RGPV (DIPLOMA	OCB CURRICULUM	FORMAT- 3	Sheet
WING) BHOPAL	FOR THE COURSE		No. 1/3
Branch	PRODUCTION ENGINEERING	Semester	THIRD

Course Code	301	Course Name	MATERIAL TECHNOLOGY
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Course Outcome 1	Understand Crystal structures and Bonds	Teach Hrs	Mar ks			
Learning Outcome 1	To know about Engineering Material and properties.	5	5			
CONTENT	Engineering Materials, Classification and their Properties.	•	•			
Method of Assessment	Paper pen test					
Learning Outcome 2	To Identify Crystal Structures	8	8			
CONTENT	Unit cell and space lattice: Crystal system: The seven basic crystal systems; Crystal structure for metallic elements: BCC, FCC and HCP; Coordination number for Simpl Cubic, BCC and FCC; Atomic radius: definition, atomic radius for Simple Cubic, BCC and FCC; Atomic Packing Factor for Simple Cubic, BCC, FCC and HCP; Simple problems on finding number of atoms for a unit cell.					
Method of Assessment	Paper pen test/ Laboratory assessment	7				
Learning Outcome 3	g Outcome 3 To know about Bonds in solids.					
CONTENT	Classification - primary or chemical bond, secondary or molecular bond; Types of primary bonds: Ionic, Covalent and Metallic Bonds; Types of secondary bonds: Dispersion bond, Dipole bond and Hydrogen bond.					
Method of Assessment	Paper pen test/ Laboratory assessment					
Comme Outroma 2						
Course Outcome 2	Understand Phase diagrams, Ferrous metals and its Alloys.					
Learning Outcome 1	To draw Iron Carbon binary diagram.	5	5			
CONTENT Method of Assessment	Isomorphs, eutectic and eutectoid systems; Iron-Carbon binary diagram Carbon Steels; flow sheet for production of iron and steel Paper pen test	n; Iron and				
Learning Outcome 2	To know about classification and composition of ferrous metals	8	8			
CONTENT	Iron ores – Pig iron: classification, composition and effects of impuring Iron: classification, composition, properties and uses; Wrought uses/applications of wrought Iron; comparison of cast iron, wrought ir steel and high carbon steel; standard commercial grades of steel as per	ities on iron Iron: propon and mile	n; Cast perties,			
Method of Assessment	Paper pen test/Laboratory assessment		_			
Learning Outcome 3	To know purpose and effect of alloying element in metals	7	7			
CONTENT	Alloy Steels – purpose of alloying; effects of alloying elements – Impo Silicon steel, High Speed Steel (HSS), heat resisting steel, spring steel (SS): types of SS, applications of SS – magnet steel – composition, pro	, Stainless S	Steel			
Method of Assessment	Paper pen test	T	1			
Course Outcome 3	Understand Non-ferrous metals and its Alloys.					
Learning Outcome 1	earning Outcome 1 To know about properties and uses of non ferrous metals					

CONTENT								
CONTENT	Properties and uses of Aluminium, copper, tin, lead, zinc, magnesium and nickel.							
Method of Assessment	Paper pen test/Laboratory assessment		•					
Learning Outcome 2	To identify composition, properties and uses non ferrous metal alloys	10	10					
CONTENT	Copper alloys: Brasses, bronzes composition, properties and uses; Aluminium alloys: Duralumin, hindalium, magnelium – composition, properties and uses; Nickel alloys: Inconel, monel, nicPerome – composition, properties and uses. Anti-friction/Bearing alloys: Various types of bearing bronzes - Standard commercial grades as per BIS/ASME.							
Method of Assessment	Paper pen test	Paper pen test						
Course Outcome 4	Understand Failure analysis & Testing of Materials.							
Learning Outcome 1	To Identify and perform failure analysis of Material.	10	10					
CONTENT	Introduction to failure analysis; Fracture: ductile fracture, brittle fracture; cleavage; notch sensitivity; fatigue; endurance limit; characteristics of fatigue fracture; variables affecting fatigue life; creep; creep curve; creep fracture							
Method of Assessment	Paper pen test/Laboratory assessment							
Learning Outcome 2	To know about destructive and non-destructive testing.	10	10					
CONTENT	Destructive testing: Tensile testing; compression testing; Hardness testing: Brinell, Rockwell; bend test; torsion test; fatigue test; creep test. Non-destructive testing: Visual Inspection; magnetic particle inspection; liquid penetrant test; ultrasonic inspection; radiography							
Method of Assessment	Paper pen test/Laboratory assessment							
Course Outcome 5	Understand Corrosion & Surface Engineering.							
Learning Outcome 1	To Know about nature and causes of corrosion.	5	5					
CONTENT	Nature of corrosion and its causes; Electrochemical reactions; Electroly	toc	•					
Method of Assessment	Paper pen test	ytes.						
Learning Outcome 2	To know about factors affecting and how to control Corrosion	5	5					
CONTENT	Factors affecting corrosion: Environment, Material properties and physical conditions; Types of corrosion; Corrosion control: Material selection, environment control and design							
Method of Assessment	Paper pen test							
Learning Outcome 3	Able to use surface engineering process: Coatings and surface treatments to prevent corrosion	10	10					
CONTENT	Surface engineering processes: Coatings and surface treatments; Cleaning and mechanical finishing of surfaces; Organic coatings; Electroplating and Special metallic plating; Electro polishing and photo-etching;— Conversion coatings: Oxide, phosphate and chromate coatings; Thin film coatings: PVD and CVD; Surface analysis; Hardfacing, thermal spraying and high-energy processes; Process/material selection. Pollution norms for treating effluents as per standards. Paper pen test/Laboratory assessment							
Method of Assessment	Paper nen test/Laboratory aggaggment							

RGPV	SCHEME FOR	Branch	Course Code	CO	LO	Format
(Diploma	LEARNING	Code	301	Code	Code	No.
Wing) Bhopal	OUTCOME	P05		01	01	4

COURSE NAME	MATERIAL TECHNOLOGY		
CO Description Understand Crystal structures and Bonds			
LO Description To know about Engineering Material and properties.			
SCHEME OF STUDY			

S. No	Learning Content	Teaching— Learning	Description of T-L Process	Teac h	Prac t.	LRs Required	Re ma
		Method		Hrs.	/Tut	rtoquirea	rks
1	Engineering Materials, Classification and their Properties.	Traditional Lecture method	Teacher will explain the contents. Teacher will conduct Progressive test/give Assignment so that students explain Knowledge about Engineering Material and properties.	5	Hrs.	Handout, Book	
		SCH	ÉMÉ OF ASSESSMENT			1	1

S.	Method of	Description of Assessment	Maximu	Resources Required	External /			
No	Assessment		m Marks		Internal			
1	Paper pen test	For the given learning	5	Progressive Test	Internal			
		content, Students write		paper/ End semester	/External			
		answer of questions.		exam				
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)							

RGPV (Diploma	SCHEME FOR	Branch	Course Code	CO	LO	Format
Wing) Bhopal	LEARNING	Code	301	Code	Code	No.
	OUTCOME	P05		<mark>01</mark>	02	4

COURSE NAME	MATERIAL TECHNOLOGY			
CO Description Understand Crystal structures and Bonds				
LO Description	Able To Identify Crystal Structures			
	SCHEME OF STUDY			

S.	Learning Content	Teaching	Description of T-L	Teac	Prac	LRs	Re
No	J	_	Process	h	t.	Required	ma
		Learning Method		Hrs.	/Tut Hrs.		rks
1	Unit cell and space lattice: Crystal system: The seven basic crystal systems; Crystal structure for metallic elements: BCC, FCC and HCP; Coordination number for Simple Cubic, BCC and FCC; Atomic radius: definition, atomic radius for Simple Cubic, BCC and FCC; Atomic Packing Factor for Simple Cubic, BCC, FCC and HCP; Simple problems on finding number of atoms for a unit cell.	Tradition al Lecture method + Practical (Lab visit)	Teacher will explain the contents to students. Conduct quiz and Students will visit Laboratory so that students able to Identify Crystal Structures.	4	4	Handout, Book, Laborato ry	
		SCHEME C	OF ASSESSMENT				

S.	Method of	Description of Assessment	Maximu	Resources Required	External /			
No	Assessment		m Marks		Internal			
1	Paper pen	For the given learning	8	Practical file/ End	Internal			
	test/ <mark>Laborator</mark>	content, Students write		semester exam	/External			
	y assessment	answer of questions, and						
		face Practical Viva						
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)							

List of Practical :Study of crystal structures.

RGPV	SCHEME FOR	Branch	Course Code	CO	LO	Format No.
(Diploma	LEARNING	Code	301	Code	Code	4
Wing) Bhopal	OUTCOME	P05		01	03	_

COURSE NAME	MATERIAL TECHNOLOGY				
CO Description	Understand Crystal structures and Bonds				
LO Description	To know about Bonds in solids.				
	SCHEME OF STUDY				

S.	Learning Content	Teaching	Description of T-L	Teac	Prac	LRs	Re
No		_	Process	h	t.	Required	ma
		Learning		Hrs.	/Tut		rks
		Method			Hrs.		
1	Classification - primary or	Tradition	Teacher will explain	4	3	Handout,	
	chemical bond, secondary or	al	the contents to			Book,	
	molecular bond; Types of	Lecture	students. Conduct			Laborato	
	primary bonds: Ionic, Covalent	method +	progressive test			ry	
	and Metallic Bonds; Types of secondary bonds: Dispersion	Practical	and Students will				
	bond, Dipole bond and	(Lab	visit Laboratory so				
	Hydrogen bond.	visit)	that students know				
			about Bonds in solids.				
		SCHEME C	OF ASSESSMENT	•	•	_	

S.	Method of	Description of Assessment	Maximu	Resources Required	External /
No	Assessment		m Marks		Internal
1	Paper pen	For the given learning	7	Practical file/ End	Internal
	test/ <mark>Laborator</mark>	content, Students write		semester exam	/External
	y assessment answer of questions, and				
		face Practical Viva			
	ADDIT	IONAL INSTRUCTIONS FO	R THE HOI	D/ FACULTY (IF ANY)	

List of Practical: Study of atomic bonds.

RGPV (Diploma	SCHEME FOR	Branch	Course	CO	LO	Format
Wing) Bhopal	LEARNING	Code	Code 301	Code	Code	No.
	OUTCOME	P05		<mark>02</mark>	01	4

COURSE NAME	MATERIAL TECHNOLOGY				
CO Description	Understand Phase diagrams, Ferrous metals and its Alloys.				
LO Description	To draw Iron Carbon binary diagram.				
	SCHEME OF STUDY				

S. No	Learning Content	Teaching— Learning Method	Description of T-L Process	Teac h Hrs.	Pract. /Tut Hrs.	LRs Require d	Re ma rks
1	Isomorphs, eutectic and eutectoid systems; Iron-Carbon binary diagram; Iron and Carbon Steels; flow sheet for production of iron and steel	Traditional Lecture method	the contents. Teacher will conduct Progressive test/ give Assignment so that students draw Iron Carbon binary diagram.	5	-	Handou t, Book	
		SCHEME C	OF ASSESSMENT				

S.	Method of	Description of Assessment	Maximu	Resources Required	External /			
No	Assessment		m Marks		Internal			
1	Paper pen test	For the given learning	5	Progressive Test	Internal			
		content, Students write		paper/ End semester	/External			
answer of questions.				exam				
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)							

RGPV	SCHEME FOR	Branch	Course	CO	LO	Format
(Diploma	LEARNING	Code	Code	Code	Code	No.
Wing) Bhopal	OUTCOME	P05	301	02	02	4

COURSE NAME	MATERIAL TECHNOLOGY					
CO Description	Understand Phase diagrams, Ferrous metals and its Alloys.					
LO Description	To know about classification and composition of ferrous metals					
	SCHEME OF STUDY					

S. No	Learning Content	Teaching— Learning Method	Description of T-L Process	Teac h Hrs.	Prac t. /Tut Hrs.	LRs Required	Re ma rks
1	Iron ores – Pig iron: classification, composition and effects of impurities on iron; Cast Iron: classification, composition, properties and uses; Wrought Iron: properties, uses/applications of wrought Iron; comparison of cast iron, wrought iron and mild steel and high carbon steel; standard commercial grades of steel as per BIS and AISI	Traditional Lecture method + Practical (Lab visit)	progressive test Students will visit Laboratory so that students know about classification and composition of ferrous metals	4	4	Handout, Book, Laborato ry	
		SCHEME (OF ASSESSMENT				

S.	Method of Description of Assessment		Maximu	Resources Required	External /
No	Assessment		m Marks		Internal
1	Paper pen	For the given learning	8	Practical file/ End	Internal
	test/ <mark>Laborator</mark>	content, Students write		semester exam	/External
	y assessment answer of questions, and				
		face Practical Viva			
	ADDIT	IONAL INSTRUCTIONS FO	R THE HOI	D/ FACULTY (IF ANY)	

List of Practicals:

- 1. Study and use of metallurgical microscope.
- 2. Prepare a specimen and examine the micro-structure of the Ferrous metals using the Metallurgical Microscope.

RGPV	SCHEME FOR	Branch	Course Code	CO	LO	Format No.
(Diploma	LEARNING	Code	301	Code	Code	4
Wing) Bhopal	OUTCOME	P05		<mark>02</mark>	03	_

COURSE NAME	MATERIAL TECHNOLOGY					
CO Description	Understand Phase diagrams, Ferrous metals and its Alloys.					
LO Description	To know purpose and effect of alloying element in metals					
	SCHEME OF STUDY					

S. No	Learning Content	Teaching— Learning Method	Description of T-L Process	Teac h Hrs.	Prac t. /Tut Hrs.	LRs Required	Re ma rks
1	Alloy Steels – purpose of alloying; effects of alloying elements – Important alloy steels: Silicon steel, High Speed Steel (HSS), heat resisting steel, spring steel, Stainless Steel (SS): types of SS, applications of SS – magnet steel – composition, properties and uses.	Traditional Lecture method	the contents. Teacher will conduct Progressive test/ give Assignment so that students know purpose and effect of alloying element in metals	7	-	Handout, Book	
		SCHEME C	OF ASSESSMENT				

S.	Method of	Description of Assessment	Maximu	Resources Required	External /			
No	Assessment		m Marks		Internal			
1	Paper pen test	For the given learning	7	Progressive Test	Internal			
		content, Students write		paper/ End semester	/External			
answer of questions. exam								
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)							

RGPV	SCHEME FOR	Branch	Course	CO	LO	Format
(Diploma	LEARNING	Code	Code 301	Code	Code	No.
Wing) Bhopal	OUTCOME	P05		<mark>03</mark>	01	4

COURSE NAME	MATERIAL TECHNOLOGY					
CO Description	Understand Non-ferrous metals and its Alloys.					
LO Description	To know about properties and uses of non ferrous metals					
	SCHEME OF STUDY					

	S.	Learning Content	Teaching-	Description of T-L	Teac	Prac	LRs	Re		
Properties and uses of Aluminium, copper, tin, lead, zinc, magnesium and nickel. Traditional Lecture the contents to method + Practical (Lab visit) Traditional Lecture the contents to students. Conduct progressive test (Lab visit) and Students will visit Laboratory so that students know about properties and	No		Learning	Process	h	t.	Required	ma		
Properties and uses of Aluminium, copper, tin, lead, zinc, magnesium and nickel. Traditional Lecture method + Practical (Lab visit) Traditional Lecture method + Practical visit Laboratory so that students know about properties and			Method		Hrs.	/Tut		rks		
Properties and uses of Aluminium, copper, tin, lead, zinc, magnesium and nickel. Lecture method + Practical progressive test (Lab visit) I book, Laborato ry Book, Laborato ry I book, Laborato ry						Hrs.				
Aluminium, copper, tin, lead, zinc, magnesium and nickel. Lecture method + students. Conduct progressive test (Lab visit) Lecture method + practical progressive test and Students will visit Laboratory so that students know about properties and	1	Properties and uses of	Traditional	Teacher will explain	4	6	Handout,			
zinc, magnesium and nickel. method + students. Conduct progressive test (Lab visit) and Students will visit Laboratory so that students know about properties and		r	Lecture	the contents to			Book,			
Practical progressive test (Lab visit) and Students will visit Laboratory so that students know about properties and			method +	students. Conduct			Laborato			
visit Laboratory so that students know about properties and		, 2	Practical	progressive test			ry			
that students know about properties and			(Lab visit)	and Students will						
about properties and				visit Laboratory so						
uses of non ferrous										
metals SCHEME OF ASSESSMENT										

S.	Method of	Description of Assessment	Maximu	Resources Required	External /	
No	Assessment		m Marks		Internal	
1	Paper pen	For the given learning	10	Practical file/ End	Internal	
	test/Laborator	content, Students write		semester exam	/External	
y assessment answer of questions, and						
face Practical Viva						
	ADDIT	IONAL INSTRUCTIONS FO	R THE HOI	D/ FACULTY (IF ANY)		

List of practical:

1. Prepare a specimen and examine the micro-structure of the Non- ferrous metals using the Metallurgical Microscope.

RGPV	SCHEME FOR	Branch	Course Code	CO	LO	Format No.
(Diploma	LEARNING	Code	301	Code	Code	4
Wing) Bhopal	OUTCOME	P05		<mark>03</mark>	02	_

COURSE NAME	MATERIAL TECHNOLOGY				
CO Description	Understand Non-ferrous metals and its Alloys.				
LO Description	To identify composition, properties and uses non ferrous metal alloys				
SCHEME OF STUDY					

S. No	Learning Content	Teaching— Learning Method	Description of T-L Process	Teac h Hrs.	Prac t. /Tut Hrs.	LRs Required	Re ma rks
1	Copper alloys: Brasses, bronzes composition, properties and uses; Aluminium alloys: Duralumin, hindalium, magnelium — composition, properties and uses; Nickel alloys: Inconel, monel, nicPerome — composition, properties and uses. Anti-friction/Bearing alloys: Various types of bearing bronzes — Standard commercial grades as per BIS/ASME.	Traditional Lecture method	the contents. Teacher will conduct Progressive test or quiz and give Assignment so that students identify composition, properties and uses non ferrous metal alloys	10	-	Handout, Book	
		SCHEME C	OF ASSESSMENT				

S. No	Method of Assessment	Description of Assessment	Maximu m Marks	Resources Required	External / Internal			
Paper pen test For the given learning content, Students write answer of questions. Progressive Test In paper/ End semester /E								
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)							

CO4:LO1

RGPV	SCHEME	Branch	Course	СО	LO	Format No.			
(Diploma	FOR	Code	Code 301	Code	Code	4			
Wing)	LEARNIN	P05		<mark>04</mark>	<mark>01</mark>	_			
Bhopal	G								
	OUTCOME								
COURSE		MATERIAL TECHNOLOGY							
NAME									
CO	Understand Fai	lure analysis & T	Testing of Materi	als.					
Description		•	O						
LO	To Identify and	To Identify and perform failure analysis of Material.							
Description	Description Description								
		SCI	HEME OF STU	JDY					

S.	Learning Content	Teaching-	Description of T-L	Teac	Prac	LRs	Re
No		Learning	Process	h	t.	Required	ma
		Method		Hrs.	/Tut		rks
					Hrs.		
1	Introduction to failure analysis; Fracture: ductile fracture, brittle fracture; cleavage; notch sensitivity; fatigue; endurance limit; characteristics of fatigue fracture; variables affecting fatigue life; creep; creep curve; creep fracture.	Traditional Lecture method + Practical (Lab visit)	Teacher will explain the contents to students. Students will visit Laboratory so that students Identify and perform failure analysis of Material.	4	6	Handout, Book, Laborato ry	
		SCHEME C	OF ASSESSMENT	•			

S. No	Method of Assessment Assessment		Maximu m Marks	Resources Required	External / Internal		
110	Assessment		III IVIAI KS		Internal		
1	Paper pen	For the given learning	10	Practical file/ End	Internal		
	test/ <mark>Laborator</mark>	content, Students write		semester exam	/External		
	y assessment	answer of questions, and					
	face Practical Viva						
	ADDIT	IONAL INSTRUCTIONS FO	R THE HOI	O/ FACULTY (IF ANY)			

List of practical

- 1. Study of Universal Testing Machine.
- 2. Finding Young's Modulus of Elasticity, yield points, percentage elongation and percentage reduction in area, stress strain diagram plotting, tests on mild steel.
- 3. Finding the resistance of materials to impact loads by Izod test and Charpy test.

CO4:LO2

RGPV	SCHEME FOR	Branch	Course	CO	LO	Format
(Diploma	LEARNING	Code	Code	Code	Code	No.
Wing) Bhopal	OUTCOME	P05	301	<mark>04</mark>	02	4

COURSE NAME	MATERIAL TECHNOLOGY				
CO Description	Understand Failure analysis & Testing of Materials.				
LO Description	·				
SCHEME OF STUDY					

S. No	Learning Content	Teaching— Learning Method	Description of T-L Process	Teac h Hrs.	Prac t. /Tut Hrs.	LRs Required	Re ma rks
1	Destructive testing: Tensile testing; compression testing; Hardness testing: Brinell, Rockwell; bend test; torsion test; fatigue test; creep test. Non-destructive testing: Visual Inspection; magnetic particle inspection; liquid penetrant test; ultrasonic inspection; radiography	Traditional Lecture method + Practical (Lab visit)	will visit Laboratory so that students know about destructive and non- destructive testing.	4	6	Handout, Book, Laborato ry	
		SCHEME C	OF ASSESSMENT				

S.	Method of	Description of Assessment	Maximu	Resources Required	External /	
No	Assessment		m Marks		Internal	
1	Paper pen	For the given learning	10	Practical file/ End	Internal	
	test/ <mark>Laborator</mark>	content, Students write		semester exam	/External	
	y assessment	answer of questions, and				
	face Practical Viva					
	ADDIT	IONAL INSTRUCTIONS FO	R THE HOI	D/ FACULTY (IF ANY)		

List of practical

- 1. Detect the cracks in the specimen using (i) Visual inspection and ring test (ii) Die penetration test (iii) Magnetic particle test.
- 2. Determination of Rockwell's Hardness Number for various materials like mild steel, high carbon steel, brass, copper and aluminium.

RGPV	SCHEME FOR	Branch	Course Code	CO	LO	Format No.
(Diploma	LEARNING	Code	301	Code	Code	4
Wing) Bhopal	OUTCOME	P05		<mark>05</mark>	01	_

COURSE NAME	MATERIAL TECHNOLOGY
CO Description	Understand Corrosion & Surface Engineering.
LO Description	To Know about nature and causes of corrosion.
	SCHEME OF STUDY

S. No	Learning Content	Teaching— Learning Method	Description of T-L Process	Teac h Hrs.	Prac t. /Tut	LRs Required	Re ma rks
•					Hrs.		IKS
1	Nature of corrosion and its causes; Electrochemical reactions; Electrolytes.	Traditional Lecture method	the contents. Teacher will conduct Progressive test/ give Assignment so that students Know about nature and causes of corrosion.	5	-	Handout, Book	
		SCHEME C	OF ASSESSMENT				

S.	Method of	Description of Assessment	Maximu	Resources Required	External /		
No	Assessment		m Marks		Internal		
1	Paper pen test	For the given learning	5	Progressive Test	Internal		
		content, Students write		paper/ End semester	/External		
		answer of questions.		exam			
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)						

RGPV	SCHEME FOR	Branch	Course	CO	LO	Format
(Diploma Wing)	LEARNING	Code	Code 301	Code	Code	No.
Bhopal	OUTCOME	P05		<mark>05</mark>	02	4

COURSE NAME	MATERIAL TECHNOLOGY
CO Description	Understand Corrosion & Surface Engineering.
LO Description	To know about factors affecting and how to control Corrosion
	SCHEME OF STUDY

S. No	Learning Content	Teaching— Learning Method	Description of T-L Process	Teac h Hrs.	Prac t. /Tut Hrs.	LRs Required	Re ma rks
1	Factors affecting corrosion: Environment, Material properties and physical conditions; Types of corrosion; Corrosion control: Material selection, environment control and design	Traditional Lecture method	the contents. Teacher will conduct Progressive test/ give Assignment so that students know about factors affecting and how to control Corrosion	5	-	Handout, Book	
		SCHEME C	OF ASSESSMENT				

S.	Method of	Description of Assessment	Maximu	Resources Required	External /			
No	Assessment		m Marks		Internal			
1	Paper pen test	For the given learning	5	Progressive Test	Internal			
		content, Students write		paper/ End semester	/External			
	answer of questions. exam							
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)							

RGPV (Diploma	SCHEME FOR	Branch	Course Code	СО	LO	Format
Wing) Bhopal	LEARNING	Code	301	Code	Code	No.
	OUTCOME	P05		<mark>05</mark>	03	4

COURSE NAME	MATERIAL TECHNOLOGY					
CO Description	Understand Corrosion & Surface Engineering.					
LO Description	Able to use surface engineering process: Coatings and surface treatments to prevent corrosion					
SCHEME OF STUDY						

S.	Learning Content	Teaching-	Description of T-L	Teac	Prac	LRs	Re
No		Learning	Process	h	t.	Required	ma
		Method		Hrs.	/Tut		rks
					Hrs.		
1	Surface engineering processes: Coatings and surface treatments; Cleaning and mechanical finishing of surfaces; Organic coatings; Electroplating and Special metallic plating; Electro polishing and photo-etching;—Conversion coatings: Oxide, phosphate and chromate coatings; Thin film coatings: PVD and CVD; Surface analysis; Hard-facing, thermal spraying and high-energy processes; Process/material selection. Pollution norms for treating effluents as per standards.	Traditional Lecture method + Practical (Lab visit)	Teacher will explain the contents to students. Conduct progressive test and Students will visit Laboratory so that students Able to use surface engineering process: Coatings and surface treatments to prevent corrosion	6	4	Handout, Book, Laborato ry	
		SCHEME C	OF ASSESSMENT				

S.	Method of	Description of Assessment	Maximu	Resources Required	External /					
No	Assessment		m Marks		Internal					
1	Paper pen	For the given learning	10	Practical file/ End	Internal					
	test/ <mark>Laborator</mark>	content, Students write		semester exam	/External					
	y assessment	answer of questions, and								
		face Practical Viva								
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)									

List of Practical

Study of types of corrosion and types of coating, surface treatment methods for prevention of corrosion.

Reference Books:

A Text Book of Material Science & Metallurgy – O.P. Khanna, Dhanpath Rai and Sons, New Delhi. 2003.

Material Science & Engineering – R.K. Rajput, S.K. Kataria & Sons, New Delhi, 2004.

Material Science – R.S. Khurmi, S. Chand & Co. Ltd., New Delhi, 2005.

Materials Science by B.S. Narang (Pub. CBS pub. & Distributions New Delhi)

Material Science and Process. by S. K. Hazra Choudhry

	PLO HOP	MA WING)	OCB CURRICULUI	M FOR THE COURSE	FORM	IAT- 3	Sheet No. 1/3		
Branch	PF	RODUCTION	ENGINEERING	Semester	1	THIRD			
Course Code		302	Course Name	FOUNDRY AND WEI	LDING T	TECHNO	LOGY		
Course Outcome	e 1	Demonst	rate understandin	g of casting proce	ss	Teach Hrs	Mark s		
Learning Outcome 1			erns, cores, types of patterns			10	10		
CONTENT		skeleton – segn	atterns: Definition – Types of pattern – solid piece – split piece – loose piece – match plate – sweep- eleton – segmental – cope and drag – Pattern materials – Pattern allowances, Pattern making tools. ores: core & core prints, Color coding for patterns & core prints						
Method of Assessment	•		Paper pen test/ Practical assessment						
Learning Outcome 2		To explain mor	ulds, moulding sands and mo	ulding techniques		10	10		
CONTENT			nd – constituents – types – proles – moulding boxes – Types toulding						
Method of Assessment	•		Paper pen test/ Practical assessment						
Learning Outcome 3		To know about	To know about casting processes 10 10						
CONTENT			sting – Investment casting – sting – Gravity die casting –				- Cold		
Method of Assessment				Paper pen test					
Learning Outcom	me	To know about r	nelting furnaces			05	05		
CONTENT			upola furnace – Crucible furnace – Indirect arc – Induction furna		l – Oil fired	d – Electric i	furnace –		
Method of Assessment				Paper pen test					
Course Outcome	e	Illustrate p	rinciples of joining pro	ocesses					
Learning Outcome 1		To know joinin brazing	g processes and able to different	iate between welding, soldering	g and	06	06		
CONTENT		Fastening - So brazing	oldering - Brazing - weldi	ng - Difference between v	welding,	soldering	and		
Method of Assessment				Paper pen test					
Learning Outcome 2		To know about	welding, classification of welding	ng and weldability		06	06		
CONTENT			ification of welding proces ostweld treatment -Types		– Welding	g electrod	es –		
Method of Assessment			Paper per	n test/ Practical assessment					

Learning Outcome 3	To explain about safety during welding	04	04
CONTENT	Safety in welding: personal safety and equipment safety		
Method of Assessment	Paper pen test/ Practical assessment		
Course Outcome 3	Demonstrate applications of various types of welding processes		
Learning Outcome 1	To know the principle and types of arc welding	10	10
CONTENT	Arc Welding: Definition – arc welding equipment – electrode types – flux materials – arcrc welding methods – Metal arc – Metal Inert gas Tungsten inert gas (TIG) - Submerged arc – Resistance welding – Spo – Plasma arc welding	(MIG)	_
Method of Assessment	Paper pen test/ Practical assessment		
Learning Outcome 2	06	06	
CONTENT	Thermit welding - Electron beam welding - Laser beam welding -Ult welding - working principle - applications	rasonic	
Method of Assessment	Paper pen test		
Learning Outcome 3	To explain gas welding process	08	08
CONTENT	Gas welding: Oxy-acetylene welding – gas welding equipment –three – welding techniques – filler rods. – flame cutting	types o	f flame
Method of Assessment	Paper pen test/ Practical assessment		
Course Outcome 4	Explain the causes and remedies of defects in castings		
Learning Outcome 1	To know about the possible defects in castings	10	10
CONTENT	Defects in casting - causes and remedies		
Method of Assessment	Paper pen test		
Learning Outcome 2	To know about inspection and testing of castings	05	05
CONTENT	Inspection and testing of castings – destructive and non-destructive – magnetic particle test – radiographic and ultrasonic test.	e types (of tests

Method of Assessment	Paper pen test		
Course Outcome 5	Explain the causes and remedies of defects in welded joints		
Learning Outcome 1	To know about the possible defects in welded joints	05	05
CONTENT	Defects in welded joints - causes and remedies		
Method of Assessment	Paper pen test		
Learning Outcome 2	To know about inspection and testing of welded joints	05	05
CONTENT	Inspection and testing of welded joints - destructive and non-destructests - magnetic particle test - radiographic and ultrasonic test.	ıctive typ	oes of
Method of Assessment	Paper pen test		

COI:	LUI									
RGPV (Diploma Wing) S Bhopal			SCHEME FOR LEARNING Brand OUTCOME Code P05			Course Code 302	CO Code 01	LO Cod 01		F <mark>ormat</mark> No. 4
COU	JRSE NAME	FOUNDR	Y AND WEL	DING TECHN	OLOGY	Y				
CO Description Demonstrate understanding of casting process										
LO Description To explain patterns, cores, types of patterns and pattern allowances										
			SCI	HEME OF STU	UDY					
S. No.	Learning Content		Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	LI Requ		Rema rks
1	Patterns: Definition – Types of pattern – solid piece – split piece – loose piece – match plate – sweep- skeleton – segmental – cope and drag – Pattern materials – Pattern allowances, Pattern making tools. Cores: core & core prints, Color coding for patterns & core prints		Teacher will explain the contents. Teacher will conduct Progressive test/ give Assignment. Also students will do practical to gain Knowledge of patterns, types of patterns, pattern allowances and cores			4	Hando Book Found Shop	,		
			SCHEM	IE OF ASSES						
S. N	Method of Assessment		Description of	f Assessment	N	Maximum Marks	Resou Requi			ernal / ernal
Paper pen test/ For the given learning write answer of quest assesment Practical Viva						Progre test/ semest exam/ Practic file	End	Interr /Exte		
	ADDI	TIONAL I	INSTRUCTION INSTRUCTION	ONS FOR TH	E HOD/	FACUL	ΓY (IF A	ANY)		
	List of	Practical	given commo	n with LO2						

COLL	.02									
RG	PV (Diploma W Bhopal	Ving) SC	OUTCOME		Branch Code P05	Course Code 302	CO Code 01	LO Code	_	Format No. 4
COU	RSE NAME	FOUNDRY	AND WELD	DING TECHNO	LOGY	1	1			
CO I	Description	Demons	strate und	lerstanding	of cas	sting p	rocess			
LO D	escription	To explain m	noulds, mouldir	ng sands and mou	ılding tech	niques				
			SCH	HEME OF STU	UDY					
S. No.	Learning Co	ontent	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	LF Requ		Rema rks
1	Moulding sand – Loop constituents – types – properties of moulding sand preparation – moulding tools – moulding boxes – Types of moulds – green sand mould – dry sand mould – methods of moulding			the content will	Teacher conduct test/quiz students moulds sand, of and, types s and		4	Hando Book, Found Shop	,	
			SCHEM	IE OF ASSES		,				
S. No	Method of Assessment	D	escription of	Assessment	N	Iaximum Marks	Resou Requi			ernal / ernal
1	Paper pen test Practical assesment	al write answer of questions and face			dents	10	Progretest/ semestexam/ Practicefile	End	Interr /Exte	
	ADDI	ΓΙΟΝAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)		
	f Practical (LC									
Prepar	e the green sand m	ould using the Solid Pattern	Ū							

- Solid Pattern
 - 1. Stepped pulley/ Bearing top
- Split Pattern
 - 2. Bent Pipe/ T-pipe with core print
 - 3. Dumble
- Loose Piece Pattern
 - 4. Dovetail
- Core Preparation
 - 5. Core preparation for Bent pipe/ T-pipe

					ı	T						
RO	GPV (Diploma V Bhopal	Wing) S	SCHEME FOR OUTC		Branch Code P05	Code 302	CO Code 01	LO Cod <mark>03</mark>	e	ormat No. 4		
COI	URSE NAMEF	UNDRY	AND WELDIN	G TECHNOLO	GY				·			
СО	Description	Demons	trate understa	anding of cast	ing proc	ess						
LO	Description	To know a	about casting proc	esses								
			SCHI	EME OF STU	DY							
S No.												
1 S hell mould casting — Traditional Te Investment casting — Pressure die casting — Hot chamber die casting — Cold chamber die casting — Gravity die casting — Centrifugal casting — Continuous castin												
			SCHEME	E OF ASSESS	MENT							
S.No	Method of Assessment		escription of As	ssessment		Iaximum Marks	Resou Requi			ernal / ernal		
1	Paper pen test		e given learning answer of quest	_	dents	10 Pr	Test pa End semest exam	aper/	Intern /Exte			
	ADDIT	IONAL I	INSTRUCTIO	NS FOR THE	HOD/ F	ACULT	Y (IF Al	VY)				

71.LU4										
, ,	ploma Win Bhopal	ig) SC	HEME FOR OUTC	LEARNING OME	Branch Code P05	Code 302	CO Code 01	LO Cod <mark>04</mark>	le	ormat No. 4
COURSE	NAMEF)U	JNDRY A	ND WELDIN	G TECHNOLO	GY				"	
CO Descri	ption L	Demonstr	ate understa	anding of cast	ing proc	cess				
LO Descri	otion _T	To know abo	out melting furn	iaces						
	<u> </u>		SCHI	EME OF STU	DY					
S Lear No.	ning Conte	ent	Teaching— Learning Method	Description Proces		Teac R ra Hrs.	act. /Tut Hrs.	Li Requ	Rs iired	Rema rks
furna types fired furna arc – Induc	rnace – Cupo ce – Crucibi – Pit furnace – Oil fired – ce – types – Indirect arcetion furnace ing principle	le furnace ce – Coke – Electric - Direct c –	aditional Te Lecture method + Assignment	acher will exp content students. Teac conduct Prog test/give ass so that studen know about d metal melting furnaces.	to cher will ressive ignment its will lifferent		- Ha	ndout Book		
			SCHEMI	E OF ASSESS	MENT					
~	ethod of sessment	Desc	cription of As	ssessment	N	Aaximum Marks	Resou Requi			ernal / ernal
1 Paper	pen test	_	given learning swer of quest	g content, Stud tions.	lents	05 Pi	Test pa End semest exam	aper/	Intern /Exter	
	ADDITIO	ONAL IN	STRUCTIO	NS FOR THE	HOD/ F	FACULT'	Y (IF Al	VY)		

RGF	Diploma W Bhopal	ing) SC	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 302	CO Code 02	LO Coc <mark>01</mark>	le	Format No. 4
OU	RSE NAMEF)U	JNDRY AI	ND WELDIN	G TECHNOLO	OGY	1	1		l l	
O D	Description Illu	istrate pr	inciples of w	velding proce	sses.					
O D	escription To l	know joinin	g processes and	d able to different	tiate betw	een weldin	g, solderii	ng and	brazing	
	1			SCHEME O	F STUI	ΟY				
S.	Learning Conte	nt	Teaching - Learning Method	Description Proces		Teach Hrs.	act. /Tut Hrs.		Rs uired	Rema rks
-	stening – Sold Brazing – w Difference welding, solde brazing	elding – betweer	Lecture method +	han	provide dout to her will essive at some sees and ween		- H	andou Book	•	
			SC	CHEME OF A	SSESSI	MENT				
Ş .	Method of Assessment	Desc	ription of As	ssessment	N	Maximun Marks	Resou Requ		Ext	ernal / Internal
Pa	aper pen test	_	given learning swer of quest	g content, Studions.	dents	6 P	rogressi Test p End semest exam	aper/	Intern /Exte	

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

RC	BPV (Diploma V Bhopal	Wing) SO	CHEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 302	CO Code 02	LC Coc 02	le	Format No. 4
COU	JRSE NAME	FOUNDR	Y AND WELD	DING TECHNO	LOGY					
CO	Description	Illustrate	e principles o	of welding pro	cesses.					
LO I	Description	To know a	bout welding, cl	assification of we	elding and	d weldabilit	ty			
			SCF	HEME OF STU	JDY					
S. No.	Learning C	Content	Teaching– Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.		Rs uired	Rema rks
1	Welding, Class welding proces Weldability of Welding electr Preweld and po treatment –Typ welded joints	s — metals– odes – ostweld	Traditional Lecture method + Assignment	Teacher will exthe contents students. Teach conduct Progretest/quiz sestudents know welding, classion of welding and weldability	to her will essive that about ification	6	-	Hand Book	,	
			SCHEM	ME OF ASSES	SMENT	Γ				
S. N	o Method of Assessment		Description of	f Assessment	N	Maximum Marks	Resou Requi			ernal / ernal
1	Paper pen te		given learnin swer of ques	g content, Stud tions.	dents	6	Progree Test pa End semest exam	aper/	Interr /Exte	
	ADDI	TIONAL	INSTRUCTION	ONS FOR TH	E HOD/	FACUL	TΥ (IF A	ANY)		

	PV (Diploma V	Wing) SC	THEME EOD	LEARNING	Branch	Course	СО	LC) I	Format
NC	Bhopal	Wilig) SC	OUTC		Code P05	Code 302	Code 02	Coc 03	le	No. 4
COL	IRSE NAME	FOUNDRY	Y AND WELD	DING TECHNO	LOGY	<u></u>	1		II.	
CO I	Description	Illustrate	e principles o	of welding pro	cesses.					
LO I	Description		about safety du							
			SCH	HEME OF STU	UDY					
S. No.	Learning C	Content	Teaching– Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.		Rs uired	Rema rks
1	Safety in personal sa equipment saf	welding: fety and fety	Laatuma	Teacher will the safety me during welding students. The students will about safety welding while working in w shop.	asures ng to learn during e	2	2	Hand Book Weld Shop	ing	
			SCHEM	ME OF ASSES	SMEN	Γ				
S. N	o Method of Assessment		Description of	f Assessment	l	Maximum Marks	Resou Requi			ernal / ernal
1	Paper pen te /Practical assessment		inswer of q	ng content, Stu juestions and		4	Practic file/ semest exam	End	Intern /Exte	
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	ΓY (IF A	ANY)		
	S	Student will	l learn about	safety during I	Practical	l in Weldi	ng Shop	<mark>)</mark>		

CO3:	LO1									
RC	SPV (Diploma V Bhopal	Wing) SC	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 302	CO Code 03	LO Cod 01	_	Format No. 4
COL	JRSE NAME	FOUNDRY	AND WELD	ING TECHNO	LOGY		1	1		
CO	Description	Demonst	rate applica	tions of vario	us types	of weldi	ng proc	esses.		
LO I	Description			types of arc weld						
				HEME OF ST						
S. No.	Learning C	ontent	Teaching– Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	LI Requ		Rema rks
1	Arc Welding: I arc welding electrode types flux material welding method arc — Metal (MIG) — Turn gas (TIG) - Submark — Resistance Spot welding — welding	quipment — — filler and s — arc eds — Metal Inert gas egsten inert omerged arc welding —	Practical (Welding Shop)	Teacher will of the contents students. Stude will do practif welding shop understand at welding technic	to dents deal in to to	6	4	Hande Book Weld Shop	,	
			SCHEM	IE OF ASSES	SMENT			1		II.
S. N	Method of Assessment		escription of	Assessment	N	Aaximum Marks	Resou Requi			ernal / ernal
1	Paper pen tes /Practical assessment		nswer of q	ng content, Stu questions and		10	Practic file/ semest exam	End	Interr /Exte	
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	ΓΥ (IF A	ANY)		
List	of Practical									
Make	e the following w	elding joint:								
	•	Arc weldi	ng (Raw Mate	erial: 25 mmx6	mm MS	flat)				
		1. L	ap joint							
		2. B	utt joint							
		3. T-	-joint							

CO3:LO2										
RGPV (Diplon Bhopa	O ,	SC	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 302	CO Code 03	Coc 02	le	Format No. 4
COURSE NAM	E FOUN	DRY	AND WELD	ING TECHNO	LOGY		-			
CO Description	Dem	onsti	rate applicat	tions of vario	us types	of weldi	ng proc	esses.		
LO Description	To kn	ow the	e principle and	working of advar	nced weld	ing process	ses			
	,		SCF	HEME OF STU	JDY					
S. Learnin	g Content		Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	L. Requ	Rs uired	Rema rks
Thermit Electron be Laser bea Ultrasonic working applications	m weldin welding principle	g –	Traditional Lecture method + Assignmen t + Quiz	Teacher will ethe contents students. will learn about working and applications of advanced well processes	s to Students out	6	-	Hand Book		
			SCHEM	IE OF ASSES	SMENT	•				1
S. No Method Assessm		D	escription of	Assessment	N	Iaximum Marks	Resou Requ			ernal / ernal
1 Paper per		_	given learning swer of quest	g content, Studions,	dents	6	Assign End semest exam		Interi /Exte	
AI	DITION	AL I	NSTRUCTIO	ONS FOR THI	E HOD/	FACUL	ΓΥ (IF A	ANY)		

CO3	:LO3									
RO	GPV (Diploma V Bhopal	Wing) S	SCHEME FOR OUTC		Branch Code P05	Course Code 302	CO Code 03	Coc 03	le	Format No. 4
COI	URSE NAME	FOUNDI	RY AND WELD	ING TECHNO	LOGY	1			"	
CO	Description	Demon	strate applicat	tions of vario	us types	of weldi	ng proc	esses.		
LO	Description	To explai	in gas welding pro	ocess						
		I	SCH	HEME OF STU	UDY					
S. No.	Learning (Content	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.		Rs uired	Rema rks
	Gas welding: Ox welding – g equipment –thr flames – welding filler rods. – flan	gas welc ee types g technique	din Lecture fmethod +	Teacher will of the contents students. will visit Lab so that explain refrigeration calculate COP	s to Students		4	Hand Book Weld Shop	ing	
			SCHEM	IE OF ASSES	SMENT					
S. N	Method of Assessment		Description of	Assessment		Iaximum Marks	Resou Requi		-	ernal / ternal
1	Paper pen te /Practical assessment	write	ne given learnin answer of q cal Viva	-		8	Practic file/ semest exam	End	Interi /Exte	
	ADD]	TIONAL	INSTRUCTIO	ONS FOR TH	E HOD/	FACULT	ΓΥ (IF A	(YV		

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

List of Practicals

Make the following welding joint/cutting:

Gas Welding (Raw Material: 25mmx3mm MS flat)

- 1. Lap joint
- 2. Butt joint

Gas cutting: (GI/MS Sheet-3mm thickness)

3. Profile cutting—circular profile

CO4:LO1

RGPV (Diplo Bhop		sc.	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 302	CO Code 04	Coc 01	le	Format No. 4
COURSE NAM	ME FO	UNDRY	AND WELD	ING TECHNO	LOGY				'	
CO Description	n Ex	plain th	e causes and	d remedies of	defects	in castin	gs.			
LO Description	n To	know ab	out the possible	e defects in castin	ıgs					
			SCF	HEME OF STU	JDY					
S. Learn No.	ing Cont	tent	Teaching– Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.		Rs uired	Rema rks
Defects ir and remed		– causes	Traditional Lecture method	Teacher will the contents. will Progressive to Assignment students known possible deficasting along to causes and rem	so tha w abou ects ir with their	r ; t t	-	Hand Book	,	
			SCHEM	IE OF ASSES	SMENT					
S. No Metho Assess		D	escription of	Assessment	N	Aaximum Marks	Resou Requi			ernal / ernal
1 Paper p		_	given learning wer of quest	g content, Studions.	lents	10	Progre Test pa End semest exam	aper/	Interr /Exte	
P	ADDITIO	ONAL II	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	ΓΥ (IF A	NY)		

CO4:LO2

RC	GPV (Diploma ' Bhopal	Wing)	SCHEME FOR OUTC		Branch Code P05	Course Code 302	CO Code 04	LO Code	_	Format No. 4
COU	JRSE NAME	FOUND	ORY AND WELI	DING TECHNO	LOGY					
CO	Description	Explair	n the causes an	d remedies of	defects i	in castin	gs.			
LO I	Description	To kno	ow about inspec	tion and testin	ng of cast	tings				
	SCHEME OF STUDY									
S. No.	Learning (Content	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	LI Requ		Rema rks
1	Inspection and castings – des non-destructive tests – magnetest – radiogultrasonic test.	tructive a e types etic part	and Lecture method icle	the contents. will Progressive to	conduct est/ give so that w about		-	Hando Book	out,	
			SCHEN	ME OF ASSES	SMENT	ı				
S. N	Method of Assessment		Description of	f Assessment		laximum Marks	Resou Requi			ernal / ernal
	Paper pen te	st For t	he given learnin	g content, Stud	dents	5	Progre Test pa		Interr /Exte	

<u>CO5:</u>	LOI							in.		
RG	PV (Diploma V Bhopal	Ving) SO	CHEME FOR OUTC	LEARNING OME	Branch Code P05		CO Code 05	LO Cod 01		ormat No. 4
COU	IRSE NAME	FOUNDR	Y AND WELD	ING TECHNO	LOGY					
CO I	Description	Explain	the causes ar	nd remedies o	f defect	ts in weld	ed joint	s.		
LO I	Description	To know al	bout the possible	e defects in welde	ed joints					
SCHEME OF STUDY										
S. No.	Learning C	ontent	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	LI Requ		Rema rks
Defects in welded joints – causes and remedies Traditional Lecture method Teacher will explain the contentsto students so that students know about the possible defects in welded joints along with their causes and remedies Traditional Lecture method students know about the possible defects in welded joints along with their causes and remedies										
			SCHEM	IE OF ASSES	SMEN	Т				11
S. N	o Method of Assessment		Description of	Assessment]	Maximum Marks	Resou Requi			ernal / ernal
1	Paper pen tes		given learnin swer of quest	g content, Stud tions.	dents	5	Progre Test pa End semest exam	aper/	Intern /Exte	
	ADDI	TIONAL I	INSTRUCTIO	ONS FOR TH	E HOD	/ FACUL	ΓY (IF A	ANY)		

<u> </u>	LO2									
RC	GPV (Diploma V Bhopal	Wing) SO	CHEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 302	CO Code 05	Coc 02	le	ormat No. 4
COU	JRSE NAME	FOUNDR	Y AND WELD	DING TECHNO	LOGY					
CO	Description	Explain	the causes ar	nd remedies o	f defects	s in weld	ed joint	S.		
LO I	Description	To know	about inspec	tion and testir	ng of we	lded joint	ts			
SCHEME OF STUDY										
S. No.	Learning C	Content	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.		Rs uired	Rema rks
1	Inspection and welded joints – and non-destru of tests – magn test – radiog ultrasonic test.	- destructive active types actic particle	Lecture method	the contents	that w about	5	-	Hand Book Labo		
			SCHEM	IE OF ASSES	SMENT			1		I
S. N	Method of Assessment		Description of	f Assessment	N	Aaximum Marks	Resou Requi			ernal / ernal
1	Paper pen tes		given learnin swer of ques	g content, Studtions.	dents	5	Progre Test pa End semest exam	aper/	Intern /Exter	
	ADDI	TIONAL 1	INSTRUCTION OF THE PROPERTY OF	ONS FOR TH	E HOD/	FACUL	ΓY (IF A	ANY)		

Reference Books:

- 1. Elements of Workshop Technology Volume I & II, Hajra Choudhary & Bhattacharaya, Media Promoters, 11th Edition, 2007
- 2. Introduction of Basic Manufacturing Processes and Workshop Technology, Rajender Singh, New age International (P) Ltd. New Delhi- 110002, 2006
- 3. Manufacturing Process Begeman, Tata McGraw Hill, New Delhi.
- 4. Workshop Technology- Volume I, II, & III, WAJ Chapman Viva Books Pvt. Ltd., New Delhi
- 5. Welding Technology By O. P. Khanna
- 6. Foundry Technology By O. P. Khanna
- 7. Production Technology By R. K. Jain
- 8. Workshop Technology By Raghuwanshi
- 9. Production Technology by P.C. Sharma, S Chand
- 10. Process and Materials of Manufacture By Lindberg, PHI

	LOMA WING)	OCB CURRICULUI	M FOR THE COURSE	FORM	1AT- 3	Sheet No. 1/3	
Branch	PRODUCTION I	ENGINEERING	Semester		THIRD		
Course Code	303 Co	ourse Name	BASIC MECHANICAL ENGINEERING				
Course Outcome 1	Understand basics of thermodynamics					Mark s	
Learning Outcome 1	To explain types of System, State, Process and Cycles.					7	
CONTENT	Role of Thermodynamics in Engineering and Science, Types of Systems, Thermodynamic Equilibrium, Properties, State, Process and Cycle					amic	
Method of Assessment	Paper pen test						
Learning Outcome 2	To describe Law of Thermodynamics				5	5	
CONTENT	Introduction to Zeroth, First and Second laws of thermodynamics						
Method of Assessment	Paper pen test						
Learning Outcome 3	To know about non-flow and flow processes and draw T-S and P-V Diagrams.			8	8		
CONTENT Method of Assessment	Heat and Work Interactions for various non-flow and flow processes; Kelvin-Planck and Clausius Statements, Carnot Cycle, Carnot Efficiency, T-S and P-V Diagrams, Concept of Entropy (Definition only). Paper pen test						
Course Outcome 2	Understand basics power plant.	of Heat transfer, Compo	nents & Mechanism of ther	mal			
Learning Outcome 1	To explain conduction, convection and radiation			7	7		
CONTENT	Modes of Heat Transfer; Conduction: Composite Walls and Cylinders, Combined Conduction and Convection: Overall Heat Transfer Co-efficient, and Radiation					nduction	
Method of Assessment		Paj	per pen test				
Learning Outcome 2	To draw layout of thermal power Plant				5	5	
CONTENT	Thermal Power Plant Layout; Rankine Cycle						
Method of Assessment		Paj	per pen test				

Learning Outcome 3	To explain about boiler operations		8			
CONTENT	Classification of boilers, Simple vertical boiler, Lancashire boiler, Babcock and Wilcox boiler and Locomotive boiler.					
Method of Assessment	Paper pen test/Laboratory assessment					
Course Outcome 3	Understand basics of Steam turbine, Internal Combustion Engines and Refrigeration					
Learning Outcome 1	To know about working of steam turbine, condenser and cooling tower	7	7			
CONTENT	Impulse and Reaction Turbines; Condensers: Jet & Surface Condensers, Cooling Towers					
Method of Assessment	Paper pen test/Laboratory assessment					
Learning Outcome 2	To identify the physical differences between S.I. and C.I. engines and 2-S and 4-S engines		8			
CONTENT	IC engines :Define Heat Engine, Classification of I.C. Engines, working of two strokes and four stroke petrol and diesel engine with line diagram; Indicated Horse Power, Brake Horse Power, Mechanical Efficiency					
Method of Assessment	Paper pen test/Laboratory assessment					
Learning Outcome 3	To explain about refrigeration and calculate COP	5	5			
CONTENT	Refrigeration: Concept of Heat Pump and Refrigeration, ERP/COP and Ton of Refrigeration.					
Method of Assessment	Paper pen test/Laboratory assessment					
Course Outcome 4	Understand Fluid properties, Fluid statics and Fluid kinematics					
Learning Outcome 1	To know about different Fluid Properties.	8	8			
CONTENT	Properties of fluid, Newton's law of viscosity, kinematic viscosity, dynamic viscosity, simple numerical examples.					
Method of Assessment	Paper pen test					
Learning Outcome 2	To know about pressure measuring devices and measure of pressure, velocity of fluid flow	12	12			
CONTENT	Fluid statics: Laws of fluid statics, atmospheric and absolute pressure, types of devices, numerical problems on manometers. Fluid kinematics: Concept of control fluid flow, Continuity equation, momentum equations & its application in indimensional fluid flow, simple numerical examples.	ol volume,	types of			

Method of Assessment	Paper pen test								
Course Outcome 5	Understand Fluid dynamics, Flow measurement and Flow through pipes.								
Learning Outcome 1	To explain equations of fluid flow and know limitation and assumptions	5	5						
CONTENT Euler's equation, Bernoulli's equation; concept and definition, limitations and assumptions, applications.									
Method of Assessment Paper pen test/Laboratory assessment									
Learning Outcome 2	To identify flow measuring devices and know how to measure flow	10	10						
CONTENT	Flow measurement; Flow measuring devices- classification and applications; Pitot tu rotameter, Orifice and notch and simple numerical problem.	be, venturi	-meter,						
Method of Assessment	Paper pen test/Laboratory assessment								
Learning Outcome 3	To know about flow in pipes and calculate losses during flow	5	5						
CONTENT	Flow through pipes; Introduction to pipe flow, Reynolds's number, friction loss in pi Darcy's equation, water hammer effect.	pe, friction	factor,						
Method of Assessment	Paper pen test/Laboratory assessment								

<u> </u>	D 01											
RC	SPV (Diploma V Bhopal	Wing) SC	SCHEME FOR LEARNING Brand OUTCOME Code P05			Course Code 303	CO Code 01	Coc 01	le	ormat No. 4		
COL	JRSE NAME	<u> </u>	BA	SIC MECHAN	NICAL E	ENGINE	ERING	1				
COI	Description	Understand	Understand basics of thermodynamics									
LO I	Description	To explain t	ypes of System,	State, Process ar	nd Cycles.							
			SCH	HEME OF STU	JDY							
S. No.	Learning C	Content	Teaching– Learning Method	Description of T-L Process		Teach Hrs.	Pract. /Tut Hrs.		Rs uired	Rema rks		
1	Role of Thermodynamics in Engineering and Science, Types of Systems, Thermodynamic Equilibrium, Properties, State, Process and Cycle		method	Teacher will of the contents. will Progressive to Assignment s students Knowledge thermodynam system, Process and of	Teacher conduct est/ give o that explain of hic State,	7	-	Hand Book	,			
1			SCHEM	IE OF ASSES	SMENT							
S. N	o Method of Assessment		Description of	Assessment		Iaximum Marks	Resou Requi			ernal / ernal		
			he given learning content, Students answer of questions.			7	Progre Test pa End semest exam	aper/	Interr /Exte			
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR THI	E HOD/	FACULT	ΓΥ (IF A	ANY)	•			

								1					
RGPV (Diplo Bhop		ng) SC	SCHEME FOR LEARNING Brand OUTCOME Code P05				CO Code 01	Cod 02	le	ormat No. 4			
COURSE NAM	ME		BA	SIC MECHAN	NICAL I	ENGINE	ERING						
CO Description	on Un	derstand	basics of ther	modynamics									
LO Description	n _{To}	describe I	Law of Thermo	dynamics									
	SCHEME OF STUDY												
S. Learn No.	Learning Content			Description Proces		Teach Hrs.	Pract. /Tut Hrs.	Li Requ	Rs aired	Rema rks			
First and	Introduction to Zeroth, First and Second laws of thermodynamics			Teacher will the content will Progressive so that describe La Thermodynamic	Teacher conduct test/quiz students		-	Hand Book	,				
			SCHEM	ME OF ASSES	SMENT								
S. No Metho Assess		D	escription of	Assessment	N			Resources Required		ernal / ernal			
1 Paper p		For the given learning content, Students write answer of questions.				Progressive Interna Test paper/ /Extern End semester exam							
F	ADDITIO	ONAL II	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)					

CO1.LO3												
RGPV (Diplor Bhopa	O ,	SC	SCHEME FOR LEARNING Brand OUTCOME Code P05			Course Code 303	CO Code 01	Coc 03	le	ormat No. 4		
COURSE NAM	Е		BA	SIC MECHAN	NICAL I	L ENGINEERING						
CO Description	Under	rstand	nd basics of thermodynamics									
LO Description	To kn	ow abo	ow about non-flow and flow processes and draw T-S and P-V Diagrams									
	L		SCH	HEME OF STU	JDY							
S. Learnin	ng Conten	nt	Teaching– Learning Method	Description of T-I Process		Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema rks		
Heat and Work Interactions for various non-flow and flow processes; Kelvin-Planck and Clausius Statements Carnot Cycle, Carno Efficiency, T-S and P-V Diagrams, Concept o Entropy (Definition only)			Lecture method + Quiz	Teacher will of the content students. Teac conduct Prog test/give ass so that student about non-flow flow processes T-S and P-V D	to cher will ressive signment ats know ow and and draw	L	-	Hand Book				
			SCHEM	ME OF ASSES	SMENT	,						
S. No Method Assessr		D	escription of	Assessment	N	Maximum Reso Marks Req				ernal / ernal		
			given learning content, Students nswer of questions.		dents	8	Progre Test pa End semest exam	aper/	Intern /Exter			
A	DDITION	IAL II	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL'	TY (IF A	ANY)				

JO2:LO1										
RGPV (Diplom Bhopal	wing)	OUTCOME Co		Branch Code P05	Course Code 303	CO Code 02	Cod 01	le	ormat No. 4	
COURSE NAME		BA	SIC MECHAN	NICAL E	ENGINE	ERING		- 1		
CO Description	Underst	tand basics of Hea	at transfer, Com	ponents &	z Mechani	ism of the	rmal p	ower p	lant.	
LO Description	To expla	in conduction, convection and radiation								
		SCI	HEME OF STU	JDY						
S. Learning No.	Content	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	Li Requ	Rs uired	Rema rks	
Modes of I Conduction: Walls and Combined C Convection: Transfer Co Radiation	Compose Cylinder Conduction and Overall H	Lecture method + and assignment	I	and dout to cher will ressive nt so explain uction,		-	Hand Book			
		SCHEN	ME OF ASSES	SMENT						
S. No Method of Assessment		Description of	f Assessment		Iaximum Marks	Resou Requi			ernal / ernal	
1		•	e given learning content, Students answer of questions.		7	Progre Test pa End semest exam	aper/	Intern /Exte		
AD	DITIONA	L INSTRUCTION	ONS FOR THI	E HOD/	FACUL	TY (IF A	ANY)			

CO2:	LO2											
RG	PV (Diploma V Bhopal	Wing) SC	OUTCOME Co PO		Branch Code P05	Course Code 303	CO Code 02	Coc 02	le	Format No. 4		
COU	IRSE NAME		BA	SIC MECHAN	NICAL 1	ENGINE	ERING		·			
CO I	Description	Understan	d basics of Hea	nt transfer, Com	ponents &	s & Mechanism of thermal power plant.						
LO I	Description	To draw lay	yout of thermal	power Plant								
			SCI	HEME OF STU	UDY							
S. No.	Learning C	Content	Teaching– Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.		Rs uired	Rema rks		
1	Thermal Po Layout; Rankii	wer Plant ne Cycle	Traditional Lecture method	Teacher will of the contents students. Teac conduct Prog test/quiz so students draw thermal power F	s to cher wil ressive o that layout of	t	-	Hand Book	,			
			SCHEN	ME OF ASSES	SMENT	Γ						
S. N	o Method of Assessment		Description of	Assessment	N					ernal / ernal		
1	Paper pen te		e given learning content, Students answer of questions.			U		Interr /Exte				
	ADD	TIONAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)				

CO2:	LO3									
RC	SPV (Diploma V Bhopal	Ving) SC	CHEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 303	CO Code 02	Cod 03	le	ormat No. 4
COU	URSE NAME		BA	SIC MECHAN	NICAL I	ENGINE	ERING		•	
CO I	Description	Understan	d basics of Hea	nt transfer, Com	ponents &	& Mechan	ism of the	ermal p	ower p	lant.
LO I	Description	To explain	about boiler ope	erations.						
			SCH	HEME OF STU	UDY					
S. No.	Learning C	ontent	Teaching— Learning Method	Description of T-L Process		Teach Hrs.	Pract. /Tut Hrs.	L. Requ	Rs uired	Rema rks
1	Classification Simple vertice Lancashire Babcock and boiler and boiler.	eal boiler, boiler, Wilcox	Lecture	the contents	s to Students oratory students	3	4	Hand Book Labo	,	
			SCHEM	ME OF ASSES	SMENT					
S. N	o Method of Assessment	Г	Description of	Assessment	N	Aaximun Marks	n Resou Requi			ernal / ernal
Paper pen test /Laboratory assessment							Practic file/ semest exam	End	Intern /Extern	
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)	I	
List o	f Practical									
	• Study of l	high-pressure	e boiler.							

• Study of boiler mountings and Accessories.

RC	GPV (Diploma V	Ving) SC	HEME FOR	LEARNING	Branch	Course	СО	LC) <u>F</u>	ormat		
	Bhopal		OUTC	OME	Code P05	Code 303	Code 03	Coc 01		No. 4		
COL	JRSE NAME		BA	SIC MECHAN	NICAL	ENGINE	ERING					
CO	Description	Understand	d basics of Stea	am turbine, Inte	rnal Con	nbustion E	ngines an	d Refr	igeratio	n		
LO I	Description	To know ab	know about working of steam turbine, condenser and cooling tower									
			SCI	HEME OF STU	JDY		<u> </u>					
S. No.	Learning C	ontent	Teaching— Learning Method	Description of T-L Process		Teach Pract. Hrs. /Tut Hrs.			Rs uired	Rema rks		
1	Impulse and Turbines; Conde Surface Condens Towers		Traditional Lecture method + Practical (Lab visit)	the contents	Student oratory of steam		4	Hand Book Labo				
			SCHEM	ME OF ASSES	SMEN	Τ						
S. N	Method of Assessment	D	escription of	Assessment	I	Maximum Marks	Resou Requi			ernal / ernal		
1	Paper pen tes /Laboratory assessment	write a	For the given learning content, Student write answer of questions and face Practical Viva				Practic file/ semest exam	End	Intern /Exter			
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR THI	E HOD	/ FACUL	TY (IF	ANY)	1			
List	f Practical											
	1. Study	of Steam Tu	rbines									
	<u>-</u>											

CO3:L	.02										
RGI	PV (Diploma W Bhopal	Ving) SC	HEME FOR OUTC	LEARNING OME	Branch Code P05		CO Code 03	Coc 02	le	ormat No. 4	
COUI	RSE NAME	1	BA	SIC MECHAN	NICAL	ENGINE	ERING				
CO D	escription	Understand	d basics of Stea	nm turbine, Inte	rnal Con	ombustion Engines and Refrigeration					
LO D	escription	To identify	the physical dif	ferences between	n S.I. and	C.I. engine	es and 2-S	and 4-3	S engine	es	
		<u>_</u>		HEME OF STU							
S. No.	Learning Co	ontent	Teaching– Learning Method	Description of T-L Process		Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema rks	
	IC engines :D Engine, Classifica Engines, working strokes and four stand diesel engind diagram; Indica Power, Brake H Mechanical Efficient	ation of I.C. ng of two stroke petrol ne with line nted Horse orse Power,	Lecture method + Practical (Lab visit)	the contents students. will visit Lab	S to Student oratory student physica yeen S.I. and 2-S	s	4	Hand Book Labo	,		
•			SCHEM	IE OF ASSES	SMEN	Γ					
S. No	Method of Assessment	D	escription of	Assessment]	Maximun Marks	Resou Requi			ernal / ernal	
1	Paper pen tes /Laboratory assessment		nswer of q								
	ADDI	ΓΙΟΝΑL Ι	NSTRUCTIO	ONS FOR TH	E HOD	/ FACUL	TY (IF A	ANY)	I		
List of	Practicals										
1.	Study of two and	d four stroke	petrol Engines								

2. Study of two and four stroke diesel Engines.

.05.	LOS				I								
RC	BPV (Diploma V Bhopal	Wing) SO	CHEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 303	CO Code 03	Coc 03	le	ormat No. 4			
COL	JRSE NAME		BA	SIC MECHAN	NICAL I	LENGINEERING							
CO l	Description	Understan	nderstand basics of Steam turbine, Internal Combustion Engines and Refrigeration										
LO I	Description	To explain	To explain about refrigeration and calculate COP.										
			SCH	HEME OF STU	JDY								
S. No.	Learning C	Content	Teaching– Learning Method	Description Proces		Teach Pract. Hrs. /Tut Hrs.			Rs uired	Rema rks			
1	Refrigeration: Heat Pun Refrigeration, E Ton of Refrigera	RP/COP and	Lecture	will visit Lab	s to Students		2	Hand Book Labo					
			SCHEM	IE OF ASSES	SMENT	7							
S. N	o Method of Assessment		Description of	Assessment	N	Aaximum Marks	Resou Requi			ernal / ernal			
1	Paper pen ter/Laboratory assessment	write a	For the given learning content, Students write answer of questions and face Practical Viva										
	ADDI	TIONAL	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)	1				
List o	f Practicals												
	Determination	of COP of Re	efrigeration Syst	tem									
			5										

CO4:LO1

RGPV (Diploma Wing) SCHEME FOR LEARNING Branch Course CO	LO Format						
Bhopal OUTCOME Code Code P05 303 04	Code No. 4						
COURSE NAME BASIC MECHANICAL ENGINEERING	L ENGINEERING						
CO Description Understand Fluid properties, Fluid statics and Fluid kinematics	luid kinematics						
LO Description To know about different Fluid Properties.							
SCHEME OF STUDY							
S. Learning Content Teaching— Description of T-L Teach Pract. No. Learning Method Process Hrs. /Tut Hrs.	LRs Remarks						
Troperties of fluid, frewton's	andout, ook						
SCHEME OF ASSESSMENT							
S. No Method of Assessment Description of Assessment Maximum Resource Required							
Paper pen test For the given learning content, Students write answer of questions and solve numerical problems. Progressi Test paper End semester exam							
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF AN	IY)						

CO4:LO2

<u>CO4:</u>	LUZ										
RC	SPV (Diploma V Bhopal	Wing) SC	SCHEME FOR LEARNING Brand OUTCOME Code P05			Course Code 303	CO Code 04	Coc 02	le	ormat No. 4	
COU	JRSE NAME		BA	SIC MECHAN	NICAL E	ENGINE	ERING	l.	•		
CO	Description	Understand	Fluid propert	rties, Fluid statics and Fluid kinematics							
LO I	Description	To know ab	out pressure m	ssure measuring devices and measure of pressure, velocity of fluid flow.							
			SCI	HEME OF STU	JDY						
S. No.	Learning C	Content	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.		Rs uired	Rema rks	
1	manometers.	pheric and re, types of ring devices, oblems on Fluid Concept of types of fluid ty equation, ations & its mpact of jet; al fluid flow,		Teacher will the contents. will Progressive to Assignment students know pressure devices and many pressure, velocities.	Teacher conduct est/ give so that we about measuring easure of		-	Hand Book	,		
			SCHEN	ME OF ASSES	SMENT						
S. N	Method of Assessment		escription of	Assessment		Iaximum Marks	Resou Requi			ernal / ernal	
1	Paper pen te	write an numerical	ne given learning content, Students answer of questions and solve rical problems.		solve	12	Progre Test pa End semest exam	aper/ er	Intern /Exter		
	ADD	TIONAL I	NSTRUCTION	ONS FOR TH	E HOD/	FACUL	ΓY (IF A	ANY)			

RGPV (Diplo Bhop		g) SC	SCHEME FOR LEARNING Brand Code Post			Course Code 303	CO Code 05	Coc 01	le	ormat No. 4
COURSE NAM	ЛЕ		BAS	SIC MECHAN	NICAL	ENGINE	ERING		"	
CO Description	u Ur	nderstand	Fluid dynami	ics, Flow measu	rement a	nd Flow th	rough pi	pes		
LO Description	n To	explain e	quations of flu	id flow and know	v limitatio	on and assu	mptions.			
			SCH	HEME OF STU	JDY					
S. Learn No.	ing Cont	tent	Teaching– Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	L. Requ	Rs aired	Rema rks
1 Euler's equation, Bernoulli's equation; concept and definition, limitations and assumptions, applications. Traditional Lecture method + Practical (Lab visit) Traditional Lecture the contents to students. Students will visit Laboratory so that students explain equations of fluid flow and know limitation and assumptions.										
			SCHEM	IE OF ASSES	SMEN	Γ				
S. No Metho Assess		De	escription of	Assessment	ľ	Maximum Marks	Resou Requi			ernal / ernal
Paper pen test /Laboratory assessment For the given learning content, Students write answer of questions and face Practical Viva For the given learning content, Students file/ End /External semester exam										
A	DDITIC	ONAL IN	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	ΓΥ (IF A	ANY)		
List of Practical										
Verificati	on of Bern	noulli's th	eorem.							

CO5:	LO2							1		
RG	PV (Diploma V Bhopal	Ving) SC	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 303	CO Code 05	LO Code	_	ormat No. 4
COU	RSE NAME	1	BA	SIC MECHAN	NICAL	ENGINE	ERING			
CO I	Description	Understand	d Fluid dynam	ics, Flow measur	rement a	nd Flow th	rough pi	pes		
LOI	Description	To identify:	flow measuring	g devices and kno	w how to	measure fl	ow.			
		<u>-</u>		HEME OF STU						
S. No.	Learning C	ontent	Teaching– Learning Method	Description Proces		Teach Hrs.				
1	Flow measurer measuring classification applications; l venturi-meter, Orifice and notel numerical proble	devices- and Pitot tube, rotameter, and simple	Lecture method + Practical	will visit Lab	S to Students oratory students easuring	s	4	Book,		
			SCHEM	IE OF ASSES	SMEN	Γ				
S. N	Method of Assessment	D	escription of	Assessment	1	Maximum Marks	Resou Requi			ernal / ernal
1	Paper pen tes /Laboratory assessment	write a	answer of	ng content, Stu questions, and face Pra	solve	10	file/	Practical Int file/ End /Ex semester		al rnal
	ADDI	TIONAL II	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	ΓΥ (IF A	ANY)		
List o	f Practical									
<u></u>	Determination	of Coefficient	t of Discharge	of Vanturi mater						

Determination of Coefficient of Discharge of Venturi-meter.

Determination of Coefficient of Discharge, coefficient of contraction and coefficient of velocity of Orifice-meter.

JO5:	LO3				T			1		
RG	SPV (Diploma V Bhopal	Wing) SC	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 303	CO Code 05	Coo 03	de	ormat No. 4
COU	IRSE NAME		BA	SIC MECHAN	NICAL 1	ENGINE	ERING			
CO I	Description	Understand	l Fluid dynam	ics, Flow measu	rement a	nd Flow th	rough pi	pes		
LO I	Description	To know ab	out flow in pipe	es and calculate l	osses duri	ing flow				
			SCH	HEME OF STU	JDY					
S. No.	Learning C	Content	Teaching– Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.		Rs uired	Rema rks
1	Flow throug Introduction to Reynolds's num loss in pipe, fri Darcy's equat hammer effect.	pipe flow, aber, friction action factor,	method + Practical	the contents	S to Students oratory its know pes and	3	2	Book	Handout, Book, Laboratory	
,			SCHEM	IE OF ASSES	SMENT	Γ		'		
S. N	o Method of Assessment		escription of	Assessment	N	Maximum Marks	Resou Requi			ernal / ernal
1	Paper pen test /Laboratory assessment Practical Viva For the given learning content, Students write answer of questions, and face Practical Viva For the given learning content, Students file/ End /Extern semester exam									
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	TY (IF A	ANY)	ı	
List o	f Practical									
		of coefficient	of friction of fl	low through pipes	2					
	Determination (or cocmetent	or menon or m	ow anough pipes						

Reference Books:

- Basic Mechanical Engineering M.P. Poonia & S.C. Sharma, Khanna Publishing House
- Elements of Mechanical Engineering M. L. Mathur, F. S. Mehta and R. P. Tiwari, Jain Brothers, New Delhi
- Engineering Heat Transfer Gupta & Prakash, Nem Chand & Brothers, New Delhi
- Fluid Mechanics & Hydraulic Machines, S.S. Rattan, Khanna Book Publishing Co., Delhi
- Hydraulic, fluid mechanics & fluid machines Ramamrutham S, Dhanpath Rai and Sons, New Delhi.
- Hydraulics and fluid mechanics including Hydraulic machines Modi P.N. and Seth S.M., Stan- dard Book House. New Delhi
- Basic Mechanical Engineering J Benjamin
- Elements of Mechanical Engineering Roy and Choudhary
- Engineering Thermodynamics Spalding and Cole

RGPV (DIF	FORM		Sheet Io. 1/3						
Branch	PRODUCTION	ENGINEERING	Semester		THIRD				
Course Code	304 C	Course Name	MECHANICS OF MA	CHINE					
Course Outcome 1	To understand Energy	the concepts of Simple	e Stresses, Strain and S	train	Teach Hrs	Marks			
Learning Outcome 1	To understand th	ne concept of Simple St	resses and Strain		10	10			
CONTENT	for ferrous & no stresses in bars of thermal stresses i	on-ferrous materials, of varying cross section	stress & strain, Hook's modulus of elasticity & ns, composite sections, Poisson's ratio, Relation e topics.	& rigidi therma	ty, Bulk l stresses	modulus, & strain,			
Method of Assessment		P	aper pen test						
Learning Outcome 2	To understand th	ne concept of Strain Ene	ergy		10	10			
CONTENT	Strain energy or	resilience, proof resilie	nce and modulus of resi	lience;	Derivation	n of strain			
	energy for the fo	Suddenl	y applied	load, iii)					
	Impact/ shock loa	nd; Related numerical p	roblems.						
Method of Assessment		P	aper pen test						
Course Outcome 2		the concept of Shear ding Stresses in Beam	Force & Bending Mon s	ent					
Learning Outcome 1	Diagrams	-	rce and Bending Momer		14	14			
CONTENT	Continuous beam, of shear force and and B.M. diagrams Cantilever with u supported beam with the continuous supported beam	Types of beams with examples: a) Cantilever beam, b) Simply supported beam, c) Over hanging beam, continuous beam, e) Fixed beam; Types of Loads – Point load, UDL and UVL; Definition and explanation of shear force and bending moment; Calculation of shear force and bending moment and drawing the S and B.M. diagrams by the analytical method only for the following cases: a) Cantilever with point loads, Cantilever with uniformly distributed load, c) Simply supported beam with point loads, d) Simply supported beam with UDL, e) Over hanging beam with point loads, at the center and at free ends, f) Over hanging beam with UDL throughout, g) Combination of point and UDL for the above; Related numeric							
Method of Assessment		P	aper pen test						
Learning Outcome 2	To understand t	he concept of Bending	Stresses in Beams		06	06			
CONTENT	• •	modulus of section of h.	ns in simple bending the different section, bending	•					
Method of Assessment		P	aper pen test						
Course Outcome 3									

Method of Assessment CONTENT Method of Assessment CONTENT Method of Assessment Course Outcome 4 Learning Outcome 1 CONTENT	To understand the mechanism and types along with their inversion. Definitions- Simple mechanism, link or element, Higher & lower pair, R Kinematic Chain, Mechanism, Inversion, M/c, Four bar chain, Slider craslider crank chain & their inversions. Paper pen test To understand the various types of drives available for power transmission Belt, Chain, Rope, Gear drives & their comparison; Belt Drives - flat applications; Material for flat and V-belt; Angle of lap, Belt length Determination of Velocity Ratio, Ratio of tight side and slack side to tension and Initial tension; Condition for maximum power transmumericals); Chain Drives - Advantages & Disadvantages; Gear Determinology; Types of gears and gear trains, their selection for different value & Velocity ratio for compound, reverted and simple epicycof gearing; Rope Drives - Types, applications, advantages & limitation Paper pen test To understand the different types of cams, followers and drawing of cam profile. To understand the different types of cams, followers and their motion.	belt, V– I h. Slip an ension; Ce asmission Prives – S Ferent app	Double 10 Delt & its d Creep; entrifugal (Simple pur gear lications; rain; Law
Method of Assessment Learning Outcome 2 CONTENT Method of Assessment Course Outcome 4 Learning Outcome 1 CONTENT	Kinematic Chain, Mechanism, Inversion, M/c, Four bar chain, Slider craslider crank chain & their inversions. Paper pen test To understand the various types of drives available for power transmission Belt, Chain, Rope, Gear drives & their comparison; Belt Drives - flat applications; Material for flat and V-belt; Angle of lap, Belt lengtl Determination of Velocity Ratio, Ratio of tight side and slack side to tension and Initial tension; Condition for maximum power transumericals); Chain Drives – Advantages & Disadvantages; Gear Determinology; Types of gears and gear trains, their selection for different value & Velocity ratio for compound, reverted and simple epicytof gearing; Rope Drives – Types, applications, advantages & limitation Paper pen test To understand the different types of cams, followers and drawing of cam profile. To understand the different types of cams, followers and their motion.	belt, V– I h. Slip an ension; Ce asmission orives – S erent app elic gear tr as of Steel	Double 10 Delt & its d Creep; entrifugal (Simple pur gear lications; rain; Law ropes.
Assessment Learning Outcome 2 CONTENT Method of Assessment Course Outcome 4 Learning Outcome 1 CONTENT	To understand the various types of drives available for power transmission Belt, Chain, Rope, Gear drives & their comparison; Belt Drives - flat applications; Material for flat and V-belt; Angle of lap, Belt length Determination of Velocity Ratio, Ratio of tight side and slack side to tension and Initial tension; Condition for maximum power transumericals); Chain Drives – Advantages & Disadvantages; Gear Determinology; Types of gears and gear trains, their selection for different value & Velocity ratio for compound, reverted and simple epicycof gearing; Rope Drives – Types, applications, advantages & limitation Paper pen test To understand the different types of cams, followers and drawing of cam profile. To understand the different types of cams, followers and their motion.	belt, V– I h. Slip an ension; Ce asmission Orives – S Ferent app clic gear tr as of Steel	pelt & its d Creep; entrifugal (Simple pur gear lications; rain; Law ropes.
Outcome 2 CONTENT Method of Assessment Course Outcome 4 Learning Outcome 1 CONTENT	Belt, Chain, Rope, Gear drives & their comparison; Belt Drives - flat applications; Material for flat and V-belt; Angle of lap, Belt length Determination of Velocity Ratio, Ratio of tight side and slack side to tension and Initial tension; Condition for maximum power transumericals); Chain Drives – Advantages & Disadvantages; Gear Determinology; Types of gears and gear trains, their selection for different value & Velocity ratio for compound, reverted and simple epicycof gearing; Rope Drives – Types, applications, advantages & limitation Paper pen test To understand the different types of cams, followers and drawing of cam profile. To understand the different types of cams, followers and their motion.	belt, V– I h. Slip an ension; Ce asmission Orives – S Ferent app clic gear tr as of Steel	pelt & its d Creep; entrifugal (Simple pur gear lications; rain; Law ropes.
Method of Assessment Course Outcome 4 Learning Outcome 1 CONTENT	applications; Material for flat and V-belt; Angle of lap, Belt length Determination of Velocity Ratio, Ratio of tight side and slack side to tension and Initial tension; Condition for maximum power transumericals); Chain Drives – Advantages & Disadvantages; Gear Determinology; Types of gears and gear trains, their selection for different value & Velocity ratio for compound, reverted and simple epicycof gearing; Rope Drives – Types, applications, advantages & limitation Paper pen test To understand the different types of cams, followers and drawing of cam profile. To understand the different types of cams, followers and their motion.	h. Slip an ension; Censmission Orives – Serent appelic gear tris of Steel	d Creep; entrifugal (Simple pur gear lications; rain; Law ropes.
Assessment Course Outcome 4 Learning Outcome 1 CONTENT	To understand the different types of cams, followers and drawing of cam profile. To understand the different types of cams, followers and their motion.	6	6
Outcome 4 Learning Outcome 1 CONTENT	of cam profile. To understand the different types of cams, followers and their motion.	6	6
Outcome 1 CONTENT	**	6	6
	Consent Definition and application of Come and Followers Classific		İ
V	Concept; Definition and application of Cams and Followers; Classific Followers; Different follower motions and their displacement diag velocity, SHM, uniform acceleration and Retardation;		
Method of Assessment	Paper pen test		
Learning Outcome 2	To learn the method of drawing cam profile.	14	14
001,121,1	Drawing of profile of radial cam with knife-edge and roller follower wit offset with reciprocating motion (graphical method).	th and witl	nout
Method of Assessment	Paper pen test		
Course	To understand the need for balancing of masses and concept		
Outcome 5	of vibration.		
	To understand the concept, need and methods for	12	12
Outcome 1	balancing of masses.		
CONTENT	Concept of balancing; Balancing of single rotating mass; Graphical me of several masses revolving in same plane; balancing of a single rotation masses in different planes.		_
Method of Assessment	Paper pen test		

Learning Outcome 2	To understand the concept, terminology and causes of vibration.	8	8			
CONTENT	ept and terminology used in vibrations, types of Vibratory motion, Causes of ions in machines; their harmful effects and remedies.					
Method of Assessment	Paper pen test					

CO1:I	LO1								
RG	PV (Diploma W Bhopal	Ving) SC	CHEME FOR OUTCO	LEARNING OME	Branch Code P05	Course Code 304	CO Code 01	LO Code <mark>01</mark>	Format No.4
COU	RSE NAME	MECHAN	ICS OF MAC	CHINE		1	"		
СОГ	Description	To unders	stand the cor	ncepts of Sim	ple Stres	sses, Stra	in and	Strain E	nergy
LO D	Description	To underst	tand the conc	ept of Simple	Stresses	and Stra	in		
				HEME OF ST					
S. No.	Learning Co	ontent	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	LRs Require	Rema rks
	Types of loads deformation, T stress & strain, law, Stress- strain, stresses in bars varying cross strain, stresses in bars varying cross strain stresses composite section thermal stresses composite section between E, N & Related numeric problems on the topics.	ypes of Hook's ain rous & terials, sticity & nodulus, of ections, ions, s & strain, s in ions, Relation & K, cal	Traditional Lecture method + Assignment	Teacher will the contents of students under the concepts of loads, stresstrains and strain diagram Teacher will Progressive to assignment.	so that erstand of types sses, ress- m. conduct		-	Handout Book	
			SCHEM	IE OF ASSES	SMENT				
S. No	Method of Assessment	D	escription of	Assessment	N	Iaximum Marks	Resou Requi		External / Internal
1	Paper pen test For the given learning write answer of ques		•		dents	10	Progre test/ semest exam	End	External / Internal
	ADDI	Ι ΓΙΟΝΑL Ι	NSTRUCTIO	ONS FOR TH	E HOD/	FACUL	ΓΥ (IF A	ANY)	

COI	.LO2	T					1			
RO	GPV (Diploma V Bhopal	Ving) SC	HEME FOR OUTCO		Branch Code P05	Course Code 304	CO Code 01	LO Code 02		ormat No.4
COI	URSE NAME	MECHAN	ICS OF MAC	HINE		I				
CO	Description	To unders	stand the con	cepts of Sim	ple Stres	ses, Stra	in and	Strain	Ener	gy
LO	Description	To underst	and the conce	ept of Strain E	Energy.					
				EME OF STU						
S. No.	Learning C	ontent	Teaching— Learning Method	Description Proce		Teach Hrs.	Pract. /Tut Hrs.	LR Requi		Rema rks
1	Strain energy or resilience, prooresilience and resilience; Deristrain energy for following cases Gradually appliii) Suddenly apiii) Suddenly apiii) Impact/sho Related numeriproblems.	f nodulus of vation of or the : i) ed load, plied load, ck load;	Traditional Lecture method + Assignment	Teacher will the content students understand energy an deviation for loads. Teach conduct Pro- test/ assignment.	so that can strain d it's various ner will		-	Handout, Book,		
	1		SCHEM	E OF ASSES	SMENT					II.
S. N	No Method of Assessment		escription of	Assessment		laximum Marks	Resou Requi			ernal / ernal
1	Paper pen tes		given learning swer of questi		lents	10	test/E	Progressive Extetest/ End Intersemester		ernal / ernal
	ADDI	TIONAL I	NSTRUCTIO	NS FOR THI – NIL-	E HOD/	FACUL	ΓΥ (IF A	ANY)		

CO2:I	LO1									
RG	PV (Diploma V Bhopal	Ving) SCHE	ME FOR L OUTCO	EARNING ME	Branch C Code P05	Code 304		LO Code <mark>01</mark>	_	Format No.4
CO	URSE NAME		MECHAN	ICS OF MA	CHINE	1				
CC	Description	To understa	nd the con	cept of Shea Bending				ment D	iagr	ams,
LC	Description	To understa	and the con	cept of Shea				nent Di	iagra	ıms
			SCHEN	ME OF STU	DY					
S. No.	Learnin	g Content	Teaching Learnin g Method	_	on of T-L Process	Teac h Hrs.	Pract. /Tut Hrs.	LE Requi d		Rema rks
1 e)	S.F and B.M. dia analytical metho following cases: with point loads, with uniformly d c) Simply support point loads, d) Si	b) Simply beam, eam, es of Loads — and UVL; splanation of bending moment; ear force and and drawing the agrams by the d only for the a) Cantilever b) Cantilever istributed load, rted beam with imply supported e) Over hanging loads, at the e ends, f) Over ith UDL ombination of or the above;	Traditional Lecture method + Assignment	Teacher will contents to st that students understand th beams, loads force and Bermoment beha various beam will conduct test/ give assi	udents so can e types of and Shear ading vior for s. Teacher Progressive	14	-	Hando t, Bool		
			SCHEME (OF ASSESS	MENT	1		1		
S. No	Method of Assessment		escription o	f Assessmen	nt Ma	aximun Marks				ernal / ternal

1	Paper pen test	For the given learning content, Students write answer of questions.	14	Progressive Test paper/ End semester	External / Internal
				exam	
	ADDITIO	ONAL INSTRUCTIONS FOR THE HOD/ NIL	FACULTY	(IF ANY)	

CO2:	:LO2							1		
RC	GPV (Diploma V Bhopal	Wing) SO	CHEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 304	CO Code 02	LO Cod <mark>02</mark>	le	Format No.4
COU	JRSE NAME	MECHAN	ICS OF MAC	CHINE		1	1		'	
CO	Description		rstand the co Stresses in E	oncept of Shea Beams	r Force	& Bend	ing Mo	ment l	Diagra	ams,
LO	Description	To under	stand the con	cept of Bendin	g Stress	es in Bea	ms			
		l	SCI	HEME OF ST	UDY					
S. No.	Learning C	Content	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	Ll Requ	Rs iired	Rema rks
1	Theory of bending, Assu simple bendin neutral axis a surface, mo section of different section, bendin beams of strength.	ng theory nd neutral dulus of erent	Lecture method + Assignment	Teacher will exthe contents students so that students can understand the bending theory bending stress beams.	to t simple and	6	-	Handout, Book		
			SCHEM	IE OF ASSES	SMENT	,				
S. N	Method of Assessment		Description of	Assessment	N	Iaximum Marks	Resou Requ			ernal / ernal
1	Paper pen te		given learnin swer of ques	g content, Stud tions.	dents	6	Progre Test pa End semest exam	aper/	Exter Intern	
	ADDI	TIONAL 1	INSTRUCTION TO STRUCTION TO STR	ONS FOR THI -NIL-	E HOD/	FACUL	ΓΥ (IF A	ANY)		

CO3·LO1

CO3	:LO1				T	1		1		
RO	GPV (Diploma ` Bhopal	Wing) SC	HEME FOR DUTCO		Branch Code P05	Cours e Code 304	CO Code 03	LO Code 01	_	ormat No.4
COU	JRSE NAME	MECHAN	ICS OF MAC	HINE						
СО	Description		stand the med	chanism and	various	types o	f drives	availab	le fo	r
LO	Description	To underst	and the mech	anism and typ	oes along	g with th	eir inver	sion.		
		1	SCH	EME OF ST	UDY	-				
S. No.	Learning (Content	Teaching– Learning Method	Description Proce		Teach Hrs.	Pract. /Tut Hrs.	LR Requi		Rema rks
1	Definitions- mechanism, element, High- pair, Kinem Kinematic Mechanism, M/c, Four Slider cran Double slider & their inversi	atic pair, Chain, Inversion, bar chain, k chain, crank chain	method+ Assignment	Teacher will the content students so t students can understand the of mechanism their inversion Teacher will Progressive test/assignment	ts to hat e types ms and on. conduct nt.	10	-	Handout, Book		
S. N	Method of Assessmen		escription of			Maximu m Marks	Resou Requi			ernal / ernal
1	Paper pen te		given learning swer of questi		dents	10	Progres Test p Assign /End semeste examE al / Inte	paper/ Integrated Inte		ernal / ernal
	ADD	ITIONAL I	NSTRUCTIO		E HOD/	FACUL	TY (IF A	ANY)		
				NIL						

CO ₃	:LO2								
RO	GPV (Diploma V Bhopal	Wing) SC	HEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 304	CO Code 03	LO Code 02	Format No.4
COI	URSE NAME	MECHAN	ICS OF MAC	CHINE					
СО	Description		stand the manning	echanism and	l various	s types o	of drives	available f	for
LO	Description	•		ous types of d	rives ava	ilable fo	r nower	transmissic	ın.
		10 unders		HEME OF ST		114010 10	1 power	transmissic	,11
S. No.	Learning C	Content	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Rema rks
1	tension and tension; Commaximum transmission numericals); Drives — Adv Disadvantages; Drives — Sterminology; gears and getheir select different appropriate of for reverted and epicyclic gear of gearing; Roj	their elt Drives - belt & its Material for t; Angle of h. Slip and nination of o, Ratio of slack side Centrifugal dition for power (Simple Chain vantages & Gear Types of ear trains, tion for pplications; & Velocity compound, d simple train; Law pe Drives - pplications,	method + Assignment	Teacher will of the contents students so the students can understand the means of power transmission. Will conduct Progressive teassignment.	s to nat e various er Teacher st/ give	10		Handout, Book	
			SCHEN	IE OFASSES	SMENT				

S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal							
1	Paper pen test	For the given learning content, Students write answer of questions,		Progressive Test paper/ Assignment/ End semester exam	External / Internal							
	ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)											

NIL

CO4:LO1

CO4:	LO1									
RC	SPV (Diploma V Bhopal	Wing) SC	CHEME FOR OUTC	LEARNING OME	Branch Code P05	Course Code 304	CO Code 04	LO Code <mark>01</mark>		ormat No.4
COU	JRSE NAME	MECHAN	ICS OF MAC	CHINE			•			
CO	Description	To unders	stand the di	fferent types	of cams,	follower	s and d	rawing	of c	am
LO I	Description	To unders	tand the diffe	erent types of o	cams, fol	lowers a	nd their	motion		
			SCH	HEME OF ST	UDY					
S. No.	Learning C	Content	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	LR Requi		Rema rks
Concept; Definition and application of Cams and Followers; Classification of Cams and Followers; Different follower motions and their displacement diagrams like uniform velocity, SHM, uniform acceleration and Retardation;			₹ 1	so that can e various ams and ong with Teacher conduct			Hando Book,	ut,		
			SCHEM	IE OF ASSES	SMENT					
S. N	Method of Assessment		escription of	Assessment		Iaximum Marks	Resou Requi			ernal / ernal
1	Paper pen te		e given learning content, Students nswer of questions.			6	Progre Test pa End semest exam	aper/		ernal / ernal
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR THE	E HOD/	FACUL	ΓΥ (IF A	ANY)		

CO4:LO2

CO4:	LO2							1		
RC	GPV (Diploma V Bhopal	Wing) SC	SCHEME FOR LEARNING Branch OUTCOME Code P05		Code	Course Code 304	CO Code 04	LO Code 02		ormat No.4
COU	JRSE NAME	MECHAN	ICS OF MAC	CHINE		1	-	I	"	
CO	Description	To unders	stand the di	fferent types	of cams,	follower	s and d	rawing	of c	am
LO	Description	To learn t	he method of	f drawing cam	profile.					
				HEME OF ST	-					
S. No.	Learning C	Content	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	LR Requi		Rema rks
1	Drawing of radial cam we edge and rolle with and with with recomotion method).	ith knife- r follower	Traditional Lecture method+ assignment	Teacher will ethe contents so students can deam profile. The will conduct Progressive the Assignment so students know the concept of cam profile.	o that the raw the eacher st/ give o that about	14	-	Hando Book,	out,	
			SCHEM	IE OF ASSES	SMENT	1				
S. N	Method of Assessment		escription of	Assessment		Iaximum Marks	Resou Requi			ernal / ernal
1	Paper pen te		given learning swer of quest	g content, Studions.	dents	14	Progre Test pa End semest exam	aper/		ernal / ernal
	ADDI	TIONAL I	NSTRUCTIO	ONS FOR TH NIL	E HOD/	FACUL	Γ Υ (IF A	ANY)		

CO5:LO1										
RGPV (Diploma V Bhopal	Wing) SC	SCHEME FOR LEARNING Brand Code P05			Course Code 304	CO Code 05	LO Code 01	F	ormat No.4	
COURSE NAME	MECHAN	ICS OF MAC	CHINE							
CO Description	To underst	tand the nee	d for balancii	ng of ma	sses and	concep	t of vib	ratio	on.	
LO Description	To underst	and the conc	ept, need and	methods	for balar	ncing of	masses.			
	SCHEME OF STUDY									
S. Learning Content No. Learning Method Description of T-L Process Hrs. Learning Method Description of T-L Hrs. Requirements Hrs.									Rema rks	
rotating mass; method for ba several masses in same plane of a single rot	nlancing of s revolving ; balancing rating mass sses in		Teacher will exthe need of band method of balancing of m	palancing	12		Handou Book,	ut,		
		SCHEM	IE OF ASSES	SMENT	•					
S. No Method of Assessment		escription of	Assessment		Iaximum Marks	Resou Requi			ernal / ernal	
Paper pen test For the given learning content, Students write answer of questions. Progressive Test paper/ End semester exam External /										
ADD	TIONAL I	NSTRUCTIO	ONS FOR THI NIL	E HOD/	FACUL	ΓY (IF A	ANY)			

	LO2	Win a) CO	NIEME EOD	LEADNING	Duonala	Carrage	CO	1.0		70 04
KC	SPV (Diploma ' Bhopal	wing) SC			Branch Code P05	Course Code 304	CO Code 05	LO Cod 02	e	Format No.4
COU	JRSE NAME	MECHAN	ICS OF MAC	CHINE	I					
CO	Description	To unders	tand the nee	ed for balancii	ng of m	asses and	l concep	ot of		
		vibration.								
LO l	Description	To unders	stand the con	cept, terminolo	ogy and	causes of	f vibratio	on.		
		1		HEME OF STU						
S. No.	Learning (Content	Teaching— Learning Method	Description Proces		Teach Hrs.	Pract. /Tut Hrs.	LRs Required		Rema
Concept and terminology used in vibrations, types of Vibratory motion, Causes of vibrations in machines; their harmful effects and remedies.			4	Teacher will of the contents students so the students can understand the concepts and concepts and contents vibration alon their harmful and remedies	s to nat causes of ag with effects	8	-	Hande Book		
•			SCHEM	IE OF ASSES	SMENT	Γ				
S. N	Method of Assessment		Description of	Assessment	ľ	Maximum Marks	Resou Requi			ernal / ernal
1	Paper pen te		given learning swer of quest	g content, Stud tions.	dents	8	Progre Test pa End semest exam	aper/		ernal / ernal
	ADD	ITIONAL I	NSTRUCTIO	ONS FOR THE	E HOD/	FACUL	Γ Υ (IF A	ANY)		

Reference Books:

- 1. Strength of Materials, R. S. Khurmi, , S. Chand & Co., Ram Nagar, New Delhi 2002
- 2. Strength of Materials, S. Ramamrutham, 15 th Edn 2004, Dhanpat Rai Pub. Co., New Delhi.
- 3. Strength of Materials, S. S. Rattan, Tata Mcgraw hill, New Delhi, 2008, ISBN 9780070668959
- 4. Strength of Materials, B K Sarkar, I Edition, 2003 Tata Mcgraw Hill, New Delhi
- 5. Theory of machines S.S. Rattan, Tata McGraw-Hill publications.
- 6. Theory of machines R.S. Khurmi & J.K.Gupta, S.Chand publications.
- 7. Theory of machines R.K.Bansal ,Laxmi publications
- 8. Dynamics of Machines J B K Das, Sapna Publications. Theory of machines Jagdishlal, Bombay Metro Politan book Ltd.

•	DIPLOMA V BHOPAL	VING)		RICULUM FOR COURSE	FORMAT-3		Sheet No. 1/3				
Branch			ALL BRANCHES		Semester		III				
Course Co	ode		Course Name		PROFESSIONAL DEVELOPN	/IENT-III					
Course (Outcome 1		ent will be able to lem in the given s	leader of small team for solving a team	Teach Hrs	Marks					
_earning	Outcome 1		Student will be able to demonstrate his/her understanding of leadership required in a team work performance 10								
Contents			leaders, importar leaders	nce of team leader, role	e of team leaders, important qualities of good	team leaders, k	pehaviors of good				
Wethod of Assessment		Papei	pen test								
earning.	Outcome 2		ent will be able to p situation	play role of the leader of	of a team for solving a team problem in the	10	15				
Cor	ntents		Team leaders, importance of team leader, role of team leaders, important qualities of good team leaders, behaviors of good team leaders								
/lethod of	f Assessment	Stude	ent's role play								
Course (Outcome 2	Stud	ent will be able	to apply professiona	l ethics in a given problem situation						
_earning	Outcome 1	Stude	ent will be able to	demonstrate his/he	r understanding of professional ethics	10	10				
Learning Outcome 1 Contents		engir	neers, ethical issu	•	ce, seven ethics common to all profession nmon problems related to professional et	•					

Method of Assessment	Paper pen test		
Learning Outcome2	Student will be able to apply appropriate professional ethics in a given problem situation	10	10
Contents	Procedure of solving the problems related professional ethics, Identification of ethical ethical stand, searching various possible solutions for the problem keeping ethical stappropriate solution.		
Method of Assessment	Paper pen test		
Course Outcome 3	Student will be able to plan self-learning to complete the given task	Teach Hrs	Marks
Learning Outcome 1	Student will be able to identify the self-learning needs for completing the given task	10	10
Contents	Lifelong learning, its examples, self-directed learning, its examples, important steps in lifelon needs	ng learning, ide	ntification of learning
Method of Assessment	Assessment through student activity		
Learning Outcome 2	Student will be able to plan self directed learning for completing the given task	10	10
Contents	Need for planning, need for planning self directed learning, planning self directed learning, s	self directed lea	rning plan, examples.
Method of Assessment	Assessment through student activity		

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SCHEME FOR LEARNING OUTCOME

Branch Coo		de	Co	ourse Co	de	CO Code	LO Code	
M	0	2	3	0	5	1	1	Format No.

COURSE NAME	Professional Development-III
CO Description	Student will be able to perform as the team leader of small team for solving a team problem in the given situation
LO Description	Student will be able to demonstrate his/her understanding of leadership required in a team work performance

SCHEME OF STUDY

S. No.	Learning Content	Teaching-Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Team leaders, importance of team leader, role of team leaders, important qualities of good team leaders, behaviors of good team leaders	Traditional lecture method + Case Study	Teacher will explain about the contents along-with examples/cases, will give assignment for practice, will conduct tutorials and remedial.	05	05	Handout, video film*	*Teacher will suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	A test will be designed and administered by the teacher to assess the understanding of student. Assessment will be done through Rating Scale.	10	Test paper and Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Important qualities of team leader:will be able to

- 1. to take initiatives
- 2. take responsibility on behalf of group
- 3. to visualize the team event and plan things for the event
- 4. to take interest to carry out related activities

5. to take interest in solving team related problems

The test questions:-

- 1. Explain the importance of team leadership
- 2. Explain important qualities of good team-leaders
- 3. Identify the team leader's behavior in the following list of team persons' behavior
- 4. Identify the team leader in the following case of team event
- 5. Suggest the team leader's would be course of action in the following team problem situation

Performance indicators

- 1. Quality of response the Q. 1
- 2. Quality of response to Q. 2
- 3. Number of correct behaviors identified in Q. 3(Max. 3 correct behaviors out of 10)
- 4. Correct team leader identified or not, in Q. 4
- 5. Correct team leader course of action suggested or not, in Q. 5

RGPV (Diploma Wing) Bhopal

SCHEME FOR LEARNING OUTCOME

Branch Code			Co	ourse Co	de	CO Code	LO Code	A
	0	2	3	0	5	1	2	Format No. 4

COURSE NAME	Professional Development-III
CO Description	Student will be able to perform as the leader of small team for solving a team problem in the given situation
LO Description	Student will be able to play role of the leader of a team for solving a team problem in the given situation

SCHEME OF STUDY

S. No.	Learning Content	Teaching- Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Team leaders, importance of team leader, role of team leaders, important qualities of good team leaders, behaviors of good team leaders	Case Study method	Teacher will organize a students' team event in class/ department. Few students will be asked to play roles of team members and the leader to solve team problems under given situation. Other students will observe. Afterward, teacher will discussion with students. Teacher will organize similar events for practice.	02	08	video film*	*Teacher will suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Student's role play	The teacher will organize small team events in batches in which individual students will be asked to play role of leader to solve a team problem, under given situation. Teacher will observe and assess the extent of leader's behavior performed by students on the basis of performance indicators	15	Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

The assessment will be done on basis of following performance indicators:-

- 1. Extent to which student take initiatives
- 2. Extent to which student take responsibility on behalf of group
- 3. Extent to which student visualize the team event and plan things for the event
- 4. Extent to which student take interest to carryout team related activities

5. Extent to which student take interest in solving team related problems

ethics for engineers, ethical issues

for engineers, common problems

related to professional ethics, ethical

issues, identification of ethical issues

in cases for engineers.

DC	DV (Diplo	ma Wing \ Phonal	SCHEME FO	R LEARNING	Branch Code Cou		Course Code		CO Code	LO Code	A
RGPV (Diploma Wing) Bhopal		OUTO	OUTCOME			0 5		2	1	Format No.	
COURSE NAME			t-III								
			pply professional etl	hics in a given probler	n situatio	n					
LO D	escription	Student will be able to der	nonstrate his/her un	derstanding of professi	onal ethic	es s					
			S	CHEME OF STUDY							
S. No.	No. Learning Content Learning Method		Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	L	Rs Re	quired	I	Remarks	
				Teacher will explain about the contents							*Teacher wil

SCHEME OF ASSESSMENT

examples/cases, will

give assignment for

practice, will conduct

tutorials and

remedial.

05

05

Handout, video

film*

suitable online

video to be

viewed by

students

Traditional

lecture method +

Case Study

S	. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
	1	Paper pen test	A test will be designed and administered by the teacher to assess the understanding of student. Assessment will be done through Rating Scale.	10	Test paper and Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

1. Ethics common to all professions

- honesty
- trustworthiness
- loyalty
- respect for others
- adherence to the law
- doing good and avoiding harm to others
- Accountability.

2. General code of ethics for engineers:-

- 1. Respect for People's Dignity and Rights
- 2. Responsible Practice
- 3. Integrity in Relationships
- 4. Responsibility

3. Common Ethical issues for engineers:-

- Relationships with clients, consultants, competitors, and contractors
- Ensuring legal compliance by clients, client's contractors, and others
- Conflict of interest
- Bribery and kickbacks, which might include:
 Gifts, meals, services, entertainment and recreation opportunities
- Treatment of confidential or proprietary information

- Consideration of the employer's assets
- Outside employment/activities

Test Performance Indicators:-

Extent to which student will be able

- 1. To explain the professional ethics (2 marks)
- 2. To explain the need and importance of professional ethics (2 marks)
- 3. To explain seven ethics common to all professions (2 marks)
- 4. To identify the problem related to professional ethics in given list of problems (2 marks)
- 5. To identify the ethical issue for an engineer in a given case of professional ethics (2 marks)

SCHEME FOR LEARNING OUTCOME

Branch Code	Co	ourse Co	d e	CO Code	LO Code	
	3	0	5	2	2	Format N

COURSE NAME	Professional Development-III
CO Description	Student will be able to apply professional ethics in a given problem situation
LO Description	Student will be able to apply appropriate professional ethics in a given problem situation

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Procedure of solving the problems related professional ethics, Identification of ethical issue, identification of the ethical stand, searching various possible solutions for the problem keeping ethical stand in focus, selection of appropriate solution.	Traditional lecture method + Case Study	Teacher will explain about the contents along-with examples/cases, will give assignment for practice, will conduct tutorials and remedial.	05	05	Handout, video film*	*Teacher will suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	A case based test on problem of ethical issue for an engineer will be designed and administered by the teacher to assess the ability of students to solve the ethical problem; Assessment will be done through Rating Scale.	10	Test paper and Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Steps in solving ethical problems:-

- 1. Identify the ethical issue in the problem
- 2. Identify the ethical stand in the problem
- 3. Search for various possible solutions keeping focus on the ethical stand
- 4. Implement the best possible solution

Performance indicators:-

- 1. Correctness of identified ethical issue in the problem (3 marks)
- 2. Correctness of identified ethical stand (3 marks)
- 3. Quality of suggested possible solutions (2 marks)
- 4. Appropriateness of selected best possible solution (2 marks)

RGPV (Diploma Wing) Bhopal

SCHEME FOR LEARNING OUTCOME

Branch Code			Course Code			CO Code	LO Code	
M	0	2	3	0	5	3	1	Format No. 4

COURSE NAME	Professional Development-III
CO Description	Student will be able to plan self-learning to complete the given task
LO Description	Student will be able to identify the self-learning needs for completing the given task

SCHEME OF STUDY

S. No.	Learning Content	Teaching-Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Lifelong learning, its examples, self-directed learning, its examples, important steps in lifelong learning, identification of learning needs	Traditional lecture method + Case Study	Teacher will explain about the contents along-with examples/cases, will give assignment for practice, will conduct tutorials and remedial.	05	05	Handout, video film*	*Teacher will suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S. No.	Method of Assessment Description of Assessment		Maximum Marks	Resources Required	External / Internal
1	Assessment through student activity	A Self-assessment portfolio will be prepared by the student on the task assigned by the teacher. Assessment of portfolio will be done through Rating Scale.	10	Portfolio format and Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

1. Lifelong learning

All **learning** activities undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective. It is voluntary, self-initiated and self-directed learning.

Examples:-

- 1. We learn to use smart phones (informal learning)
- 2. We learn yoga by joining a one week yoga training programme organized by a private spiritual institute (formal learning).

2. Self directed learning

A process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes.

3. Essential steps of lifelong learning

- 1. Identification of self learning need (what to learn)
- 2. Searching about how I can learn, search of learning resources and ways/means to use them for learning
- 3. Planning self-learning
- 4. Implementing the plan

4. Suggested list of tasks for practice of identification of learning needs

- 1. You have to repair your faulty house-hold electric iron
- 2. You have to daily operate the new washing machine purchased at your home
- 3. You have to format your PC
- 4. You have to attend online class using meet.google app
- 5. You have to share your ideas online with your distant friends. You have to arrange a webinar
- 6. You have to visit abroad and therefore you have to apply for passport
- 7. Your mother is a patient of high BP. You have to measure her BP daily two times at home with traditional BP measuring apparatus
- 8. Your bike is not getting started. You have to check its spark plug.
- 9. You have to complete bank paper formalities for bank loan to establish your small manufacturing unit
- 10. You have to prepare French-fries at home.

5. Self-assessment portfolio

A questionnaire in which questions are in first person and space is provided after each question to write the answer. It is prepared by the student.

6. Self-assessment portfolio questions:-

- 1. Can I complete this task?
- 2. Is there special knowledge or skill required to complete the task?

- 3. What knowledge or skill is required to complete this task?
- 4. Do I have this knowledge or skill?
- 5. From where I can learn this knowledge or skill. (Mention at least three sources. Sources may be people, institutions, books, websites?)
- 6. How I can manage to learn this knowledge or skill?

7. Indicators of performance

- 1. Able to identified that he/she can-not complete the given task due to lack of knowledge or skill
- 2. Able to identified the need for special knowledge or skill to complete the task
- 3. Correctness of identified knowledge or skill required to complete the task
- 4. Appropriateness of sources from which student can learn knowledge or skill
- **5.** Extent of feasibility of student's way to acquire the required knowledge or skill

RGPV (Diploma Wing) Bhopal

SCHEME FOR LEARNING OUTCOME

4	LO Code	CO Code	de	ourse Coo	Co	le	ranch Cod	Ві
Format No. 4	2	3	5	0	3	2	0	M

COURSE NAME	Professional Development-III
CO Description	Student will be able to plan self directed learning to complete the given task
LO Description	Student will be able to plan self directed learning for completing the given task

SCHEME OF STUDY

S. No.	Learning Content	Teaching-Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Need for planning, need for planning self directed learning, planning self directed learning, self directed learning plan, examples.	Traditional lecture method + Case Study	Teacher will explain about the contents along-with examples/cases, will give assignment of preparing self-directed learning plan for practice, will conduct tutorials and remedial.	05	05	Handout, video film*	*Teacher will suggest a suitable online video to be viewed by students

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	ethod of Assessment Description of Assessment		Resources Required	External / Internal
1	Assessment through student activity	A self directed learning plan will be prepared by the student on the task assigned by the teacher. Assessment of the plan will be done through Rating Scale.	10	Plan format and Rating Scale	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

1. Self directed learning

A process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes.

3. Essential steps of lifelong learning

5. Identification of self learning need (what to learn)

- 6. Searching about how I can learn, search of learning resources and ways/means to use them for learning
- 7. Planning self directed learning
- 8. Implementing the plan

4. Contents of the plan

- 1. Description of knowledge or skill to be self-learned
- 2. Description of selected source of learning the knowledge or skill ie people, books, institutions, websites etc.
- 3. Description of method of self-directed learning viz formal learning or informal learning
- 4. Description of additional resources / learning resources required
- 5. Expected time required to learn along with justification

5. Indicators of performance

- 1. Quality of description of knowledge or skill to be self-learned (3 marks)
- 2. Appropriateness of selected source of knowledge or skill learning (3 marks)
- 3. Appropriateness of method of self-learning (1 mark)
- 4. Appropriateness of additional resources / learning resources required (1 mark)
- **5.** Appropriateness of time required to learn (1 mark)