

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					E	O	4	4	O	4	1	1	
<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>												
<b>CO Description</b>	To understand and measure following physical parameter humidity, viscosity & Moisture.												
<b>LO Description</b>	Explain the various devices used for moisture measurement.(Cognitive)												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
LO-01	Definition of moisture, Hot wire electrode type hygrometer, dew cell, Electrolysis type hygrometer, commercial type dew point meter, moisture terms, different methods of moisture measurement.	Interactive classroom lecture, PPT, demonstration, quiz, assignments	6	2	Text Books, PPT, Handouts, chalk board, charts.Videos lectures- NPTEL& others								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							
LO-01	End Semester Theory Exam	<b>Student will be asked to (and/or)</b> <ol style="list-style-type: none"> <li>1. Explain the different methods of moisture measurement.</li> <li>2. Explain the Hot wire electrode type hygrometer and dew cell.</li> <li>3. What is electrode and Explain the commercial type dew point meter.</li> </ol>	10		Question paper, Rating scale	External							
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					E	O	A	4	0	4	1	2	
<b>COURSE NAME</b>	Electronics and Instrumentation												
<b>CO Description</b>	To understand and measure following physical parameter humidity, viscosity & Moisture.												
<b>LO Description</b>	Explain the humidity measurement. (Cognitive)												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
LO-02	Definition of humidity, Industrial consistency meters ,humidity terms, dry and wet bulb methods	Interactive classroom lecture, PPT, demonstration, quiz, assignments	6	2	Text Books, PPT, Handouts, chalk board, charts. Videos lectures- NPTEL & others								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							
LO-02	End Semester Theory Exam	<b>Student will be asked to (and/or)</b> <ol style="list-style-type: none"> <li>Definition of humidity and its Explain the Industrial consistency meters.</li> <li>What is Humidity terms and its Explain the dry and wet bulb method.</li> </ol>	10		Question paper, Rating scale	External							
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					E	O	A	4	0	4	1	3	
<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>												
<b>CO Description</b>	To understand and measure following physical parameter humidity, viscosity & Moisture.												
<b>LO Description</b>	Explain the viscosity measurement. <b>(Psychomotor)</b>												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
LO-03	Definition of viscosity, viscosity terms, Say bolt viscometer, Rota meter type viscometer, capillary tube type viscometer	Lab demonstration, hands on practice, lab assignments, Virtual Lab.		6	Lab manual, charts, experimental trainer instruments/kit with measuring instruments, computer with relevant simulation software.								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							
LO-03	Practical test in laboratory	<b>Student will be asked to</b> 1. Demonstrate various type of viscometers and find viscosity different fluids	10		Rubrics/Rating scale	Internal							
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RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					E	O	A	4	0	4	2	4	
<b>COURSE NAME</b>	Electronics and Instrumentation												
<b>CO Description</b>	To understand and measure following physical parameter humidity, viscosity & Moisture.												
<b>LO Description</b>	To measurement the humidity, viscosity & moisture. (Psychomotor)												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
LO-04	<ul style="list-style-type: none"> <li>To Measure the humidity using hygrometer</li> <li>To Measure the viscosity using say bolt universal viscometer</li> <li>To Measure the Moisture using hygrometer</li> <li>To make a small project for humidity &amp; moisture measurement</li> </ul>	Lab demonstration, hands on practice, lab assignments, Virtual Lab.		8	Lab manual, charts, experimental trainer instruments/kit with measuring instruments, computer with relevant simulation software.								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							
LO-04	End Semester Practical Exam	<b>Student will be asked to</b> 1. To study hygrometer & viscometer	10		Rubrics/Rating scale	External							
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					E	O	A	4	0	4	2	5	
<b>COURSE NAME</b>	Electronics and Instrumentation												
<b>CO Description</b>	Explain the various methods of level measurements.												
<b>LO Description</b>	Explain the different type mechanical instrument for level measurement. (cognitive)												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
LO-05	Definition of level measurement, method of level measurement, Sight Glass, hook Gauge, float type, magnetic level gauge, Buoyancy and displacement gauge	Interactive classroom lecture, PPT, demonstration, quiz, assignments	6	2	Text Books, PPT, Handouts, chalk board, charts. Videos lectures- NPTEL & others								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							
LO-05	End Semester Theory Exam	<b>Student will be asked to (and/or)</b> <ol style="list-style-type: none"> <li>What is level measurement and its Explain the Sight Glass method.</li> <li>Explain the magnetic level gauge, Buoyancy and displacement gauge.</li> <li>Explain the hook gauge and float gauge measurement.</li> </ol>	10		Question paper, Rating scale	External							
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					E	O	4	4	O	4	2	6	
<b>COURSE NAME</b>	Electronics and Instrumentation												
<b>CO Description</b>	Explain the various methods of level measurements.												
<b>LO Description</b>	Explain the construction and working of hydrostatic type level measurement. (Cognitive)												
SCHEME OF STUDY													
S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks							
LO-06	Pressure gauge, air bellows, air purge system, liquid purge system, force balance method	Interactive classroom lecture, PPT, demonstration, quiz, assignments	3	2	Text Books, PPT, Handouts, chalk board, charts. Videos lectures- NPTEL & others .								
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal							
LO-06	Mid semester Theory Exam	<b>Student will be asked to</b> 1. What is pressure gauge and Explain the air purge system, liquid purge system. 2. Explain the force balanced method.	10		Question paper, Rating scale	External							
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
						E	0	4	4	0	4	3	7	
<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>													
<b>CO Description</b>	Explain the various methods of level measurements.													
<b>LO Description</b>	Explain the various electrical type level measurement gauges & nuclear radiation and ultrasonic sensor. <b>(Cognitive)</b>													
SCHEME OF STUDY														
S. No.	Learning Content				Method of teaching			Teach Hrs.	Pract. /Tut Hrs.	LRs Required			Remarks	
LO-07	level switches, level measurement using displacer and torque tube ,bubbler method. Boiler drum level measurement, differential pressure method hydra step systems, Electrical types of level gauges using resistance, capacitance method, nuclear radiation and ultrasonic sensors.				Interactive classroom lecture, PPT, demonstration, quiz, assignments			6	2	Text Books, PPT, Handouts, chalk board, charts. Videos lectures- NPTEL & others				
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment			Maximum Marks	Passing Criteria	Resources Required			External / Internal				
LO-07	End Semester Theory Exam	<b>Student will be asked to</b> 1.Explain the Working principle of bubbler method. 2. what is level switches and its Explain the Electrical types of level gauges using resistance, capacitance method. 3. Explain the differential pressure method hydra step systems,			10		Question paper, Rating scale			External				
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					<i>E</i>	<i>0</i>	<i>4</i>	<i>4</i>	<i>0</i>	<i>4</i>	<i>3</i>	<i>8</i>	
<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>												
<b>CO Description</b>	Explain the various methods of level measurements.												
<b>LO Description</b>	To Measurement level using different methods(Psychomotor)												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>				<b>Method of teaching</b>			<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>
LO-08	<ol style="list-style-type: none"> <li>1. To measure level using float type method</li> <li>2. To measure level using capacitive prove method.</li> <li>3. To measure and control level using PLC</li> <li>4. To control the level of any tank, make a small project</li> </ol>				Lab demonstration, hands on practice, lab assignments, Virtual Lab.				6	Lab manual, charts, experimental trainer instruments/kit with measuring instruments, computer with relevant simulation software			
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>			<b>Maximum Marks</b>	<b>Passing Criteria</b>		<b>Resources Required</b>			<b>External / Internal</b>		
LO-08	End Semester Practical Exam	<b>Student will be asked to</b> <ol style="list-style-type: none"> <li>1. To study the various level measurement methods.</li> </ol>			10			Rubrics/Rating scale			External		
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													

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						E	0	4	4	0	4	3	9	
<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>													
<b>CO Description</b>	To understand construction and working principle of various type Fluid flow.													
<b>LO Description</b>	Explain the types of flow meters(Cognitive)													
SCHEME OF STUDY														
S. No.	Learning Content				Method of teaching			Teach Hrs.	Pract. /Tut Hrs.	LRs Required			Remarks	
LO-09	Definition of flow, type of flow, Reynolds's number, Bernoulli's equation for flow restriction variable head type flow meters, orifice plate, venture meter , flow nozzle, Dall tube, installation of head flow meters, piping arrangement for different fluids, pitot tube, quantity meters, area flow meters, calibration of flow meters, thermal mass flow meter..				Interactive classroom lecture, PPT, demonstration, quiz, assignments.			6	2	Text Books, PPT, Handouts, chalk board, charts. Videos lectures- NPTEL & others				
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment		Description of Assessment				Maximum Marks	Passing Criteria	Resources Required			External / Internal		
LO-09	End semester Theory Exam		<b>Student will be asked to</b> <ol style="list-style-type: none"> <li>1. What is flow and its type of flow measurement orifice plate, venturi meter.</li> <li>2. Explain the venture meter and pitot tube, quantity meters, area flow meters</li> <li>3. Explain the Thermal mass flow meter.</li> </ol>				10		Question paper, Rating scale			External		
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														

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<b>RGPV (Diploma Wing ) Bhopal</b>	<b>SCHEME FOR LEARNING OUTCOME</b>	Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
		<i>E</i>	<i>0</i>	<i>4</i>	<i>4</i>	<i>0</i>	<i>4</i>	<i>4</i>	<i>10</i>	

<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>
<b>CO Description</b>	To understand construction and working principle of various type Fluid flow.
<b>LO Description</b>	Explain the mass flow meters.(Cognitive)

**SCHEME OF STUDY**

S. No.	Learning Content	Method of teaching	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-10	Weirs, Flume, Angular momentum mass flow meter, carioles mass flow meters,Thermal mass flow meter.	Interactive classroom lecture, PPT, demonstration, quiz, assignments	4	2	Text Books, PPT, Handouts, chalk board, charts. Videos lectures- NPTEL & others	

**SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
LO-10	Mid Semester Theory Exam	<b>Student will be asked to (and/or)</b> 1. Basic of Thermal mass flow meterworking and construction mass flow meter.	10		Question paper, Rating scale	Internal

**ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)**

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME				Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
						E	O	4	4	O	4	4	4	
<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>													
<b>CO Description</b>	To understand construction and working principle of various type Fluid flow.													
<b>LO Description</b>	Explain the Different flow meters.(Cognitive)													
SCHEME OF STUDY														
S. No.	Learning Content				Method of teaching			Teach Hrs.	Pract. /Tut Hrs.	LRs Required			Remarks	
LO-11	Positive displacement flow meters, construction details and theory of operation of Nutating disc, reciprocation piston meter, oval gear and helix type flow meters, turbine flow meter theory and installation, magnetic flow meter.				Interactive classroom lecture, PPT, demonstration, quiz, assignments			4	2	Text Books, PPT, Handouts, chalk board, charts. Videos lectures- NPTEL & others				
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment			Maximum Marks	Passing Criteria	Resources Required			External / Internal				
LO-11	End semester Theory Exam	<b>Student will be asked to</b> 1. Explain the reciprocation piston meter. 2. What is flow meter and its Explain the turbine flow meter.			10		Question paper, Rating scale			External				
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														

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						E	0	4	4	0	4	5	12	
<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>													
<b>CO Description</b>	To understand construction and working principle of various type Fluid flow.													
<b>LO Description</b>	To measure the flow using various instruments(Psychomotor)													
SCHEME OF STUDY														
S. No.	Learning Content				Method of teaching			Teach Hrs.	Pract. /Tut Hrs.	LRs Required			Remarks	
LO-12	<ul style="list-style-type: none"> <li>To measure the Flow using venture meter</li> <li>To measure the Flow using orifice plate</li> <li>To measure the Flow using magnetic flow meter</li> </ul>				Lab demonstration, hands on practice, lab assignments, Virtual Lab				6	Lab manual, charts, experimental trainer instruments/kit with measuring instruments, computer with relevant simulation software.				
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment			Maximum Marks	Passing Criteria	Resources Required			External / Internal				
LO-12	End semester practical Exam	<b>Student will be asked to</b> 1.To steady Various Type Flow measurement instrument			10		Rubrics/Rating scale			External				
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					E	0	4	4	0	4	5	13	
<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>												
<b>CO Description</b>	To understand construction and working principle of various type Industrial Innovations.												
<b>LO Description</b>	Instrument and Process equipment Symbols.												
SCHEME OF STUDY													
S. No.	Learning Content		Method of teaching		Teach Hrs.	Pract. /Tut Hrs.	LRs Required			Remarks			
LO-13	Line type, Process/instrument line connections, instrument bubbles ,process valve type , valve actuator type ,valve failure mode		Interactive classroom lecture, PPT, demonstration, quiz, assignments		5	3	Text Books, PPT, Handouts, chalk board, charts. Videos lectures- NPTEL & others						
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment			Maximum Marks	Passing Criteria	Resources Required			External / Internal			
LO-13	End Semester Theory Exam	<b>Student will be asked to</b> 1. Explain theProcess equipment Symbols.			10		Question paper, Rating scale			External			
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<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			Branch Code			Course Code			CO Code	LO Code	Format No. <b>4</b>
					<i>E</i>	<i>0</i>	<i>4</i>	<i>4</i>	<i>0</i>	<i>4</i>	<i>5</i>	<i>14</i>	
<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>												
<b>CO Description</b>	To understand construction and working principle of various type Industrial Innovations.												
<b>LO Description</b>	To understand process devices symbols.												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Method of teaching</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>							
LO-14	Liquid level measurement devices symbol, flow measurement devices symbol, pressure vessels symbol, functional diagram symbols, single line electrical and fluid power diagram symbol..	Interactive classroom lecture, PPT, demonstration, quiz, assignments	5	2	Text Books, PPT, Handouts, chalk board, charts. Videos lectures- NPTEL & others								
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Passing Criteria</b>	<b>Resources Required</b>	<b>External / Internal</b>							
LO-14	Assignment	<b>Student will be asked to</b> 1. Draw the electrical and fluid power diagram symbol.	10		Question paper, Rating scale	Internal							
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						E	O	4	4	O	4	5	15	
<b>COURSE NAME</b>	<b>Electronics and Instrumentation</b>													
<b>CO Description</b>	To understand construction and working principle of various type Industrial Innovations.													
<b>LO Description</b>	Illustrate the Application Of Instrumentation. <b>(Psychomotor)</b>													
SCHEME OF STUDY														
S. No.	Learning Content				Method of teaching		Teach Hrs.	Pract. /Tut Hrs.	LRs Required			Remarks		
LO-15	Student should be encouraged to collect information regarding process instrumentation used in various process control applications. Documentation may be made on the collected topics.				Lab demonstration, hands on practice, lab assignments, Virtual Lab.		8	4	Lab manual, charts, experimental trainer instruments/kit with measuring instruments, computer with relevant simulation software.					
SCHEME OF ASSESSMENT														
S. No.	Method of Assessment	Description of Assessment			Maximum Marks	Passing Criteria	Resources Required			External / Internal				
LO-15	Lab Assingment	<b>Student will be asked to</b> 1. To collect the information from any process industries regarding operation 2. To deliver a presentation.			10		Rubrics/Rating scale			Internal				
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)														