REFRIGERATION AND AIR CONDITIONING

MECHANICAL ENGINEERING

SEM-5TH

LIST OF PRACTICALS

1. Identify various tools of refrigeration kit and practice in cutting, bending, flaring, swaging and brazing of tubes.
2. Study of thermostatic switch, LP/HP cut out overload protector filters, strainers and filter driers.
3. Identify various parts of a refrigerator and window air conditioner.
4. To find COP of Refrigeration system
5. To detect trouble/faults in a refrigerator/window type air conditioner
6. Charging of a refrigerator/window type air conditioner.
7. Study of cut section of single cylinder compressor
8. Visit to an ice plant, cold storage plant, central air conditioning plant

CNC MACHINES AND AUTOMATION

MECHANICAL ENGINEERING

SEM-5TH

LIST OF PRACTICALS

1. Study of constructional detail of CNC lathe.
2. Study of constructional detail of CNC milling machine.
3. Study the constructional details and working of Automatic tool changer and Multiple pallets
4. Develop a part programme for following lathe operations and make the job on CNC lathe.
- Plain turning and facing operation
- Taper turning operation
- Circular interpolation.
5. Develop a part programme for the following milling operation and make the job on CNC milling
- Plain milling
- Slot milling
- Contouring
- Pocket milling
6. Preparation of work instructions for machine operator
7. Preparation of preventive maintenance schedule for CNC machine.
8. Demonstration through industrial visit for awareness of actual working of FMS

WORKSHOP PRACTICE – III

MECHANICAL ENGINEERING
SEM-5TH

DETAILED CONTENTS

Advance Turning Shop

1. Exercise of boring with the help of boring bar
2. Exercises on internal turning on lathe machine
3. Exercises on internal threading on lathe machine
4. Exercises on external turning on lathe machine
5. Resharpening of single point cutting tool with given geometry

Machine Shop

1. Produce a rectangular slot on one face with a sharper
2. Produce a rectangular block using a milling machine with a side and face cutter
3. Prepare a slot on one face using milling machine
4. Job on grinding machine using a surface grinder
5. Prepare a job on cylindrical grinding machine.
6. Exercise on milling machine with the help of a form cutter
7. Exercise on milling machine to produce a spur gear
8. Grinding a drill-bit on tool and cutter grinder
9. Exercise on dressing a grinding wheel

COMPUTER AIDED DRAFTING

MECHANICAL ENGINEERING

SEM-5TH

PRACTICE WORK

1. Introduction to AutoCAD : Starting up, practice on – how to create a new drawing file, setting drawing limits & saving a file, drawing lines in different ways using absolute coordinates, user co-ordinates, WCS, UCS, drawing circles, drawing arcs, drawing ellipses. Drawing polygons, drawings splines. Drawing polylines, using window, zoom commands.
2. Practice on Edit commands such as erase, copy, mirror, array, offset, rotate, oops, undo, redo, scale, stretch, trim, break, extend, chamfer, fillet, O snap command
3. Practice on Text commands: editing text, text size, text styles, change properties commands.
4. Practice on Layer Commands: creating layer, freeze, layer on/off colour assigning, current layer, load line type, lock & unlock layer, move from one layer to other.
5. Practice on Hatching, Hatch pattern selection.

6. Practice on Dimensioning, linear dimensioning, angular dimensioning radius/.diameter dimensioning O-snap command, aligned dimensioning, editing of dimensioning, tolerances in dimensioning.
7. Practice on print/plot commands. Export/import commands.
8. Practice on making complete drawings of components by doing following exercises:
a) Detail and assembly drawing of the following using AUTOCAD (2D) (4 sheets)
- Plummer Block
- Wall Bracket
- Stepped pulley, V-belt pulley
- Flanged coupling
- Machine tool Holder (Three views)
- Screw jack or knuckle joint

b) Isometric Drawing by CAD using Auto CAD (one sheet)
Drawings of following on computer:
- Cone
- Cylinder
- Isometric view of objects

9. Modelling (02 sheets)
3D modelling, Transformations, scaling, rotation, translation
10. Creating Chamfer and Fillet
Practice on surface modeling, create part file, practice on assembly of parts, creating assembly view, orthographic views, section view (Practice on different views, practice on data transfer)
11. Introduction to Other Softwares;
(Pro Engineer/CATIA / Inventor/Unigraphics/Solid Work: Salient features.

AUTOMOBILE ENGINEERING
MECHANICAL ENGINEERING

SEM-6TH

LIST OF PRACTICALS

1 Fault and their remedies in (i) Battery Ignition system (ii) magnetic Ignition system.
2 Demonstration of (i) Head Light Model (ii) Wiper and Indicators.
3 Demonstration of (i) AC Pump (ii) SU Pump (iii) Master Cylinders.
4 Demonstration of (i) rear axle (ii) differential (iii) steering system.
5 Fault finding practices on an automobile - four wheelers (petrol/ diesel vehicles).
6 Tuning of an automobile engine.
7 Driving practice on a 4-wheeler.
8 Charging of an automobile battery and measuring cell voltage and specific gravity of electrolyte.
9 Changing of wheels and inflation of tyres, balancing of wheels.
10 Checking spark gap and valve clearance
11 Cleaning and adjusting a carburetor.

INSPECTION AND QUALITY CONTROL
MECHANICAL ENGINEERING

SEM-6TH

LIST OF PRACTICALS

1 Use of dial indicator for measuring taper.
2 Use of combination set, bevel protector and sine bar for measuring taper.
3 Measurement of thread characteristic using vernier and gauges.
4 Use of slip gauge in measurement of center distance between two pins.
5 Use of tool maker’s microscope and comparator.
6 Plot frequency distribution for 50 turned components.
7 With the help of given data, plot X, R, P and C charts