Pr.3b. Workshop Practice
(1st / 2nd sem Common)

Theory: 6 Periods per Week — Sessional : 50 Marks
Total Periods: 90 Periods — End Sem Exams : 100 Marks
Examination: 4 Hours — TOTAL MARKS : 150 Marks

Objective:

1. To demonstrate safely practice in various shops of the workshop.
2. To select suitable tools & equipment in the following shops. (a) Fitting.
   (b) Sheet Metal.
   (c) Welding (Gas & Electrical). (d) Turning.
3. To select suitable materials for different process in the above shops.
4. To demonstrate the different processes adopted in the above shops.
5. To finish the jobs within stipulated time and with accuracy as per specifications.

Topic Wise distribution of periods

Sl. No.	Topics	Periods
1	Fitting Shop	24
2	Sheet Metal	18
3	Welding Shop	24
4	Turning Shop	21
5	Exposure to CNC Milling / Lathe Machine	03
	TOTAL	**90**

1. **FITTING SHOP**

1.1 Demonstrate safety practices in the fitting shop.
1.2 Select suitable holding & clamping devices for fitting jobs.
1.3 Select suitable tools like- files, vice, chisels, punch, scriber, hammers, surface plate, V-block, try square, caliper etc.
1.4 Demonstrate the following operations:
Sawing, Chipping, Fitting, Craping, Grinding, Marking, Reaming, Tapping, Drilling & Angular cutting.
1.5 Introduction of chipping, demonstration on chipping and its applications.
1.6 Description, demonstration and practice of simple operation of hack saw straight and angular cutting.
1.7 Introduction and use of measuring tools used in fitting shop like steel rule, measuring tape, outside micrometer, vernier caliper and vernier height gauge.
1.8 Description and Demonstration and practice of thread cutting using taps and dies.
Job: Cutting & fitting practice on a square of 50mm X 50mm X 8mm MS Flat. Job: Angular cutting practice of 45 degree (on the above job).
Job: Preparation of stud (to cut external threads) with the help of dies (mm or BSW). Job: H-fitting in the mild steel (ms) square.
Job: Prepare one job on male female fitting.

2. SHEET METAL

2.1 Demonstrate safety practices in sheet metal shop.

2.2 Prepare surface development for the jobs according to the drawing.

2.3 Cut M.S and G.P. sheets according to the surface development / drawing using standard sheet metal cutting tools.

2.4 Select hand tools for sheet metal work.

2.5 Demonstrate the process of metal clamp joining and reveted joining of sheet metals.

Job: Making of sheet metal joints.

Job: Prepare a sheet metal tray or a funnel.

Job: Prepare a sheet metal job involving rolling, shearing, creasing, bending & cornering. Job: Prepare a lap riveting joint.

3. WELDING SHOP

3.1 Introduction.

3.2 Safety precautions in welding, safety equipments & its application in welding shop.

3.3 Introduction to welding, type of welding, common materials that can be welded, introduction to gas welding equipment, types of flame, adjustment of flame, applications of gas welding, Welding tools & safety precautions.

3.4 Introduction to electric arc welding (AC & DC), practice in setting current & voltage for striking proper arc, precautions while using electric arc welding. Applications of arc welding. Introduction to polarity & their use.

3.5 Demonstrate & use of the different tools used in the welding shop with sketches, Hand shield, helmet, clipping hammer, gloves, welding lead, connectors, aprons, goggles, etc.

3.6 Demonstrate of welding defects & various types of joints & end preparation.

Job: Preparation of lap joint by arc welding rod. Job: Preparation of Tee joint by arc welding.

Job: Preparation of single V or double V butt joint by electric arc welding. Job: Brazing practice. Use of Spelt or (on MS sheet pieces).

Job: Gas welding practice on worn-out & broken parts.

4. TURNING SHOP

4.1 Introduction.

4.2 Safety precaution & safety equipments.

4.3 Various marking, measuring, cutting & holding tools.

4.4 Demonstration of different parts of a lathe, demonstration on centering & turning operation in a group of 06 students.

Job: plain turning, taper turning & grooving practices on round bar.

5. EXPOSURE TO C.N.C MILLING / LATHE MACHINE

Reference Books

1. Workshop Technology by S.K.Hajara Choudhray, Media Promoters Publishers, New Delhi.
2. Workshop Technology by B.S. Raghubanshi, Dhanpat Rai and Sons, New Delhi.
3. Workshop Technology by H.S. Bawa – TMH.
4. Workshop Familiarization by E Wilkinson.
5. Sheet metal shop practice by Bruce & Meyer.
6. Workshop Technology by R.S. Khurmi & J.K. Gupta, S.Chand.

Notes

1. *Work, Progress book should be maintained continuously.*
2. *The roll numbers of the students must be punched on each job.*
3. *The turning shop job should be done by students' maximum 06 students in a group*