



SCHEME FOR FIFTH SEMESTER (MECHANICAL ENGINEERING)

Sr. No.	Subject	Study Scheme			EVALUATION SCHEME						Total Marks
					INTERNAL ASSESSMENT		EXTERNAL ASSESMENT (EXAMINATION)				
					Theory	Practical	Written Paper		Practical		
					Max. Marks	Max. Marks	Max. Marks	Hrs.	Max. Marks	Hrs.	
	Industrial Training				-	50	-	-	50	3	100
5.1**	Theory of Machine	4	-	-	25	-	100	3	-	-	125
5.2**	Refrigeration and Air Conditioning	4	-	2	25	25	100	3	50	3	200
5.3**	Employability Skills-I	-	-	2	-	25	-	-	50	3	75
5.4**	Environmental Education	3	-	-	25	-	100	3	-	-	125
5.5**	CNC Machines and Automation	3	-	2	25	25	100	3	50	3	200
5.6**	Workshop Technology -III	3	-	-	25	-	100	3	-	-	125
5.7**	Workshop Practice -III	-	-	9	-	100	-	-	100	3	200
5.8**	Computer Aided Drafting	-	-	3	-	50	-	-	50	3	100
#	Student Centred Activities	-	-	5	-	25	-	-	-	-	25
	Total	17	-	23	125	300	500	-	350	-	1275

*Common with other diploma programmes

** Common with diploma programme in production Engineering

student centered activities will comprise of co-curricular activities like extension lectures , library studies, games, hobby clubs eg. Photography, painting , singing, seminars , declamation contests, educational field visits , N.C.C. , NSS, Cultural activities , civil defense/ disaster management activities etc.



PM
POLYTECHNIC

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

SYLLABUS: Polytechnic (ME)

Department: Mechanical Engineering – 5th Semester

Subject: Theory of Machine (Theory)

Subject Code: 121751

Detailed Contents

Unit No.1 Simple mechanisms

- Topic No.1: Introduction to link
- Topic No.2: Kinematic pair
- Topic No.3: Kinematic chain
- Topic No.4: Mechanism
- Topic No.5: Inversions
- Topic No.6: Different types of mechanism

Unit No.2 Power transmission

- Topic No.7: Introduction to belt and rope drives
- Topic No.8: Types of belt
- Topic No.9: Types of pulleys
- Topic No.10: Concept of velocity ratio
- Topic No.11: Slip and creep
- Topic No.12: Crowing of pulleys
- Topic No.13: Ratio of driving tensions
- Topic No.14: Power transmission
- Topic No.15: Centrifugal tension
- Topic No.16: Condition for maximum horse power
- Topic No.17: Different types of chain and terminology
- Topic No.18: Gear terminology
- Topic No.19: Types of gears and their application
- Topic No.20: Simple and compound gear trains
- Topic No.21: Power transmitted by simple spur gear

Unit No.3 Flywheel

- Topic No.22: Principle of flywheel and Applications of flywheel
- Topic No.23: Turning moment diagram
- Topic No.24: Fluctuation of speed and Fluctuation of energy
- Topic No.25: Coefficient of fluctuation of speed and Coefficient of fluctuation of energy
- Topic No.26: Numerical

Unit No.4 Governor

- Topic No.27: Principal of governor
- Topic No.28: Working of watt
- Topic No.29: Working of porter
- Topic No.30: Working of hartnel governor
- Topic No.31: Hunting
- Topic No.32: Isochronisms
- Topic No.33: Stability
- Topic No.34: Sensitiveness of a governor

Unit No.5 Balancing

- Topic No.35: concept of balancing
- Topic No.36: introduction to balancing of rotating masses
- Topic No.37: simple problem related to several masses rotating in different planes.

Unit No.6 Vibrations

- Topic No.39: concept of vibration
- Topic No.39: types of vibration
- Topic No.40: damping of vibrations
- Topic No.41: causes of vibration in machines, their harmful effects and remedies



PM

POLYTECHNIC

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
5	-	-	25	-	100	3	-	-	125

TEXT BOOKS:

1. Theory of Machines by R.C. Jindal; North Publications.
2. Theory of Machine by Eshaan publication

RECOMMENDED BOOKS

1. Theory of Machines by D.R. Malhotra; Satya Prakashan, New Delhi.
2. Theory of Machines by V.P Singh; Dhanpat Rai and Sons, New Delhi.
3. Theory of Machines by Jagdish Lal; Metropolitan Publishers, New Delhi.

INSTRUCTIONAL STRATEGY

1. Use teaching aids for classroom teaching
2. Give assignments for solving numerical problems
3. Arrange industry visits to augment explaining use of various machine components like belt, rope, chain, gear drives, action due to unbalanced masses, brake clutch, governors, fly wheels, cams and gear drives
4. Video films may be used to explain the working of mechanisms and machine components like clutch, governors, Brake etc.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Hrs)	Marks Allotted (%)
1	08	12
2	16	26
3	10	15
4	12	20
5	08	12
6	10	15
Total	64	100



Detailed Contents

Unit No. 1 Introduction

- Topic No.1: Introduction to NC, CNC & DNC, their advantages, disadvantages and applications;
- Topic No.2: Basic components of CNC machines, Machine Control Unit, input devices,,
- Topic No.3: selection of components to be machined on CNC machines, Axis identification.

Unit No 2: Construction and Tooling

- Topic No.4: Design features, specification of CNC machines, use of sideways, balls, rollers and coatings,
- Topic No.5: motor and lead screw, sward removal, safety and guarding devices
- Topic No.6: various cutting tools for CNC machines, Concept of CNC tool holder
- Topic No.7: different pallet systems and automatic tool changer system, management of a tool room.

Unit No. 3: System Devices

- Topic No.8: Control System; Open Loop and Closed Loop System,
- Topic No.9: Concept of Actuators, Transducers and Sensors,
- Topic No.10: Tachometer, LVDT, opto-interrupters
- Topic No.11: potentiometers for linear and angular position, encoder and decoder and axis drives.

Unit No. 4: Part programming

- Topic No.12: Introduction to Part programming, Basic concepts of part programming, NCwords, part programming for equation of head loss (without proof),
- Topic No.13: simple programming for rational components, part programming using conned cycles,
- Topic No.14: subroutines and do loops, tool off sets, cutter radius compensation and tool wear compensation

Unit No. 5: Problems in cnc machines

- Topic No.15: Common problems in CNC machines related to mechanical, electrical and pneumatic, electronic components
- Topic No.16: Study of common problems and remedies, use of on-time fault finding diagnosis tools in CNC machine.

Unit No. 6: Automation and NC System

- Topic No.17: Concept of automation, emerging trends in automation, automatic assembly
- Topic No.18: Overview of FMS, Group technology, CAD/CAM and CIM.

Unit No 7: Robot technology

- Topic No.19: Introduction to robot technology, basic robot motion and its applications

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment			External Assessment (Examination)			
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
5	-	-	25	-	100	3	-	-	125

RECOMMENDED BOOKS

1. CNC Machines – Programming and Applications by M Adithan and BS Pabla; New Age International (P) Ltd.
2. CNC Machines by M.S. Sehrawat and J.S. Narang; Dhanpat Rai and Co., New Delhi.
3. Computer Aided Manufacturing by Rao, Kundra and Tiwari; Tata Mc Graw Hill New Delhi.
4. CNC Machine by Bharaj; Satya Publications, New Delhi.

INSTRUCTIONAL STRATEGY

This is highly practice-based course. Efforts should be made to develop programming skills amongst the students. During practice work, it should be ensured that students get opportunity to individually perform practical tasks



PM

POLYTECHNIC

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

SUGGESTED DISTRIBUTION OF MARKS

Unit No.	Time Allotted for Lectures (Periods)	Marks Allotted (%)
1	06	12
2	06	12
3	12	26
4	08	18
5	04	08
6	06	12
7	06	12
Total	48	100





PM POLYTECHNIC

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

Subject: CNC Machines and Automation (Practical)

Subject Code: 121755(P)

List of Practical

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 in production

STUDY SCHEME		EVALUATION SCHEME							Total Marks
		Internal Assessment			External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
5	-	-	25	-	-	-	50	3	75



Detailed Contents

Unit No.1 fundamentals of refrigeration

- Topic No.1: Introduction to refrigeration
- Topic No.2: Air conditioning
- Topic No.3: Refrigerating effect
- Topic No.4: cop.
- Topic No.5: Methods of refrigeration
- Topic No.6: Reverse Carnot cycle

Unit No.2 Vapor compression system

- Topic No.7: principle function of vapor compression
- Topic No.8: Tem.enthalpy & pressure –enthalpy chart
- Topic No.9: Dry, wet & superheated compression, effects on compression
- Topic No.10: Actual vapor compression system

Unit No.3 Refrigerants

- Topic No.11: Functions and classification
- Topic No.12: Properties of R-717, R-22, R-314 & co2
- Topic No.13: Properties of ideal refrigerant
- Topic No.14: Selection of refrigerant

Unit No. 4 Vapor absorption system

- Topic No.15: Principle & working of simple absorption system
- Topic No.16: Domestic Electrolux system
- Topic No.17: Solar power refrigeration system
- Topic no.18: Advantages &disadvantages of solar over Vapor system

Unit No. 5 Refrigeration equipment

- Topic No.19: Compressor – functions &types
- Topic No.20: Condenser –functions &types
- Topic No.21: Evaporator –functions &types
- Topic No.22: Expansion valve – function and its type
- Topic No.23: Safety devices – function &its type

AIR CONDITIONING

Unit No. 6 Psychometry

- Topic No.24: Definition, importance, specific humidity WBT, DBT
- Topic No.25: Degree of saturation, sensible heat, total enthalpy
- Topic No.26: Psychometry chart &various process of psychometric

Unit No.7 Air conditioner

- Topic No.27: Window air conditioning
- Topic No.28: Split air conditioning & central air conditioning
- Topic No.29: Automobile air conditioning

			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
5	-	-	25	-	100	-	-	-	125

TEXT BOOKS:

1. RAC (G.S. AULAKH).
2. RAC by Ishaan publication



PM POLYTECHNIC

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

RECOMMENDED BOOKS

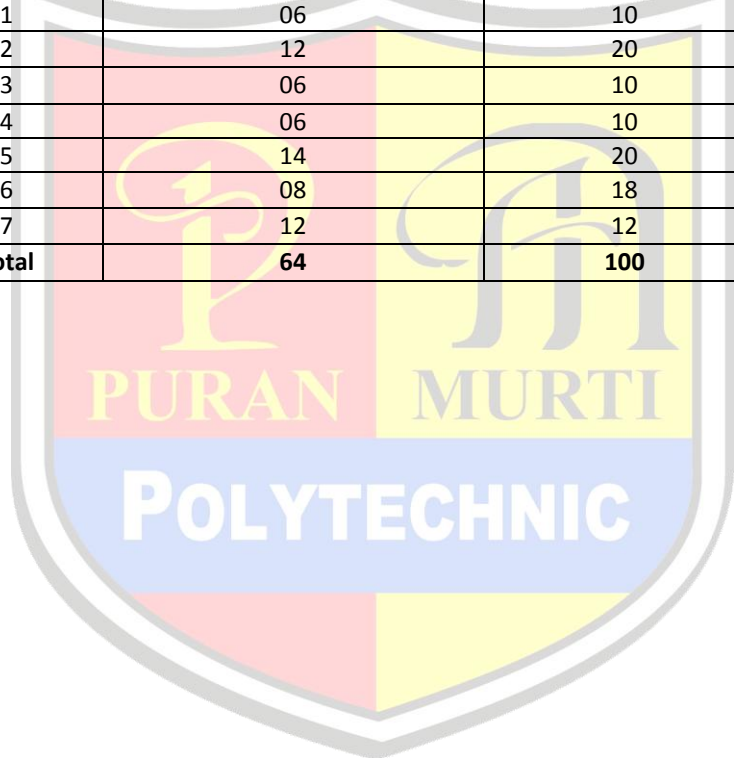
1. Refrigeration and Air Conditioning by Domkundwar; Dhanpat Rai and Sons, Delhi.
2. Refrigeration and Air Conditioning by CP Arora; Tata McGraw Hill, New Delhi.
3. Refrigeration and Air Conditioning by R.S Khurmi and J.K. Gupta; S Chand and Company Limited, New Delhi.

STRATEGY

1. Teachers should take the students to industry and explain the details of refrigeration and air-conditioning systems and their components.
2. While imparting instructions, focus should be on conceptual understanding.
3. Training slides of "Carrier Fundamentals of Refrigeration Air Conditioning" to be shown to students

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Hrs)	Marks Allotted (%)
1	06	10
2	12	20
3	06	10
4	06	10
5	14	20
6	08	18
7	12	12
Total	64	100





PM POLYTECHNIC

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

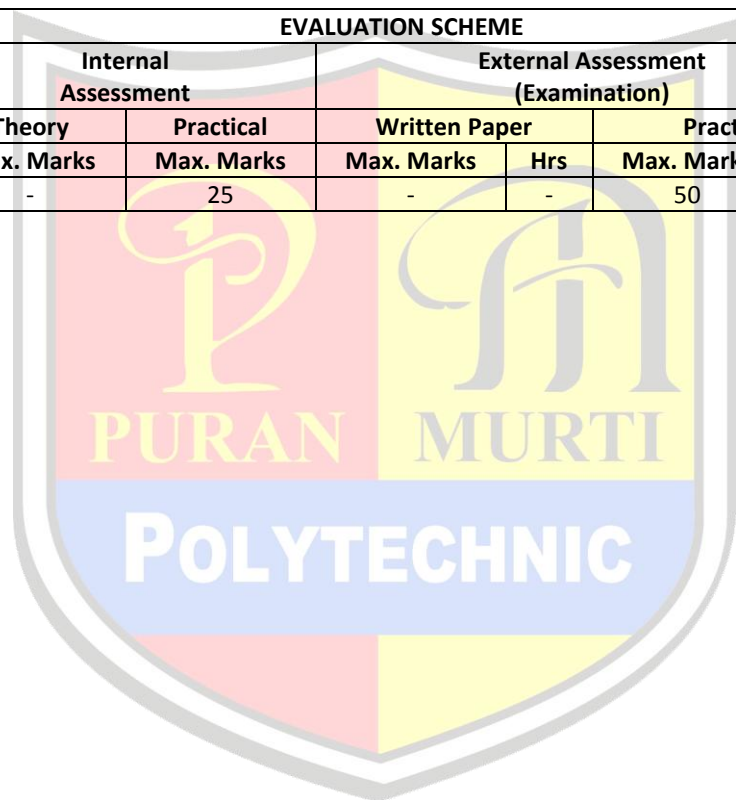
Subject: Refrigeration & Air Conditioning_(Practical)

Subject Code: 31752(P)

List of practical

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.

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
5	-	-	-	25	-	-	50	3	75





PM POLYTECHNIC

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

Subject: Environmental Education (Theory)

Subject Code: 120151

Detailed Contents

Unit No. 1 Introduction

- Topic No.1: Definition
- Topic No.2: Scope
- Topic No.3: Importance of Environmental Education

Unit No. 2

- Topic No.4: Basics of ecology, Biodiversity
- Topic No.5: Eco system and Sustainable development

Unit No. 3

- Topic No.6: Sources of pollution - natural and manmade, Causes
- Topic No.7: Effects and control measures of air pollution and their units of measurement
- Topic No.8: Effects and control measures of water pollution and their units of measurement
- Topic No.9: Effects and control measures of noise pollution and their units of measurement
- Topic No.10: Effects and control measures of soil pollution and their units of measurement
- Topic No.11: Effects and control measures of radioactive pollution and their units of measurement
- Topic No.12: Effects and control measures of nuclear pollution and their units of measurement

Unit No. 4

- Topic No.13: Solid waste management, Causes, Effects
- Topic No.14: Control measures of urban and industrial waste

Unit No. 5

- Topic No.15: Mining - Causes, effects and control measures
- Topic No.16: Deforestation – Causes, effects and control measures

Unit No. 6

- Topic No.17: Environmental Legislation - Water (prevention and control of Pollution) Act 1974
- Topic No.18: Air (Prevention and Control of Pollution) Act 1981
- Topic No.19: Environmental Protection Act 1986
- Topic No.20: Role and Function of State Pollution Control Board,
- Topic No.21: Environmental Impact Assessment (EIA)

Unit No. 7

- Topic No.22: Role of Non-conventional Energy Resources-Solar Energy
- Topic No.23: Wind Energy, Bio Energy, Hydro Energy

Unit No. 8

- Topic No.24: Current Issues in Environmental Pollution – Global Warming
- Topic No.25: Green House Effect, Depletion of Ozone Layer
- Topic No.26: Recycling of Material, Environmental Ethics
- Topic No.27: Rain Water Harvesting, Maintenance of Groundwater
- Topic No.28: Acid Rain, Carbon Credits

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
3	-	-	25	-	100	3	-	-	



PM POLYTECHNIC

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

RECOMMENDED BOOKS

1. Environmental Engineering and Management by Suresh K Dhameja; SK Kataria and Sons, New Delhi.
2. Environmental Science by Dr. Suresh K Dhameja; SK Kataria and Sons, New Delhi.
3. Environmental and Pollution Awareness by Sharma BR; Satya Prakashan, New Delhi.
4. Environmental Protection Law and Policy in India by Thakur Kailash; Deep and Deep Publications, New Delhi.
5. Environmental Science by Deswal and Deswal; Dhanpat Rai and Co. (P) Ltd. Delhi.
6. Engineering Chemistry by Jain and Jain; Dhanpat Rai and Co. (P) Ltd. Delhi.
7. Environmental Studies by Erach Bharucha; UGC University Press

INSTRUCTIONAL STRATEGY

In addition, different activities pertaining to Environmental Education like expert lectures, seminar and awareness camps etc. may also be organized.

SUGGESTED DISTRIBUTION OF MARKS

Unit No.	Time Allotted for Lectures (Periods)	Marks Allotted (%)
1	02	04
2	03	06
3	12	24
4	06	12
5	04	10
6	10	20
7	04	10
8	07	14
Total	48	100



PM

POLYTECHNIC

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

Subject: Workshop Technology-III (Theory)

Subject Code: 31753

Detailed Contents

Unit No.1 MILLING

- Topic No.1: Principle of milling machine
- Topic No.2: classification of milling machine
- Topic No.3: construction of column and knee type milling machine
- Topic No.4: milling accessories and attachment
- Topic No.5: milling method
- Topic No.6: classification of milling cutter and work mandrels
- Topic No.7: types of milling operation
- Topic No.8: cutting parameter
- Topic No.9: indexing and its basic types

Unit No.2 Grinding

- Topic No.10: Grinding mechanism and grinding types
- Topic No.11: Types of grinding wheels and its specification
- Topic No.12: Mounting of wheel (turning and dressing)
- Topic No.13: Grinding method
- Topic No.14: Grinding machine

Unit No.3 Gear Manufacturing and Finishing Process

- Topic No.15: Gear hobbling
- Topic No.16: Gear shaping

Unit No.4 Modern Machining Process

- Topic No.17: Ultrasonic Machining (USM)
- Topic No.18: Electro chemical Machining (ECM)
- Topic No.19: Electro chemical Grinding (ECG)
- Topic No.20: Electrical discharge machining (EDM)
- Topic No.21: Laser beam machining (LBM) ,(EBM)

Unit No.5 Metallic Coating Process

- Topic No.22: Metal spraying process
- Topic No.23: Powder coating process

Unit No.6 Metal Finishing Process

- Topic No.24: Surface roughness and purpose of finishing process
- Topic No.25: Honing Process and their description
- Topic No.26: Lapping process and its description
- Topic No.27: Brief idea lapping machine
- Topic No.28: Polishing and buffing

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
4	-	-	25	-	100	3	-	-	125

TEXT BOOKS:

1. Workshop Technology by Dr. R. K. Singhal
2. Workshop Technology by Eshaan publication

RECOMMENDED BOOKS

1. Manufacturing Technology by Rao; Tata McGraw Hill Publishers, New Delhi.
2. Workshop Technology Vol. I, II, III by Chapman; Standard Publishers Distributors, New Delhi.
3. Production Technology by HMT; Tata McGraw Publishers, New Delhi.
4. Production Engineering and Science by Pandey and Singh; Standard Publishers Distributors, New Delhi.



PM

POLYTECHNIC

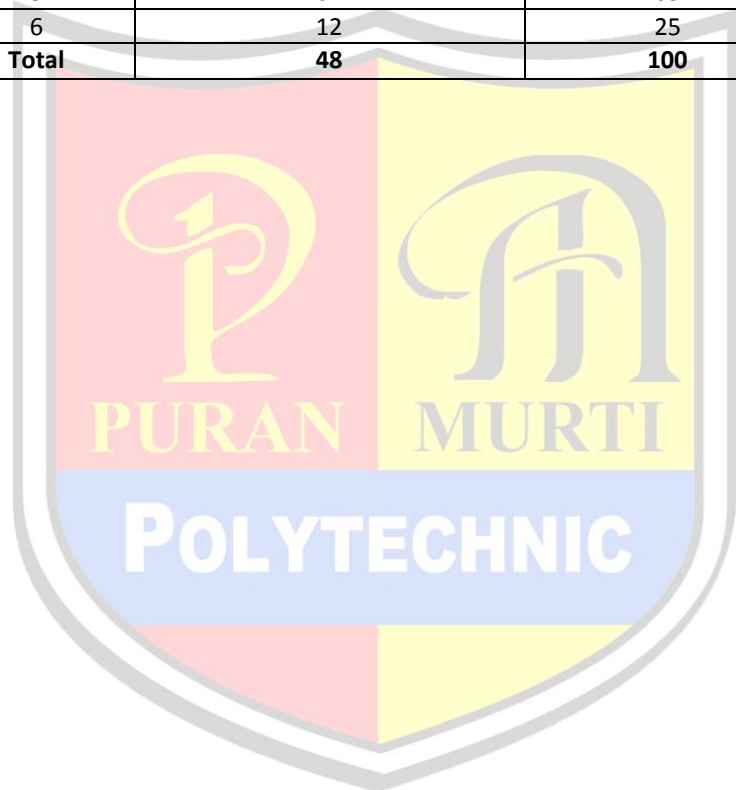
A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

INSTRUCTIONAL STRATEGY

1. Teachers should lay special emphasis in making the students conversant with concepts, principles, procedures and practices related to various manufacturing processes.
2. Focus should be laid in preparing jobs using various machines/equipment in the workshop.
3. Use of audio-visual aids/video films should be made to show specialized operations.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Hrs)	Marks Allotted (%)
1	12	25
2	12	25
3	02	05
4	08	15
5	02	05
6	12	25
Total	48	100





PM POLYTECHNIC

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to State Board of Technical Education, Panchkula, Haryana

Subject: Workshop Practice - III (Practical)

Subject Code: WPIII (P)

List of practical

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. Resharpener of single point cutting tool with given geometry

Machine Shop

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

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	9	-	100	-	-	100	3	200



List of practical

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 spines. Drawing plotlines, 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 color 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. Practice on print/plot commands. Export/import commands.
Practice on making complete drawings of components by doing following exercises:
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
Isometric Drawing by CAD using Auto CAD (one sheet)
Drawings of following on computer:
Cone
Cylinder
Isometric view of object
Modeling (02 sheets) 3D modeling Transformations, scaling, rotation, translation
7. 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)
8. Introduction to Other Software's; (Pro Engineer/CATIA / Inventor/Unigraphics/Solid Work: Salient features.

STUDY SCHEME			EVALUATION SCHEME						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	3	-	50	-	-	50	3	100

INSTRUCTIONAL STRATEGY

1. Teachers should show model or realia of the component/part whose drawing is to be made.
2. Emphasis should be given on cleanliness, dimensioning, & layout of sheet.
3. Teachers should ensure use of IS codes related to drawing.