STRENGTH OF MATERIALS
MECHANICAL ENGINEERING
SEM-3RD

LIST OF PRACTICALS

1. Tensile test on bars of Mild steel and Aluminium.
2. Bending tests on a steel bar or a wooden beam.
3. Impact test on metals
a) Izod test
b) Charpy test
4. Torsion test on specimens of different metals for determining modulus of rigidity.
5. To determine the stiffness of a helical spring and to plot a graph between load and extension.
6. Hardness test on different metals.

THERMODYNAMICS
MECHANICAL ENGINEERING
SEM-3RD

LIST OF PRACTICALS

1. Determination of temperature by
1.1 Thermocouple
1.2 Pyrometer
1.3 Infrared thermometer
2. Demonstration of mountings and accessories on a boiler.
3. Study of boilers (through industrial visit)
4. Study of air compressors.
5. Demonstration of heat transfer through conduction, convection and Radiation

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING
MECHANICAL ENGINEERING

SEM-3RD

LIST OF PRACTICALS

1. Connection of a three-phase motor and starter with fuses and reversing of direction of rotation
2. Connection of a single-phase induction motor with supply and reversing of its direction of rotation

3. To test a battery for its charged and discharged condition.
4. Identify the different faults in a domestic wiring system
5. Connection and reading of an electric energy meter with supply and load using ammeter, voltmeter, wattmeter
6. Study of a distribution board for domestic installation
7. Ohm's law verification
8. Verification of law of resistance in series
9. Verification of law of resistance in parallel
10. Draw V-I characteristics of P-N junction diode
11. Draw input and output characters of a transistor
12. Draw reverse break down characteristics of a zener diode

WORKSHOP PRACTICE – I
MECHANICAL ENGINEERING

SEM-3RD

LIST OF PRACTICALS

General introduction to hand tools used in foundry, welding and pattern making and smithy shop.

Welding Shop

Job 1. Preparing gas welding joint in vertical position joining M.S. Plates
Job 2. Exercise on gas cutting of mild steel plate with oxy-acetylene gas torch.
Job 3. Exercise on gas welding of cast iron and brass part or component.
Job 4. Exercise on preparation of T Joint by arc welding
Job 5. Exercise on spot welding/seam welding
Job 6. Exercise on MIG and TIG welding

Pattern making

Job 1. Preparation of solid/single piece pattern.
Job 2. Preparation of two piece/split pattern
Job 3. Preparation of a pattern on wooden lathe
Job 4. Preparation of a self cored pattern
Job 5. Preparation of a core box.

Foundry Shop

Job 1. Preparation of mould with solid pattern on floor.
Job 2. Preparation of floor mould of solid pattern using cope.
Job 3. Preparation of floor mould of split pattern in cope and drag of moulding box.
Job 4. Moulding and casting of a solid pattern of aluminum
Job 5. Preparing a mould of step pulley and also preparing core for the same.
Job 6. A visit to cast iron foundry should be arranged to have first hand knowledge of cast iron melting pouring and casting.
Job 7. Testing of moisture contents and strength of moulding sand.

Forging Shop/Fitting Shop/Sheet Metal Shop

Job 1. Preparation of single ended spanner by hand/machine forging.
Job 2. Preparation of simple die
Job 3. Demonstration of spinning process on lathe and spinning a bowl on a lathe

machine.
Job 4. Demonstration of grinding process on lathe machine and grinding a job on a lathe machine
Job 5. Preparation of utility item out of G.I. sheet.
Job 6. Preparation of drilling Jig

MATERIALS AND METALLURGY

MECHANICAL ENGINEERING

SEM-4TH

LIST OF PRACTICALS

1. Classification of about 25 specimens of materials/machine parts into
(i) Metals and non metals
(ii) Metals and alloys
(iii) Ferrous and non ferrous metals
(iv) Ferrous and non ferrous alloys
2. Given a set of specimen of metals and alloys (copper, brass, aluminium, cast iron, HSS, Gun metal); identify and indicate the various properties possessed by them.
3. Study of heat treatment furnace.
4. Study of a metallurgical microscope and a specimen polishing machine.
5. To prepare specimens of following materials for microscopic examination and to Examine the microstructure of the specimens of following materials:
i) Brass ii)Copper iii)Grey iv)Malleable v)Low carbon steel vi)High carbon steel vii) HSS
6. To anneal a given specimen and find out difference in hardness as a result of annealing.
7. To normalize a given specimen and to find out the difference in hardness as a result of normalizing.
8. To harden and temper a specimen and to find out the difference in hardness due to tempering.

HYDRAULICS AND HYDRAULIC MACHINES

MECHANICAL ENGINEERING

SEM-4TH

LIST OF PRACTICALS

1. Measurement of pressure head by employing.
i) Piezometer tube
ii) Single and double column manometer
2. To find out the value of coefficient of discharge for a venturimeter.
3. Measurement of flow by using venturimeter.
4. Verification of Bernoulli's theorem.
5. To find coefficient of friction for a pipe (Darcy's friction).
6. To study hydraulic circuit of an automobile brake and hydraulic ram.
7. Study the working of a Pelton wheel and Francis turbine.
8. To study a single stage centrifugal pump for constructional details and its operation to find out its normal head and discharge.

I.C. ENGINES

MECHANICAL ENGINEERING

SEM-4TH

LIST OF PRACTICALS

1. Study of a two stroke engine using cut section model, note the function and material of each part.
2. Study of a four stroke engine using cut section model. Note the function of each part
3. Study of battery ignition system of a multi-cylinder petrol engine stressing ignition timings, setting, fixing order and contact breaker; gap adjustment.
4. Study of cooling of IC engine.
5. Study of lubricating system of IC engine.
6. Determination of BHP by dynamometer.
7. Morse test on multi-cylinder petrol engine.
8. Local visit to roadways or private automobile workshops

WORKSHOP PRACTICE – II

MECHANICAL ENGINEERING

SEM-4TH

PRACTICAL EXERCISES

Turning Shop

Job 1. Grinding of single point turning tool.
Job 2. Exercise of simple turning and step turning.
Job 3. A composite job involving, turning, taper turning, external thread cutting and knurling.

Advance Fitting Shop

Job 1. Exercise on drilling, reaming, counter boring, counter sinking and taping
Job 2. Dove tail fitting in mild steel
Job 3. Radius fitting in mild steel
Job 4. Pipe threading with die

Machine Shop

Job 1. Prepare a V-Block up to ± 0.5 mm accuracy on shaper machine
Job 2. Exercise on key way cutting and spline cutting on shaper machine.