

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 1/2
Branch	Cement Technology (C01)			Semester	IV
Course Code	404	Course Name	Unit Operation - I		
<b>Course Outcome 1</b>	<b>Student will be able to explain the Mining process of cement plant.</b>			Teach Hrs	Marks
<b>Learning Outcome 1</b>	<b>Specify the selection criteria of limestone mines.</b>			<b>08</b>	<b>10</b>
<b>Contents</b>	Selection of Mines, overburden removal bore holes/drill holes samples. Assessment of life span of mines, determination of parameter of quarry.				
<b>Method of Assessment</b>	Paper pen test				
<b>Learning Outcome 2</b>	<b>Define the method of blasting and types of explosive materials.</b>			<b>08</b>	<b>10</b>
<b>Contents</b>	Methods of blasting, types of explosive materials, storage of explosive materials, safety methods during the blazing operation, Transportation of limestone up to the crusher, equipments needed for transportation and filling purposes (excavators. dozers, dumpers).				
<b>Method of Assessment</b>	Theory exam				
<b>Course Outcome 2</b>	<b>Student will be able to describe the crushing of raw materials.</b>			Teach Hrs	Marks
<b>Learning Outcome 1</b>	<b>State the theory of crushing and types of crushers used in cement plant.</b>			<b>10</b>	<b>10</b>
<b>Contents</b>	Theory of size reduction, types of crushers, Jaw crushers, gyratory crushers, hammer crushers, roller crusher, Impactor, principles of operation, sieve analysis of crushed limestone, Checking crusher efficiency.				
<b>Method of Assessment</b>	Theory exam				
<b>Learning Outcome 2</b>	<b>Explain the transportation of crushed material.</b>			<b>10</b>	<b>10</b>
<b>Contents</b>	Apron conveyer, pipe conveyer, rope way, belt conveyer, cable conveyer, hoppers used to store the raw materials, types of hoppers, apron feeders, weigh feeders, application of their blasters.				
<b>Method of Assessment</b>	Quiz (Term work)				
<b>Course Outcome 3</b>	<b>Student will be able to describe the mixing of raw materials and dust collecting equipments used in cement plant.</b>			Teach Hrs	Marks
<b>Learning Outcome 1</b>	<b>Describe the different types of stock piles and equipments used to make the stock piles.</b>			<b>08</b>	<b>10</b>
<b>Contents</b>	Different types of stock piles, longitudinal stock pile, circular stock pile, capacity of stock piles, linear type of stacker and reclaimer, circular type of stacker and reclaimer, open gantry system.				
<b>Method of Assessment</b>	Theory exam				

<b>Learning Outcome 2</b>	<b>Categorize the different types of dust collecting equipments.</b>	<b>08</b>	<b>10</b>
<b>Contents</b>	Dust collecting equipments, bag dust collector (bag house), Electrostatic precipitator (ESP), hybrid dust collector, cyclone and multiclone, principle of operation, working, selection criteria of dust collecting equipment.		
<b>Method of Assessment</b>	Theory exam		
<b>Course Outcome 4</b>	<b>Student will be able to explain the grinding of raw materials.</b>	Teach Hrs	Marks
<b>Learning Outcome 1</b>	<b>Draw a neat sketch of vertical roller mill with its auxiliaries.</b>	<b>10</b>	<b>10</b>
<b>Contents</b>	Theory of grinding, three laws (Rittingers, Kick's & Bonds), application of Bond's law In grinding mills, hard grove grindability index (HGIV), types of grinding mills, vertical roller mill (VRM), construction and operation, hydraulic system, mill drive system, types of separators & their functions, circulating load & separator efficiency, cyclone separators.		
<b>Method of Assessment</b>	Theory exam		
<b>Learning Outcome 2</b>	<b>Draw a neat sketch of ball mill and explain its working.</b>	<b>10</b>	<b>10</b>
<b>Contents</b>	Ball mill, construction and operation, tube mill, theory of operations of mills, L/D ratio, selection of grinding media, critical speed of mill, determination of critical mill speed, roller press, angle of nip, open and close circuit mill.		
<b>Method of Assessment</b>	Theory exam		
<b>Course Outcome 5</b>	<b>Student will be able to describe the homogenization and transportation of raw meal.</b>	Teach Hrs	Marks
<b>Learning Outcome 1</b>	<b>Explain the Homogenization of raw meal.</b>	<b>09</b>	<b>10</b>
<b>Contents</b>	Types of storage silos, different methods used for the homogenization storage cum blending, capacity of homogenization silo, continuous flow (CF) silo, continuous blending (CB) silo.		
<b>Method of Assessment</b>	Paper pen test		
<b>Learning Outcome 2</b>	<b>Differentiate between mechanical conveyers and pneumatic conveyers.</b>	<b>09</b>	<b>10</b>
<b>Contents</b>	Mechanical conveyers and pneumatic conveyors, screw conveyors, drag chain conveyors, apron conveyors, belt conveyors, bucket elevators, deep drawn pan conveyer, air slides, FK pump, air lift pump, Selection of conveying equipments.		
<b>Method of Assessment</b>	Theory exam		

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>		<b>Course Code</b>			<b>CO Code</b>		<b>LO Code</b>		<b>Format No. 4</b>
					<i>C</i>	<i>0</i>	<i>1</i>	<i>4</i>	<i>0</i>	<i>4</i>	<i>1</i>	<i>1</i>		
<b>COURSE NAME</b>		<b>Unit Operation - I</b>												
<b>CO Description</b>		<b>Student will be able to explain the Mining process of cement plant.</b>												
<b>LO Description</b>		<b>Specify the selection criteria of limestone mines.</b>												
<b>SCHEME OF STUDY</b>														
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>			<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>					
1.	Selection of Mines, overburden removal bore holes/drill holes samples. Assessment of life span of mines, determination of parameter of quarry.	Interactive classroom teaching, demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz to make students practice their knowledge.			08	NIL	Handouts, chalk board, PPT, text book, charts.	NIL					
<b>SCHEME OF ASSESSMENT</b>														
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>				<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>				
1.	Paper pen test	Student will be asked to specify the selection criteria of limestone mines.				10	Test paper + rating scale			Internal				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>														
<b>Part of Progressive – I</b>														

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>		<b>Course Code</b>		<b>CO Code</b>		<b>LO Code</b>		<b>Format No. 4</b>
					<i>C</i>	<i>0</i>	<i>1</i>	<i>4</i>	<i>0</i>	<i>4</i>	<i>1</i>	<i>2</i>	
<b>COURSE NAME</b>		<b>Unit Operation - I</b>											
<b>CO Description</b>		<b>Student will be able to explain the Mining process of cement plant.</b>											
<b>LO Description</b>		<b>Define the method of blasting and types of explosive materials.</b>											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>				<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>	
1.	Methods of blasting, types of explosive materials, storage of explosive materials, safety methods during the blazing operation, Transportation of limestone up to the crusher, equipments needed for transportation and filling purposes (excavators. dozers, dumpers).	Interactive classroom teaching, demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz to make students practice their knowledge.				08	NIL	Handouts, chalk board, PPT, text book, charts.			NIL	
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>					<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>		
1.	Theory exam	Students will be asked to define the method of blasting and types of explosive materials.					10	Question paper + rating scale			External		
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
<b>NIL</b>													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>		<b>LO Code</b>		<b>Format No. 4</b>
					<i>C</i>	<i>0</i>	<i>1</i>	<i>4</i>	<i>0</i>	<i>4</i>	<i>2</i>	<i>1</i>			
<b>COURSE NAME</b>		<b>Unit Operation - I</b>													
<b>CO Description</b>		<b>Student will be able to describe the crushing of raw materials.</b>													
<b>LO Description</b>		<b>State the theory of crushing and types of crushers used in cement plant.</b>													
<b>SCHEME OF STUDY</b>															
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>				<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>			
1.	Theory of size reduction, types of crushers, Jaw crushers, gyratory crushers, hammer crushers, roller crusher, Impactor, principles of operation, sieve analysis of crushed limestone, checking crusher efficiency.	Interactive classroom teaching, tutorial, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/tutorial/assignments to make students practice their knowledge.				10	NIL	Handouts, chalk board, PPT, text book, charts, video film.			NIL			
<b>SCHEME OF ASSESSMENT</b>															
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>					<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>				
1.	Theory exam	Students will be asked to state the theory of crushing and types of crushers used in cement plant.					10	Question paper + rating scale			External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>															
NIL															

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code		LO Code	Format No. <b>4</b>
					C 0 1			4 0 4			2		2	
<b>COURSE NAME</b>		Unit Operation - I												
<b>CO Description</b>		Student will be able to describe the crushing of raw materials.												
<b>LO Description</b>		Explain the transportation of crushed material.												
<b>SCHEME OF STUDY</b>														
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>			<b>Description of T-L Process</b>			<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>		<b>Remarks</b>		
1.	Apron conveyer, pipe conveyer, rope way, belt conveyer, cable conveyer, hoppers used to store the raw materials, types of hoppers, apron feeders, weigh feeders, application of their blasters.	Interactive classroom teaching, tutorial, quiz, assignments.			Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/tutorial/assignments to make students practice their knowledge.			10	NIL	Handouts, chalk board, PPT, text book		NIL		
<b>SCHEME OF ASSESSMENT</b>														
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>					<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>			
1.	Quiz	Students will be asked to explain the transportation of crushed material.					10	Rubrics/rating scales			Internal			
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>														
<b>Term Work</b>														

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>		<b>LO Code</b>		<b>Format No. 4</b>
					<i>C</i>	<i>0</i>	<i>1</i>	<i>4</i>	<i>0</i>	<i>4</i>	<i>3</i>	<i>1</i>			
<b>COURSE NAME</b>		<b>Unit Operation - I</b>													
<b>CO Description</b>		<b>Student will be able to describe the mixing of raw materials and dust collecting equipments used in cement plant.</b>													
<b>LO Description</b>		<b>Describe the different types of stock piles and equipments used to make the stock piles.</b>													
<b>SCHEME OF STUDY</b>															
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>			<b>Description of T-L Process</b>			<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>		<b>Remarks</b>			
1.	Different types of stock piles, longitudinal stock pile, circular stock pile, capacity of stock piles, linear type of stacker and reclaimer, circular type of stacker and reclaimer, open gantry system.	Interactive classroom teaching, quiz, assignments.			Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/assignments to make students practice their knowledge.			08	NIL	Handouts, chalk board, PPT, text book and video films.		NIL			
<b>SCHEME OF ASSESSMENT</b>															
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>						<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>			
1.	Theory exam	Student will be asked to describe the different types of stock piles and equipments used to make the stock piles.						10	Question paper + rating scale			External			
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>															
NIL															

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>		<b>Course Code</b>		<b>CO Code</b>	<b>LO Code</b>	<b>Format No. 4</b>
		<i>C</i>	<i>0</i>	<i>1</i>	<i>4</i>	<i>0</i>	<i>4</i>	<i>3</i>	<i>2</i>		
<b>COURSE NAME</b>	<b>Unit Operation - I</b>										
<b>CO Description</b>	<b>Student will be able to describe the mixing of raw materials and dust collecting equipments used in cement plant.</b>										
<b>LO Description</b>	<b>Categorize the different types of dust collecting equipments.</b>										
<b>SCHEME OF STUDY</b>											
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>			<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>		
1.	Dust collecting equipments, bag dust collector (bag house), Electrostatic precipitator (ESP), hybrid dust collector, cyclone and multiclone, principle of operation, working, selection criteria of dust collecting equipment.	Interactive classroom teaching, lab demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/assignments to make students practice their knowledge.			08	NIL	Handouts, chalk board, PPT, text book, charts, video film, Models.	NIL		
<b>SCHEME OF ASSESSMENT</b>											
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>				<b>Maximum Marks</b>	<b>Resources Required</b>		<b>External / Internal</b>		
1.	Theory exam	Student will be asked to categorize the different types of dust collecting equipments.				10	Question paper + rating scale		External		
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>											
<b>NIL</b>											



<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>		<b>LO Code</b>		<b>Format No. 4</b>
					<i>C</i>	<i>0</i>	<i>1</i>	<i>4</i>	<i>0</i>	<i>4</i>	<i>4</i>	<i>1</i>			
<b>COURSE NAME</b>		<b>Unit Operation - I</b>													
<b>CO Description</b>		<b>Student will be able to explain the grinding of raw materials.</b>													
<b>LO Description</b>		<b>Draw a neat sketch of vertical roller mill with its auxiliaries.</b>													
<b>SCHEME OF STUDY</b>															
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>					<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>		
1.	Theory of grinding, three laws (Rittingers, Kick's & Bonds), application of Bond's law In grinding mills, hard grove grindability index (HGIV), types of grinding mills, vertical roller mill (VRM), construction and operation, hydraulic system, mill drive system, types of separators & their functions, circulating load & separator efficiency, cyclone separators.	Interactive classroom teaching, lab demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/assignments to make students practice their knowledge.					10	NIL	Handouts, chalk board, PPT, text book, charts, video film, Models.			NIL		
<b>SCHEME OF ASSESSMENT</b>															
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>					<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>				
1.	Theory exam	Student will be asked to describe the different physical and chemical properties of cement.					10	Question paper + rating scale			External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>															
NIL															

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code		Course Code		CO Code	LO Code	Format No. 4
					C	0	1	4	0	4	
COURSE NAME		Unit Operation - I									
CO Description		Student will be able to explain the grinding of raw materials.									
LO Description		Draw a neat sketch of ball mill and explain its working.									
<b>SCHEME OF STUDY</b>											
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks				
1.	Ball mill, construction and operation, tube mill, theory of operations of mills, L/D ratio, selection of grinding media, critical speed of mill, determination of critical mill speed, roller press, angle of nip, open and close circuit mill.	Interactive classroom teaching, demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/assignments to make students practice their knowledge	10	NIL	Handouts, chalk board, PPT, text book, charts, video film, Models.	NIL				
<b>SCHEME OF ASSESSMENT</b>											
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal						
1.	Theory exam	Student will be asked to perform the different test mentioned in content.	10	Question paper + rating scale	External						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>											
NIL											

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	<b>Format No. 4</b>
					<i>C</i>	<i>0</i>	<i>1</i>	<i>4</i>	<i>0</i>	<i>4</i>	<i>5</i>	<i>1</i>	
<b>COURSE NAME</b>	<b>Unit Operation - I</b>												
<b>CO Description</b>	<b>Student will be able to describe the homogenization and transportation of raw meal.</b>												
<b>LO Description</b>	<b>Explain the Homogenization of raw meal.</b>												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>						
1.	Types of storage silos, different methods used for the homogenization storage cum blending, capacity of homogenization silo, continuous flow (CF) silo, continuous blending (CB) silo.	Interactive classroom teaching, lab demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/assignments to make students practice their knowledge.	09	NIL	Handouts, chalk board, PPT, text book, charts, video film, Models.	NIL						
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>			<b>Maximum Marks</b>	<b>Resources Required</b>	<b>External / Internal</b>						
1.	Paper pen test	Student will be asked to explain the homogenization of raw meal.			10	Test paper + rating scale	Internal						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
<b>Part of Progressive – II</b>													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME					Branch Code			Course Code			CO Code	LO Code	Format No. 4
							C	0	1	4	0	4	5		
COURSE NAME		Unit Operation - I													
CO Description		Student will be able to describe the homogenization and transportation of raw meal.													
LO Description		Differentiate between mechanical conveyers and pneumatic conveyers.													
<b>SCHEME OF STUDY</b>															
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks								
1.	Mechanical conveyers and pneumatic conveyors, screw conveyors, drag chain conveyors, apron conveyors, belt conveyors, bucket elevators, deep drawn pan conveyer, air slides, FK pump, air lift pump, Selection of conveying equipments.	Interactive classroom teaching, tutorial, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/tutorial/assignments to make students practice their knowledge.	09	NIL	Handouts, chalk board, PPT, text book, charts, video film, models.	NIL								
<b>SCHEME OF ASSESSMENT</b>															
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal										
1.	Theory exam	Student will be asked to differentiate between mechanical conveyers and pneumatic conveyers.	10	Question paper + rating scale	External										
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>															
NIL															