welding.
15. What is a flame?
16. Name the different types of flames.
17. What are the differences between Arc & Gas welding?
18. Which type of welding is used for sheet metals?
19. What are the defects in welding?
20. What are the precautions to be taken for welding?
21. Name the different safety devices used in welding
22. Name the different joints in welding.
23. What is a torch? Which welding used the torch?
24. What is Nozzle?
25. What is filler material in welding?
26. What are differences between welding & soldering?