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.

LIST OF SELECTED TERMINAL BEHAVIORS--

- To apply knowledge of mathematics, science, and engineering. TB-1 To understand types and causes of wear. (602) TB-2 To understand lubrication and required properties of lubricants. (602)
- To design and conduct experiments, as well as to analyze and interpret data. TB-1 To identify and measure wear on a part. (602)
 TB-2 To select proper tool and gauge during maintenance of a machine or equipment. (602)
- 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. NIL
- 4. To function on multidisciplinary teams. NIL
- To identify, formulate, and solve engineering problems
 TB- 1 To locate fault in machine or equipment and take a decision to repair or replace the part. (602)
- 6. To understand professional and ethical responsibility NIL
- 7. To communicate effectively NIL
- 8. To understand the impact of engineering solutions in a global, economic, environmental, and societal context. NIL
- 9. To engage in lifelong learning

TB-1 To use grease gun in lubricating various components of any machine. (602) TB-2 To operate fire extinguisher. (602)

10. To use the techniques, skills, and modern engineering tools necessary for engineering practice. NIL

FRAMED COs FOR SELECTED TERMINAL BEHAVIORS

1. To apply knowledge of mathematics, science, and engineering.

TB-1 To understand types and causes of wear. (602)

C04: Explain types of wear and the importance of lubrication.

TB-2 To understand lubrication and required properties of lubricants. (602)

C04: Explain types of wear and the importance of lubrication.

2. To design and conduct experiments, as well as to analyze and interpret data.

TB-1 To identify and measure wear on a part. (602)

C04: Explain types of wear and the importance of lubrication.

TB-2 To select proper tool and gauge during maintenance of a machine or equipment. (602)

CO1: Demonstrate understanding of the importance of plant maintenance.

- 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. NIL
- 4. To function on multidisciplinary teams. NIL
- 5. To identify, formulate, and solve engineering problems

TB-1 To locate fault in machine or equipment and take a decision to repair or replace the part. (602)

CO2: Describe the types of maintenance and general maintenance practices.

- 6. To understand professional and ethical responsibility NIL
- 7. To communicate effectively NIL
- 8. To understand the impact of engineering solutions in a global, economic, environmental, and societal context. NIL
- 9. To engage in lifelong learning
 - TB-1 To use grease gun in lubricating various components of any machine. (602)

C04: Explain types of wear and the importance of lubrication.

TB-2 To operate fire extinguisher. (602)

C05: Explain the general safety regulations in a plant.

10. To use the techniques, skills, and modern engineering tools necessary for engineering practice. NIL

CO GROUPING AND COURSE FORMATION

COURSE NAME: - MAINTENANCE ENGINEERING AND SAFETY (602)

(Total 100 Hrs., Total 100 Marks)

LIST OF COs:-

CO1: Demonstrate understanding of the importance of plant maintenance. (20 Hrs, 20 marks)

CO2: Describe the types of maintenance and general maintenance practices. (20 Hrs, 20 marks)

CO3: Describe the concept of maintainability and optimum maintenance cost. (20 Hrs, 20 marks)

C04: Explain types of wear and the importance of lubrication. (20 Hrs, 20 marks)

C05: Explain the general safety regulations in a plant. (20 Hrs, 20 marks)

LOs FORMATION

COURSE NAME: - MAINTENANCE ENGINEERING AND SAFETY (602) (Total 100 Hrs., Total 100 Marks)

List of COs and LOs

- CO1: Demonstrate understanding of the importance of plant maintenance. (20 Hrs, 20 marks)
- LO1: To explain the effect of maintenance on productivity of a plant. (10 Hrs., 10 Marks)
- LO2: To explain the functions of maintenance department in an industry. (10 Hrs., 10 Marks)

CO2: Describe the types of maintenance and general maintenance practices. (20 Hrs, 20 marks)

- LO1: To explain different types of maintenance. (08 Hrs., 08 Marks)
- LO2: To understand concept of fault tracing. (06 Hrs., 06 Marks)
- LO3: To explain the steps involved in different types of maintenance. (06 Hrs., 06 Marks)

CO3: Describe the concept of maintainability and optimum maintenance cost. (20 Hrs, 20 marks)

- LO1: To explain maintainability and factors affecting maintainability. (10 Hrs., 10 Marks)
- LO2: To define the components of maintenance cost in an industry. (10 Hrs., 10 Marks)

CO4: Explain types of wear and the importance of lubrication. (20 Hrs, 20 marks)

- LO1: To know about the types of wear and the concept of permissible wear. (10 Hrs., 10 Marks)
- LO2: To know the purpose and types of lubrication. (10 Hrs., 10 Marks)

CO5: Explain the general safety regulations in a plant. (20 Hrs, 20 marks)

- LO1: To know about the concept of safety in an industry. (10 Hrs., 10 Marks)
- LO2: To know about general safety practices in an industry. (10 Hrs., 10 Marks)

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RGP	V (Diplo	ma V	Ving) Bhopal		COURSE	E PLAN	1		Format	<mark>t -2</mark>	She	et No. /2
Cou	urse Nan	ne	MAINTENA	NCE F	ENGINEERIN	IG & SA	AFETY	Sem	nester		SIXT	Н
Branc	h	PRO ENC	DUCTION GINEERING	(Course Code	602	No. of	COs	05	No.	of LOs	s 11
Total Tea Lea	Hrs. of ching rning	100	Total Marks	100	Total no. of Assessments		Type Assess	es of ments		N Ex Asse	o. of ternal ssments	8
			DESCR	IPTIC	N OF OUTC	OMES					T-L Hrs.	Max. Marks
CO 01P053021Demonstrate understanding of the importance of plant maintenance.								20	20			
T	PO5302	211	To explain the eff	ect of 1	naintenance on J	productiv	vity of a pl	ant.			08	08
Los	PO5302	212	To explain the fur	nctions	of maintenance	departme	ent in an ii	ndustry.			12	12
CO 02	Describe the types of maintenance and general maintenance Describe the types of maintenance and general maintenance							20	20			
	PO5302	221	To explain differ	ent typ	es of maintenand	ce.					08	08
Los	PO5302	222	To understand co	oncept	of fault tracing.						06	06
	PO5302	223	To explain the st	eps inv	olved in differer	nt types o	of mainten	ance.			06	06
CO 03	P05302	3	Describe the maintenance	conce _] cost.	pt of maintain	ability a	and opt	imum			20	20
T	PO5302	231	To explain main	ainabil	ity and factors a	ffecting	maintainal	bility.			10	10
Los	PO5302	232	To define the con	nponer	nts of maintenand	ce cost ir	n an indus	try.			10	10
CO 04	CO 04P053024Explain types of wear and the importance of lubrication.								20	20		
PO530241To know about the types of wear and the concept of permissible wear.									10	10		
Los PO530242 To know the purpose and types of lubrication.								10	10			
CO 05	CO 05P053025Explain the general safety regulations in a plant.								20	20		

Lec	PO530251	To know about the concept of safety in an industry.	10	10
Los	PO530252	To know about general safety practices in an industry.	10	10

RGPV (DII BI	PLOMA WING HOPAL)	OCB CURRICULUN	M FOR THE COURSE	FORM	IAT- 3	Sheet No. 1/3
Branch	PRODUCTIO	NE	ENGINEERING	Semester		SIXTH	-
Course Code	602	Co	ourse Name	MAINTENANCE ENG	SINEER	ING &	SAFETY
Course Outcome 1	Demonstrate maintenance.	unc	lerstanding of the im	portance of plant		Teach Hrs	Mark s
Learning Outcome 1	To explain the e	effec	ct of maintenance on pro	ductivity of a plant.		08	08
CONTENT	Introduction to r conservation, m enhanced availa	nair 1an-1 bilit	ntenance, its need and ec machine relationship, i y.	onomic significance, effect increased life of machir	ets on pro	oductivit ipment	ty, energy and their
Method of Assessment			Рај	per pen test			
Learning Outcome 2	To explain the f	To explain the functions of maintenance department in an industry.					
CONTENT	Scope and fund responsibilities Industries, Deve fixed joints.	ry & S nce pro procatin	econdary, blems in g Parts &				
Method of Assessment			Paper pen test	/ Practical assessment			
Course Outcome 2	Describe the t	ype	s of maintenance and g	eneral maintenance pra	ctices.		
Learning Outcome 1	To explain diff	erer	nt types of maintenance.			08	08
CONTENT	Different types of Corrective main analysis, conditi	of M tena on r	laintenance Practices e.g ince, Breakdown mainter nonitoring of equipment	. Productive maintenance nance etc., Equipment rep	, Prevent airs histo	ive Mai ory and h	ntenance, history
Method of Assessment			Рар	per pen test			
Learning Outcome 2	ng me 2 To understand concept of fault tracing.						06
CONTENT	Sequence of acti of repair, measu	Sequence of activities in fault finding, decision tree & Logical structure, methods as of repair, measures to prevent repetition of similar faults.					
Method of Assessment	of Paper pen test						

Learning Outcome 3	To explain the steps involved in different types of maintenance.	06	06
CONTENT	Sequence of activities in break down maintenance, servicing and overhauling procedure, Principles and procedure for preventive maintenance.	;: concept	&
Method of Assessment	Paper pen test/ Practical assessment		
Course Outcome 3	Describe the concept of maintainability and optimum maintenance cost.		
Learning Outcome 1	To explain maintainability and factors affecting maintainability.	10	10
CONTENT	Concept of maintainability & its significance, Definition, objective of maintain affecting maintainability, reliability index, optimum volume of maintenance	ability, fa	ctors
Method of Assessment	Paper pen test		
Learning Outcome 2	To define the components of maintenance cost in an industry.	10	10
CONTENT	Maintenance cost components, estimation of maintenance labour cost met methods of material cost, overhead cost, maintenance cost control, main kelvin's graph.	thods, est ntenance	imation budget.
Method of Assessment	Paper pen test		
Course Outcome 4	Explain types of wear and the importance of lubrication.		
Learning Outcome 1	To know about the types of wear and the concept of permissible wear.	10	10
CONTENT	Wear, causes of wear, types of wear, measurement of wear, concept of permiss of wear, wear reduction factors, components replacement, deciding factors,, v of vibrations.	ible wear, vibrations,	causes
Method of Assessment	Paper pen test/ Practical assessment		
Learning Outcome 2	To know the purpose and types of lubrication.	10	10
CONTENT	Concept and significance of lubrication, functions of lubrication, principl hydrodynamic lubrication, boundary lubrication, hydrostatic lubrication, lubricants, Important properties of lubricants, selection of lubricants, types of oil changes: need & sequence for oil change.	e of lubr classifica oil feed s	ication, tion of ystems,

Method of Assessment	Paper pen test/ Practical assessment		
Course Outcome 5	Explain the general safety regulations in a plant.		
Learning Outcome 1	To know about the concept of safety in an industry.	10	10
CONTENT	Safety principles and practices, safe layout, safety aspects of machines/e arrangements during manufacturing processes e.g. welding, grinding, machi chemical, regular plant inspection & safety audit, hazard analysis, safety maintenance and lubrication, safety during material handling in shops, safety in	equipment, ning, hanc aspects nanageme	safety lling of in m/c nt.
Method of Assessment	Paper pen test/ Practical assessment		
Learning Outcome 2	To know about general safety practices in an industry.	10	10
CONTENT	Salient points of safety regulations, fire safety measures, types of fire exworking environment and safety consciousness, Industrial housekeeping, ba for good housekeeping.	xtinguisher asic requir	s, safe ements
Method of Assessment	Paper pen test/ Practical assessment		

CO1	:LO1										
RO	GPV (Diploma Bhopal	Wing)	SCI	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 602	CO Code 01	LC Coc <mark>01</mark>) <mark>F</mark> le	F <mark>ormat</mark> No. 4
COU	URSE NAME	MAINT	'EN.	ANCE ENG	INEERING &	SAFETY	Y	1	1		
CO	Description	Demons	stra	te understa	anding of the	importa	nce of p	lant ma	intena	ance.	
LO	Description	To expla	ain tl	he effect of m	naintenance on j	productiv	ity of a p	lant.			
	-			SCH	HEME OF STU	UDY					
S. No.	S. Learning Content No.			Teaching– Learning Method	Description of T-I Process		Teach Hrs.	Pract. /Tut Hrs.	L Requ	Rs uired	Rema rks
1	1 Introduction to maintenance, its need and economic significance, effects on productivity, energy conservation, man- machine relationship, increased life of machines, equipment and their enhanced availability			Fraditional Lecture method + Assignment	Teacher will of the contents s students under the importance maintenance Shop/ Industr Teacher will of Progressive to assignment.	explain so that erstand ce of in Work y. conduct est/ give	8	-	Hand Book	lout,	
	I			SCHEM	IE OF ASSES	SMENT			1		1
S. N	No Method of Assessmen	t	De	escription of	Assessment	Ν	Iaximun Marks	n Resou Requi	irces ired	Ext Int	ernal / ernal
1 Paper pen test For the giv write answ			given learning content, Students swer of questions.		dents	8	Progre test/ semest exam	ssive End ær	Interr /Exte	nal rnal	
	ADD	ITIONAI	LIN	ISTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)		

CO1:I	LO2									
RG	PV (Diploma W Bhopal	Ving) SC	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 602	CO Code 01	LC Cod 02	e F	ormat No. 4
COU	RSE NAME	MAINTEN	ANCE ENG	INEERING &	SAFET	'Y	-	1	1	
CO	Description	Demonstra	ate understa	anding of the	import	ance of p	lant mai	intena	nce.	
LOD	Description	To explain t	he functions of	of maintenance	departm	ent in an i	ndustry.			
			SCH	HEME OF STU	UDY					
S. No.	Learning Co	ontent	Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	Ll Requ	Rs iired	Rema rks
1	Scope and fur Maintenance, Cla of functions: F Secondary, resp of maintenance of General nate maintenance pro Industries, De trends in maint Maintenance of reciprocating Par joints.	actions of assification Primary & onsibilities lepartment, ure of oblems in evelopment enance , rotating , ts & fixed	Traditional Lecture method + Practical (Work Shop/ Industry Visit)	Teacher will the content students exp scope and f of main department industry. will Progressive t assignment. will visit wo Industry understand maintenance procedure.	explain so tha lain the unction ntenance in an Teache conduc rest/ give Student rk shop to the	n 8 t s s e n r t e s s / D e	4	Hand Book Work Shop	out,	
			SCHEM	IE OF ASSES	SMEN	Г		1		1
S. No	Method of Assessment	D	escription of	Assessment]	Maximum Marks	Resou Requi	irces ired	Exte Inte	ernal / ernal
1 Paper pen test For the given learning content, Students /Practical write answer of questions and face assessment Practical Viva						12	Practic file/Pro sive te End semest exam	eal ogres st/	Intern /Exter	nal
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)									
1.	List of Practical 1. Study of various tools and gauges used in mechanical maintenance.									

CO2	:LO1									
R	GPV (Diploma V Bhopal	Wing) S	SCHEME FOR OUTCO	LEARNING OME	Branch Code P05	Course Code 602	CO Code 02	LC Cod 01) <mark>F</mark> le	format No. 4
COI	URSE NAME	MAINT	ENANCE ENG	INEERING &	SAFET	Y		-1		
CO	Description	Describ	e the types of	maintenance	and gen	eral mai	intenan	ce pra	ctices	•
LO	Description	To expla	ain different type	es of maintenan	.ce.					
			SCH	IEME OF ST	UDY					
S. No.	Learning C	Content	Teaching– Learning Method	Description Proce	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	L) Requ	Rs uired	Rema rks
1	Different ty Maintenance Pr Productive m Preventive M Corrective m Breakdown m etc., Equipment history and histor condition mor equipment	ypes ractices e. naintenanc faintenanc naintenan nt repai ory analys hitoring	of g. Traditional Lecture method + Assignment ce, ce irs is, of	Teacher will the con students s students different ty maintenance. will Progressive t assignment.	explain ntents to o that explain pes of Teacher conduct est/ give	8	-	Hand Book	out,	
			SCHEM	IE OF ASSES	SMENT			1		L.
S. N	No Method of Assessment		Description of	Assessment	Ν	laximum Marks	Resou Requ	urces ired	Exte Int	ernal / ernal
1 Paper pen test For the given learnin write answer of ques				g content, Stu ions.	dents	8 Progree Test pa End semest exam		essive aper/ ter	Interr /Exte	nal rnal
	ADD	TIONAL	L INSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)		

CO2	:LO2									
RC	GPV (Diploma V Bhopal	Wing)	SCHEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 602	CO Code 02	LC Coc 02) F le	'ormat No. 4
COU	URSE NAME	MAINT	ENANCE ENG	INEERING &	SAFET	Y				
CO	Description	Describ	be the types of	maintenance	and gei	neral mai	intenan	ce pra	octices	•
LO	Description	To unde	erstand concept of	of fault tracing.						
			SCH	HEME OF STU	UDY					
S. No.	Learning C	Content	Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	Pract. Li /Tut Requ Hrs.		Rema rks
1	Sequence of a fault finding, d & Logical methods and p repair, measures repetition of sim	activities ecision tr structur rocedure s to preve ilar faults	in Traditional Lecture method + of Assignment	Teacher will ex the contents students so the students know the concept of tracing. Teacher conduct Progree test/ give assigned	xplain to nat about fault er will essive mment.	6	-	Hand Book	lout,	
			SCHEN	/IE OF ASSES	SMENT	Γ		1		1
S. N	Io Method of Assessment		Description of	fAssessment	N	Maximum Marks	Resou Requi	irces ired	External / Internal	
1 Paper pen test For the given leaving write answer of			e given learnin answer of ques	ng content, Students stions.		6	Progre Test pa End semest exam	Progressive Test paper/ End semester exam		al rnal
	ADD	ITIONAI	L INSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)		

CO2	:LO3									
R	GPV (Diploma V Bhopal	Wing) SC	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 602	CO Code 02	LC Cod 03) <mark>F</mark> le	ormat No. 4
COU	URSE NAME	MAINTEN	ANCE ENG	INEERING &	SAFET	Y		1		
CO	Description	Describe	the types of	maintenance	and ger	neral mai	intenan	ce pra	ctices	•
LO	Description	To explain	the steps invo	olved in differen	nt types o	of mainten	ance.			
	-		SCH	HEME OF STU	JDY					
S. No.	Learning C	Content	Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	Pract. Ll /Tut Requ Hrs.		Rema rks
1	Sequence of a break down m servicing and c concept & Principles and p preventive maint	ctivities in naintenance, overhauling: procedure, rocedure for tenance.	Traditional Lecture method + Practical (Work Shop/ Industry)	Teacher will the conter students so t will know al steps invol- preventive breakdown maintenance. students wi learn abou during vis workshop /i Teacher will Progressive assignment.	explain nts to hat they bout the ved in and The Il also it this sit to ndustry. conduct test/give		2	Hand Book Work Shop	out,	
			SCHEM	IE OF ASSES	SMENT	- -				
S. N	No Method of Assessment	D	escription of	Assessment	Ν	/laximum Marks	Resou Requi	irces ired	Exte Inte	ernal / ernal
1 Paper pen test /Practical assessment For the given learning content, Students write answer of questions and face Practical Viva						6	Practic file/ Progre test/ En semest exam	eal ssive nd eer	Intern /Exter	al mal
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	ГҮ (IF A	ANY)		
	List of Practical									
	1. Vi m	isit of works aintenance	hop/ industry	tor collecting in	nformatio	on regardi	ng equipi	nent		

<u>CO3</u>	:LO1										
R	GPV (Diplom Bhopal	a Win	ng) SC	HEME FOR OUTC	LEARNING OME	Brancl Code P05	n Course Code 602	CO Code 03	LO Cod <mark>01</mark>	e F	F <mark>ormat</mark> No. 4
COU	URSE NAME	M	AINTEN	ANCE ENG	INEERING &	SAFET	Y				
CO	Description	D	escribe t	he concept of	f maintainabili	ty and	optimum	mainten	ance co	ost.	
LO	Description	Т	o explain i	maintainability	and factors affec	ting maiı	ntainability.				
		I		SCH	HEME OF STU	UDY					
S. No.	S. Learning Content Io.			Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	Ll Requ	Rs iired	Rema rks
1	1 Concept of maintainability & its significance, Definition, objective of maintainability, factors affecting maintainability, reliability index, optimum volume of maintenance.			Traditional Lecture method + Assignmen t	Teacher will of the contents students so the students under the concept of maintainabili Teacher will co Progressive test/assignment	explain s to hat erstands f ty. onduct	10	-	Hand Book	out,	
				SCHEM	IE OF ASSES	SMEN	Т				
S. N	No Method Assessme	of ent	D	escription of	Assessment		Maximun Marks	n Resou Requ	urces ired	Exte Int	ernal / ernal
1 Paper pen test For the write an				given learning content, Students swer of questions.			10	Progre Test pa Assign /End semest exam	essive aper/ nment ter	Interr /Exte	nal rnal
	AL	וווע	UNAL I	INSTRUCTION INSTRUCTION	JNS FOR TH	E HOD	/ FACUL	IY (IF A	AINY)		

CO3	:LO2												
RGPV (Diploma Wing) SC Bhopal			SCHEME FOR LEARNING Bra OUTCOME C Pt		Branch Code P05	n Course Code 602	CO Code 03	LC Cod 02) <mark>F</mark> le	Format No. 4			
COURSE NAME MAINT			INTENANCE ENGINEERING & SAFETY										
CO	CO Description		Describe the concept of maintainability and optimum maintenance cost.										
LO	Description	To defi	ne th	e components o	of maintenance c	ost in an	industry.						
		1		SCH	HEME OF STU	UDY							
S. No.	Learning Content Teaching Learning Method			Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema rks		
1 Maintenance cost components, estimation of maintenance labour cost methods, estimation methods of material cost, overhead cost, maintenance cost control, maintenance budget. kelvin's graph.			Traditional Lecture method + Assignment	Teacher will of the contents students so the students will if about the components of maintenance Teacher will co Progressive test assignment.	explain s to hat learn of cost. onduct st/ give	10	-	Hand Book	out,				
				SCHEM	IE OF ASSES	SMEN	Г						
S. N	S. No Method of Description Assessment		escription of	f Assessment		Maximum Resourc Marks Require		irces ired	ces External / ed Internal				
1	Paper pen te	st For t write	the g ans	given learnin swer of quest	ng content, Stu tions,	ıdents	10	Progressive Test paper/ Assignment /End semester exam		Internal /External			
	ADD	ITIONA	LI	NSTRUCTIO	ONS FOR TH	E HOD	FACUL	TY (IF A	ANY)				

CO4:	LO1											
RC	PV (Diploma V Bhopal	Ving) S	SCHEME FOR LEARNING B OUTCOME		Branch Code P05	Course Code 602	CO Code <mark>04</mark>	LC Cod 01) <mark>F</mark> le	F <mark>ormat</mark> No. 4		
COURSE NAME MAINT			INTENANCE ENGINEERING & SAFETY									
CO Description Explain			ain types of wear and the importance of lubrication.									
LO Description To know			know about the types of wear and the concept of permissible wear.									
			SCH	HEME OF STU	UDY							
S. No.	Learning C	ontent	Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema rks		
1	Wear, causes types of measurement concept of wear, effects of reduction components re deciding vibrations, c vibrations.	of wea wea of wea permissib wear, we factor eplacemen factor auses	ar, ar, ar, ble car (Work rs, shop) nt, ss, of	Teacher will the contents. will Progressive to Assignment students know possible def casting along causes and ren	explair Teacher conduc est/ give so tha w abou fects ir with their nedies	t t t	4	Handout, Book, Work Shop				
			SCHEM	IE OF ASSES	SMENT							
S. N	o Method of Assessment		Description of	Assessment	Ν	/laximun Marks	n Resources Required		External / Internal			
1	Paper pen tes / <mark>Practical</mark> assessment	t For th write Practio	e given learnin answer of q cal Viva.	idents face	10	Practical file/Progres sive Test paper/ End semester exam		Internal /External				
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)											
	List of Practical											
	 Measurement of wear on cylindrical surfaces by: Vernier caliper/ Micrometer / Dial indicator and v block 											

R	GPV (Diploma Bhopal	Wing) SC	CHEME FOR	LEARNING	Branch	Course	CO Code	LO	F	ormat				
Diopar			0010	OWL	P05	602	04	02	C	4 4				
CO	URSE NAME	MAINTEN	NANCE ENG	INEERING &	SAFETY									
CO	CO Description Explain types of wear and the importance of						f lubrication.							
LO	Description	To know the	e purpose and t	ypes of lubricatio	on.									
			SCH	HEME OF STU	UDY									
S. Learning Content No.			Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema rks				
1 Concept and significance of lubrication, functions of lubrication, principle of lubrication, hydrodynamic lubrication, boundary lubrication, hydrostatic lubrication, classification of lubricants, Important properties of lubricants, selection of lubricants, types of oil feed systems, oil changes: need & sequence for oil change			Traditional Lecture method + Practical (Work Shop / Industry)	Teacher will the contents. will Progressive to Assignment students know the concep importance lubrication industry. Stud visit Work Industry to k lubrication pl procedures.	Teacher will explain the contents. Teacher will conduct Progressive test/ give Assignment so that students know about the concept and importance of lubrication in an industry. Students will visit Work Shop / Industry to know the lubrication plans and			Handout, Book, Work Shop						
			SCHEM	IE OF ASSES	SMENT		-							
S. N	No Method of Assessmen	t E	Description of	Assessment	Ν	laximum Marks	um Resources s Required		External / Internal					
1	Paper pen testFor the given learning content, Students/Practicalwrite answer of questions and faceassessmentPractical Viva.				idents face	10	Practical Interna file/Progres /Extern sive Test paper/ End semester exam			nal rnal				
	ADD	ITIONAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	ΓY (IF A	ANY)						
	List o	Practical												
	 Demonstration Visit of Work 	and operations of the second sec	on of grease g ry for collecti	un in lubricating ng information	g various regarding	compone lubricatio	nts of an on plans.	y availa	able m	achine				

CO5:I	LO1									
RGPV (Diploma Wing) SC Bhopal			SCHEME FOR LEARNING Brand OUTCOME Code P05			h Course Code 602	CO Code 05	LC Coc 01) <mark>I</mark> le	Format No. 4
COU	RSE NAME	MAINTEN	ANCE ENG	INEERING &	SAFE	ГҮ	1		1	
COD	Description	Explain th	e general saf	fety regulations	s in a pl	lant.				
LO D	Description	To know ab	out the concept	t of safety in an in	ndustry.					
			SCH	HEME OF STU	UDY					
S. Learning Content No.			Teaching– Learning Method	Description Proces	of T-L ss	Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema rks
1Safety principles and practices, safe layout, safety aspects of machines/equipment, safety arrangements during (manufacturing processes e.g. welding, grinding, I machining, handling of chemical, regular plant inspection & safety audit, hazard analysis, safety aspects in m/c maintenance and lubrication, safety during material handling in			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	6	4	Handout, Book, Work Shop			
			SCHEM	IE OF ASSES	SMEN	Т				
S. No	Method of Assessment	D	escription of	Assessment		Maximun Marks	n Resources Required		External / Internal	
1	Paper pen testFor the given learning content, Stude/Practical assessmentwrite answer of questions and fa Practical Viva.				idents face	10	10 Progressive Interna Test paper/ /Extern End semester exam			nal rrnal
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR TH	E HOD	/ FACUL	TY (IF A	ANY)		
	List of	Practical								
			1. Demo 2. Demo	onstration and o onstration and o	peration peration	n of protect n of fire ext	ive equip inguishe	oment. r equip	ment.	

CO5:	LO2											
RGPV (Diploma Wing) SC Bhopal			SCHEME FOR LEARNING Bran OUTCOME Coo P05		Branch Code P05	Course Code 602	CO Code 05	LC Cod 02) <mark>F</mark> le	F <mark>ormat</mark> No. 4		
COL	JRSE NAME	MAINTEN	NANCE ENG	INEERING &	SAFET	Y		1	I			
CO Description Explain			xplain the general safety regulations in a plant.									
LO I	Description	To know a	know about general safety practices in an industry.									
	SCHEME OF STUDY											
S. Learning Content No.			Teaching– Learning Method	Description of T-L Process		Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema rks		
1 Salient points of safety regulations, fire safety measures, types of fire extinguishers, safe working environment and safety consciousness, Industrial housekeeping, basic requirements for good housekeeping			Traditional Lecture method/ Industry Visit	Teacher will e the contents students so th students know safety measur in an industry Students will industry to kn about safety p	explain s to hat v about res taken c. visit how practices	8	2 Handout, Book					
			SCHEM	AE OF ASSES	SMENT	[1				
S. N	o Method of Assessment	E	Description of	Assessment	Ν	Aaximun Marks	IaximumResourcesMarksRequired		External / Internal			
1	Paper pen tes / <mark>Practical</mark> assessment	Paper pen testFor the given learning content, Students/Practical assessmentwrite answer of questions and facePractical assessmentPractical Viva.			idents face	10	Progressive Internal Test /Externa paper/End semester exam			nal rnal		
	ADDITIONAL INSTRUCTIONS FOR THE HOI						TY (IF A	ANY)				
	List of Practical											
	 Visit of Work Shop/ Industry for collecting information regarding safety measures. 											

Reference Books:

- 1. Maintenance of Industrial equipments by B. Gelberg G. Poklis
- 2. A guide to efficient Maintenance Management by H. V. Mstwatt
- 3. Modern Maintenance management by Miller and blood.
- 4. Maintainability by Benjamin S. Blanshard, E Edward lowery
- 5. Maintenance engineering hand book By Mcrrow
- 6. An Introduction to safety Engineering and Management By N. V. Krishnan
- 7. Accident prevention Manual for industrial operations by Frank E. McElory,

P. E., C. S. P. editor in chief national safety council.