# RAJIV GANDHI PROUDYOGIKI VISHVAVIDYALAYA (DIPLOMA WING) BHOPAL P05 DIPLOMA IN PRODUCTION ENGINEERING PART A:- PROCESS OF CURRICULUM DEVELOPMENT

# LIST OF IDENTIFIED PROFESSIONAL ROLES

- 1. To apply knowledge of mathematics, science, and engineering.
- 2. To design and conduct experiments, as well as to analyze and interpret data.
- 3. To design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- 4. To function on multidisciplinary teams.
- 5. To identify, formulate, and solve engineering problems.
- 6. To understand professional and ethical responsibility.
- 7. To communicate effectively.
- 8. To understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- 9. To engage in lifelong learning.
- 10. To use the techniques, skills, and modern engineering tools necessary for engineering practice.

## CO GROUPING AND COURSE FORMATION

### COURSE NAME: PNEUMATIC HYDRAULIC CONTROL AND INSTRUMENTATION (603)

(Total 100 Hrs., Total 100 Marks)

## LIST OF COs:-

CO1: Understand the properties of fluid and production of compressed air. (20 Hrs, 20 marks)

CO2: Identify pneumatic components and its symbol and usage. (20 Hrs, 20 marks)

CO3: Identify hydraulic components and its symbol and usage. (20 Hrs, 20 marks)

C04: Explain maintenance and trouble shooting of hydraulic and pneumatic system. (20 Hrs, 20 marks)

C05: Explain the characteristics of instrumentation and measuring instruments (20 Hrs, 20 marks)

#### LOs FORMATION

## COURSE NAME: - PNEUMATIC HYDRAULIC CONTROL AND INSTRUMENTATION (603) (Total 100 Hrs., Total 100 Marks)

### List of COs and LOs

- CO1: Understand the properties of fluid and production of compressed air. (20 Hrs, 20 marks)
- LO1: To explain the properties and dynamics of fluid. (10 Hrs., 10 Marks)
- LO2: To explain the production of compressed air and their characteristics. (10 Hrs., 10 Marks)

#### CO2: Identify pneumatic components and its symbol and usage. (20 Hrs, 20 marks)

- LO1: To explain the pneumatic components. (10 Hrs., 10 Marks)
- LO2: To understand the symbol and usage of pneumatic system. (10 Hrs., 10 Marks)

#### CO3: Identify hydraulic components and its symbol and usage. (20 Hrs, 20 marks)

- LO1: To explain the hydraulic components. (12 Hrs., 12 Marks)
- LO2: To understand the symbol and usage of hydraulic system (8 Hrs., 8 Marks)

#### CO4: Explain maintenance and trouble shooting of hydraulic and pneumatic system. (20 Hrs, 20 marks)

- LO1: To know maintenance and trouble shooting of hydraulic system. (10 Hrs., 10 Marks)
- LO2: To know maintenance and trouble shooting of pneumatic system. (10 Hrs., 10 Marks)

#### CO5: Explain the characteristics of instrumentation and measuring instruments (20 Hrs, 20 marks)

- LO1: To know about the characteristics of instrumentation. (10 Hrs., 10 Marks)
- LO2: To know about measuring instruments. (10 Hrs., 10 Marks)

#### PART B:- CURRICULUM OF PRODUCTION ENGINEERING

RGPV (	RGPV (Diploma Wing ) Bhopal			COURSE PLAN					Format -2		Sheet No. 1/2	
Cours	e Nam	ie	PNEUMATIO INSTRUMEN'	C HYI FATI(	DRAULIC CO	ONTRO	L AND	Sen	nester		SIXT	H
Branch		PRO ENC	ODUCTION GINEERING	(	Course Code	603	No. of	COs	05	No	. of LOs	5 11
Total Hi Teach Learni	rs. of ing ing	100	Total Marks	100	Total no. of Assessments	5	Type Assess	es of ments		N Ex Asse	lo. of ternal essmente	5
	DESCRIPTION OF OUTCOMES									T-L Hrs.	Max. Marks	
CO 1	P056031 Understand the properties of fluid and production of compressed air.										20	20
Los	PO560	311	o explain the properties and dynamics of fluid									10
	PO560312 To explain the production of compressed air and their characteristics.										10	10
CO 2	P05603	32	Identify pneumat	dentify pneumatic components and its symbol and usage.								20
	PO560	31	To explain the pne	umatic	components.						10	10
Los	PO560	322	To understand the	symbol	and usage of pneu	imatic sys	stem.				10	10
CO 3	P0560	33	Identify hydrauli	c comp	onents and its syn	nbol and	usage.				20	20
Los	PO560	331	To explain the hyd	lraulic c	omponents						12	12
	PO560	332	To understand the	symbol	and usage of hydr	aulic syst	em				8	8
CO 4	P05603	34	Explain maintena	Explain maintenance and trouble shooting of hydraulic and pneumatic system.								20
	PO560	To know maintenance and trouble shooting of hydraulic system									10	10
Los	PO560	342	To know mainter	nance ar	nd trouble shooting	g of pneur	natic syste	n.			10	10
CO 5	O 5 P056035 Explain the characteristics of instrumentation and measuring instruments									20	20	

Los	PO560351	To know about the characteristics of instrumentation.	10	10
	PO560352	To know about measuring instruments	10	10

RGPV (DII Bł	PLOMA WING IOPAL	)	OCB CURRICULU	M FOR THE COURSE	FORM	4AT- 3	Sheet No. 1/3		
Branch	PRODUCTIO	NI	ENGINEERING	Semester		SIXTH	[		
Course Code	603	Сс	ourse Name	PNEUMATIC HYDRA INSTRUMENTATION	AULIC	CONTR	ROL AND		
<mark>Course</mark> Outcome 1	Understand t	he j	properties of fluid and	d production of comp	ressed	Teach Hrs	Mark s		
Learning Outcome 1	To explain the p	orop	erties and dynamics of f	luid.		10 10			
CONTENT	Properties of f viscosity, surfac	Properties of fluid viz. mass density, weight density, specific volum viscosity, surface tension and dynamic of fluid.							
Method of Assessment		Paper pen test							
Learning Outcome 2	To explain the p		10	10					
CONTENT	Generation of compressors. Se	con lect	pressed air. Need & ion criteria for compress	Characteristics of comp ors.	oressed a	air. Typ	es of air		
Method of Assessment			Раг	oer pen test					
<mark>Course</mark> Outcome 2	Identify pneu	mat	ic components and its s	ymbol and usage.					
Learning Outcome 1	To explain the	pne	umatic components			10	10		
CONTENT	Pneumatic com	por	ents viz. pneumatic cyli	nders, pneumatic valves,	FRL uni	t, air mot	or, air		
	filters and its s	ym	bol and usage.						
Method of Assessment			Paper pen test	/ Practical assessment					
Learning Outcome 2To understand the symbol and usage of pneumatic system						10	10		
CONTENT	Symbols, pneur pneumatic syste	nati m.	C circuit diagram e.g., mete	er –in-method, meter–out-m	ethod and	l applicat	ion of		
MethodofPaper pen test/ Practical assessmentAssessment									

<mark>Course</mark> Outcome 3	Identify hydraulic components and its symbol and usage							
Learning Outcome 1	To explain the hydraulic components.	12	12					
CONTENT	Basic system, Hydraulic cylinders viz. single acting and double acting cylinder, valves pumps e.g. Gear pump, vane pump, centrifugal pump and reciprocating pump. Power accumulator.	s and Hydr pack, Hydr	aulic aulic					
Method of Assessment	Paper pen test/ Practical assessment							
Learning Outcome 2	To understand the symbol and usage of hydraulic system.	8	8					
CONTENT	Hydraulic Symbols, Hydraulic circuit diagram and application of hydraulic system	1.						
Method of Assessment	Paper pen test/ Practical assessment							
<mark>Course</mark> Outcome 4	Explain maintenance and trouble shooting of hydraulic and pneumatic system.							
Learning Outcome 1	To know maintenance and trouble shooting of hydraulic system	10	10					
CONTENT	Maintenance need of hydraulic system, common problems in hydraulic system, maint hydraulic system, Trouble Shooting and Maintenance of air compressor.	enance sch	edule of					
Method of Assessment	Paper pen test							
Learning Outcome 2	To know maintenance and trouble shooting of pneumatic system	10	10					
CONTENT	Maintenance need of Pneumatic system, common problems in Pneumatic system, ma of Pneumatic system, Trouble Shooting and Maintenance of air compressor.	intenance s	chedule					

Method of Assessment			
<mark>Course</mark> Outcome 5	Explain the characteristics of instrumentation and measuring instruments		
Learning Outcome 1	To know about the characteristics of instrumentation	10	10
CONTENT	Static characteristics and dynamics characteristics of instruments.		
Method of Assessment	Paper pen test/ Practical assessment		
Learning Outcome 2	To know about measuring instruments	10	10
CONTENT	Pressure flow and temperature measuring instruments.		
Method of Assessment	Paper pen test/ Practical assessment		

CO1:	LO1		_										
RC	GPV (Diploma V Bhopal	Wing)	SC	SCHEME FOR LEARNING BR OUTCOME C P(		Branch Code P05	Course Code 603	CO Code <mark>01</mark>	LC Coc <mark>01</mark>	) <mark>F</mark> le	<sup>F</sup> ormat No. 4		
COU	JRSE NAME	PNEUN	MAT	TIC HYDRA	ULIC CONT	ROL AN	D INSTR	UMENT	TATIC	DN			
CO	Description	Unders	stan	d the prope	rties of fluid	and pro	production of compressed air.						
LO	Description	To expl	ain t	the properties	and dynamics of	of fluid.							
				SCF	IEME OF STU	JDY							
S. Learning Content No.				Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	L Req	Rs uired	Rema rks		
1	Properties of fluid viz. mass density, weight density, specific volume, specific gravity, viscosity, surface tension and dynamic of fluid.		с, у,	Traditional Lecture method + Assignment	Teacher will of the contents of students under the importance maintenance Shop/ Industr Teacher will of Progressive to assignment.	explain to that erstand te of in Work ty. conduct est/ give	10	-	Hanc Book	lout,			
				SCHEM	IE OF ASSES	SMENT			1				
S. N	S. No Method of Descrip Assessment			escription of	Assessment	N	laximun Marks	n Resou Requi	irces ired	Exte Int	ernal / ernal		
1 Paper pen test For the given learning conwrite answer of questions					g content, Stud tions.	lents	10	Progre test/ semest exam	ssive End er	Interr /Exte	nal rnal		
	ADD	ITIONA	LI	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)				

<u>CO1</u> :	<u>201:L02</u>										
RO	GPV (Diploma Bhopal	Wing) SC	SCHEME FOR LEARNING Brand OUTCOME Cod P05			Course Code 603	CO Code 01	LO Code <mark>02</mark>	F	ormat No. 4	
COU	JRSE NAME	PNEUMA	<b>FIC HYDRA</b>	ULIC CONT	ROL AN	D INSTR	UMENT	TATION	Ŋ		
CO	Description	Understar	nd the prope	erties of fluid	and pro	duction	of comp	ressed	air.		
LO	Description	To explain	the productior	n of compressed	l air and t	heir chara	cteristics				
			SCH	HEME OF STU	JDY						
S. No.	Learning (	Content	Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	LR Requi	s red	Rema rks	
1	Generation of air. Need & Ch of compressed a air compressors criteria for comp	ration of compressed leed & Characteristics mpressed air. Types of ompressors. Selection a for compressors. Solutional (Work Shop/ Industry Visit)			explain so that lain the unctions ntenance in an Teacher conduct est/ give Students rk shop/ to the	10	-	Hando Book, Work Shop	ut,		
			SCHEM	IE OF ASSES	SMENT	1	1				
S. N	o Method of Assessment		escription of	Assessment	N	laximun Marks	n Resou Requi	irces ired	Exte Inte	ernal / ernal	
1	Paper pen te	st For the a write an Practica	given learnin swer of ques Viva	g content, Stud tions and face	dents	10	Practic file/Pro sive te End semest exam	er I	ntern Exter	al mal	
	ADD	ITIONAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)			

(	CO2:	LO1										
	RO	GPV (Diploma Bhopal	Wing) S	CHEME FOR OUTC	LEARNING OME	Branc Code P05	h Course Code 603	CO Code <mark>02</mark>	LO Cod 01	le F	<sup>f</sup> ormat No. 4	
	COU	JRSE NAME	PNEUMA	TIC HYDRAU	JLIC CONTR	OL AN	ND INSTR	UMENT	ATIO	N		
	CO	Description	Identi	y pneumatic c	omponents and	l its syr	nbol and u	isage				
	LO	Description	To exp	lain the pneuma	atic components	5.						
				SCHI	EME OF STU	DY						
S	No.	Learning Co	ontent	Teaching– Learning Method	Description of T-L Process		L Teach Hrs.	Pract. /Tut Hrs.	L] Requ	Rs 1ired	Rema rks	
	1	Pneumatic com pneumatic pneumatic valv air motor, air symbol and usa	nponents vi: cylinder ves, FRL uni filter and i age.	z. Traditional S, Lecture t, method + Assignment	Teacher will the con students so students different ty maintenance. will Progressive to assignment.	expla tents o th expla pes Teach condu est/ giv	in 5 to at in of er ct ve	5	Hand Book	out,		
				SCHEMI	E OF ASSESS	MENT	- -					
S.	No	Method o Assessmen	f De nt	scription of As	ssessment		Maximun Marks	n Resou Requi	irces ired	Exte Int	ernal / ernal	
	1	Paper pen t	est For the write a	e given learning nswer of quest	g content, Stud tions.	dents	10	Progre Test pa End semest exam	ssive aper/ er	Interr /Exte	nal rnal	
		ADDI	TIONAL I	NSTRUCTIO	NS FOR THE	HOD/	FACULT	Y (IF AI	NY)			
				Li	st of Practical							
		1. Assemble a Pneumatic circuit with a 3/2 way manually operated valve in line with a pilot operated 3/2 way valve to control a single acting cylinder.										

CO2	:LO2											
R	GPV (Diploma Bhopal	Wing)	SC	HEME FOR OUTC	LEARNING OME	Branc Code P05	ch e	Course Code 603	CO Code 02	LC Coc 02	) <mark>F</mark> le	<sup>F</sup> ormat No. 4
COI	JRSE NAME	PNEU	MAT	<b>FIC HYDRA</b>	ULIC CONTE	ROL A	NI	) INSTR	UMENT	TATIC	<b>DN</b>	
CO	Description	Identi	fy pi	neumatic con	nponents and i	ts symł	ool	and usa	ge.			
LO	Description	To und	lerst	and the symbo	ol and usage of	pneuma	atio	c system.				
				SCH	IEME OF STU	JDY						
S. No.	S. Learning Content No.			Teaching– Learning Method	Description of T-L Process		_	Teach Hrs.	Pract. /Tut Hrs.	L Requ	Rs uired	Rema rks
1 Symbols, pneumatic circuit diagram e.g., meter –in- method, meter–out-method and application of pneumatic system.			Traditional Lecture method + Assignment	Teacher will ex the contents students so th students know the concept of tracing. Teacher conduct Progree test/ give assig	xplain to nat about fault er will essive mment.		5	5	Hand Book	lout,		
				SCHEM	IE OF ASSES	SMEN	ΙT	·		·		
S. N	No Method of Assessmen	f it	D	escription of	Assessment		M	laximum Marks	Resou Requi	irces ired	Ext Int	ernal / ernal
1	Paper pen t	est For t write	he g ans	e given learning content, Students answer of questions.				10	Progre Test pa End semest exam	ssive aper/ ær	Interr /Exte	nal rnal
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)											
				J	List of Practica	al						
	1 <b>Design a</b> pneumatic circuits through 4/2 way valve for double acting cylinder.											

CO3	:LO1									
R	GPV (Diploma V Bhopal	Wing) SC	SCHEME FOR LEARNING Brand OUTCOME Code P05			Course Code 603	CO Code <mark>03</mark>	LC Cod 01	) <mark>F</mark> le	ormat No. 4
COI	JRSE NAME	PNEUMA	TIC HYDRA	ULIC CONT	ROL AN	D INSTR	UMENT	<b>TATIO</b>	N	
CO	Description	Identify h	ydraulic com	ponents and its	s symbo	l and usag	ge.			
LO	Description	To explain	the hydraulic co	omponents.						
		I	SCH	HEME OF STU	UDY					
S. No.	Learning (	Content	Teaching– Learning Method	Description of T-L Process		Teach Hrs.	Pract. /Tut Hrs.	L] Requ	Rs 1ired	Rema rks
1	1 Basic system, Hydraulic cylinders viz. single acting and double acting cylinder, valves and Hydraulic pumps e.g. Gear pump, vane pump, centrifugal pump and reciprocating pump. Power pack, Hydraulic accumulator.			Teacher will of the contents students so the students under the concept of maintainabili Teacher will co Progressive test/assignment	explain s to at erstands f ty. onduct it.	6	6	Hand Book	out,	
			SCHEM	IE OF ASSES	SMEN	Г	1			
S. N	Io Method of Assessment	E	Description of	Assessment	1	Maximun Marks	n Resou Requi	irces ired	Exte Int	ernal / ernal
1 Paper pen test For the given learning write answer of quest				ing content, Students 12 Progress estions. 12 Assignm /End semester exam		ssive aper/ iment er	Intern /Exte	ıal rnal		
	ADD	ITIONAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)		
			<mark>]</mark>	List of Practica	al					
	1 Se	tting up of	a Power pack	for hydraulic co	ntrol circo	uits operati	on.			

CO3	LO2									
RC	GPV (Diploma V Bhopal	Wing) S	SCHEME FOR LEARNING Bra OUTCOME Co PC		Branch Code P05	Course Code 603	CO Code <mark>03</mark>	LO Code <mark>02</mark>	e F	ormat No. 4
COU	JRSE NAME	PNEUM	ATIC HYDRA	ULIC CONT	ROL AN	D INSTR	UMENT	<b>ATIO</b>	N	
CO	Description	Identify	hydraulic com	ponents and its	s symbol	and usag	ge.			
LO	Description	To under	stand the symbol a	and usage of hyd	raulic syst	tem				
			SCH	HEME OF STU	JDY					
S. No.	S. Learning Content No.		Teaching– Learning Method	Description of T-L Process		Teach Hrs.	Pract. /Tut Hrs.	LF Requ	Rs ired	Rema rks
1	Hydraulic Symbo circuit diagram an of hydraulic syste	lic Traditional on Lecture method + Assignment	Teacher will of the contents students so the students will about the components of maintenance Teacher will co Progressive tes assignment.	explain s to lat learn of cost. onduct st/ give	4	4	Hando Book	out,		
			SCHEM	IE OF ASSES	SMENT	-				
S. N	Io Method of Assessment	:	Description of	Assessment	Ν	/laximun Marks	n Resou Requ	irces ired	Exte Inte	ernal / ernal
1 Paper pen test For the given learning write answer of ques			ng content, Stu tions,	ıdents	8	Progress Test pa Assign /End semeste exam	ssive per/ ment er	Intern Æxter	rnal	
	ADD	TIONAL	L INSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)		
			]	List of Practica	al					
	1.	Design cylinder	a simple hyd	raulic control	circuit	s using	single a	acting		

CO4:	LO1									
RG	PV (Diploma V Bhopal	Ving) SC	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 603	CO Code <mark>04</mark>	LO Cod <mark>01</mark>	e F	ormat No. 4
COU	IRSE NAME	PNEUMA	<b>FIC HYDRA</b>	ULIC CONTH	ROL AN	D INSTR	UMENT	<b>TATIO</b>	N	
CO I	Description	Explain ma	iintenance an	d trouble shoo	ting of h	ydraulic	and pne	umatic	syste	m.
LO I	Description	To know ma	aintenance and	trouble shooting	of hydrau	lic system.				
			SCH	HEME OF STU	JDY					
S. Learning Content No.			Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	LF Requ	Rs iired	Rema rks
1	Maintenance hydraulic syster problems in system, schedule of hydra Trouble Shoo Maintenance compressor.	need of n, common hydraulic maintenance aulic system, oting and of air	Traditional Lecture method + Practical (Work Shop)	Teacher will the contents. will Progressive to Assignment students know possible def casting along v causes and ren	explain Teacher conduct est/ give so tha w abour fects in with their nedies	h 10 r t t t	-	Hando Book, Work Shop	out,	
			SCHEM	IE OF ASSES	SMENT	<b>-</b>				
S. N	o Method of Assessment	D	escription of	Assessment	Ν	/laximum Marks	Resou Requi	irces ired	Exte Int	ernal / ernal
1	Paper pen test For the given learning content, Student write answer of questions and face Practical Viva.					10 Practical Internal file/Progres /Externa sive Test paper/ End semester			nal rnal	
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	ΤΥ (IF A	ANY)		

CO4:LO2											
RGPV (Diploma Wing) S Bhopal			SCHEME FOR LEARNING		Branch Code P05	Course Code 603	CO Code <mark>04</mark>	LO Cod <mark>02</mark>	e F	ormat No. 4	
COURSE NAME PNEUM			ATIC HYDRAULIC CONTROL AND INSTRUMENTATION								
CO Description <b>Explain maintenance and trouble shooting of hydraulic and pro</b>							and pnet	umatic	syster	n.	
LO Description To know maintenance and trouble shooting of pneumatic system.											
SCHEME OF STUDY											
S. No.	Learning Content		Teaching– Learning Method	Description of T-L Process		Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema rks	
1	Maintenance Pneumatic syste problems in system, schedule of system, Troubl and Maintenan compressor.	Maintenance need of Pneumatic system, common problems in Pneumatic system, maintenance chedule of Pneumatic system, Trouble Shooting and Maintenance of air compressor.		Teacher will the contents. will Progressive to Assignment students know the concep importance lubrication industry. Stud visit Work Industry to k lubrication pl procedures.	explair Teacher conduct est/ give so tha w abour of and in ar lents will Shop / cnow the lans and	t 10 t t t t t t t t t t t t t t t t t t t	-	Handout, Book, Work Shop			
			SCHEM	IE OF ASSES	SMENT						
S. N	Method of Assessment	Method of Description of Assessment		Ν	⁄laximum Marks	1 Resources Required		External / Internal			
1	Paper pen tes	t For the write a Practical	given learning content, Student nswer of questions and fac l Viva.			10	Practical file/Progres sive Test paper/ End semester exam		Internal /External		
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)											

CO5:LO1												
RGPV (Diploma Wing) SC Bhopal			CHEME FOR LEARNING BI OUTCOME C P		Brancl Code P05	h Course Code 603	CO Code 05	LO Cod <mark>01</mark>	e F	ormat No. 4		
COURSE NAME PNEUMAT			FIC HYDRAULIC CONTROL AND INSTRUMENTATION									
CO Description Explain t			he characteristics of instrumentation and measuring instruments									
LO	Description	To know at	out the characteristics of instrumentation.									
SCHEME OF STUDY												
S. No.	Learning C	Content	Teaching– Learning Method	Description of T-L Process		Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema rks		
1	Static characte dynamics charac instruments.	ristics and cteristics of	Traditional Lecture method + Practical (Work Shop / Industry)	Teacher will ex the contents students so students know the possible de welded joints a with their caus remedies	xplain to that about efects in along ses and	5	5 Handout, Book, Work Shop		out,			
			SCHEM	IE OF ASSES	SMEN	T						
S. No Method of D Assessment		Description of	cription of Assessment		/laximum Resou Marks Requ		ırces Externa ired Interna		ernal / ernal			
1	Paper pen test / <mark>Practica</mark> assessment	For the <mark>l</mark> write a Practica	given learning content, Students nswer of questions and face Viva.			10	Progressive Test paper/ End semester exam		Internal /External			
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)												
List of Practical												
1. Study of Static characteristics and dynamics characteristics of instruments.												

CO5	:LO2										
RGPV (Diploma Wing) SC Bhopal			CHEME FOR LEARNING E		Branch Code P05	n Course Code 603	CO Code <mark>05</mark>	LC Coc 02	) <mark>F</mark> le	ormat No. 4	
COURSE NAME PNEUMA			TIC HYDRAULIC CONTROL AND INSTRUMENTATION								
CO	Description	Explain	the characteristics of instrumentation and measuring instruments								
LO	Description	To know a	bout measuring instruments.								
			SCH	HEME OF STU	JDY						
S. No.	Learning (	Content	Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema rks	
1	Pressure flatemperature instruments.	ow and measuring	Traditional Lecture method/ Industry Visit	Teacher will of the contents students so the students know safety measur in an industry Students will industry to kn about safety p	explain s to at v about es taken visit ow practices	5	5	Handout, Book			
SCHEME OF ASSESSMENT											
S. N	No Method of Description of Asse Assessment		Assessment		Maximum Marks	1 Resources Required		External / Internal			
1	Paper pen test / <mark>Practica</mark> assessment	For the all write a Practica	given learnir nswer of q l Viva.	idents face	10	Progressive Test paper/End semester exam		Internal /External			
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)											
List of Practical											
1. Study of Pressure flow and temperature measuring instruments.											

# **Reference Books:**

1 Ramamritham. S, "Fluid Mechanics, Hydraulics and Fluid Machines", DhanpatRai&Sons,Delhi, 2004.

2. Kumar. K.L., "Engineering Fluid Mechanics", 7th Edition, Eurasia Publishing House PrivateLimited, New Delhi, 1995.

3. P. N Modi and S. M. Seth, "Hydraulics and Fluid Mechanics Including Hydraulics Machines", 19th Edition, Standard Book House, 2013

4 Bansal R. K, "Strength of Materials", Laxmi Publications, New Delhi, 2012.

5. Oil Hydraulic Systems- Majumdar, S.R. -Tata McGraw-Hill Publication, 3/e, 2013

6. Hydraulic and Pneumatic Controls- Srinivasan, R.- Vijay Nicole Imprints Private Limited, 2/e, 2008

7. Pneumatic And Pneumatics Controls -Understanding Made Easy K.S.Sundaram,-S.chand Company Delhi

8. Pneumatic Systems - Majumdar, S.R. -Tata McGraw-Hill Publication, 3/e, 20

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