| RGPV | (DIPL) BHO | OMA W PAL | ING) | OBE CURRIC | CULUM FOR THE DURSE | FORMA | T-3 | Sheet No. 1/3 |
|----------|---------------|------------------|--|---|--|---|---|--|
| Branch | | | C | ement Technology | 7 | Semester | | V |
| Course | Code | 50 | 2 | Course Name | Automation in | Cement Mai | nufact | uring |
| Course (| Dutcon | ne 1 | Studer contro | nt will be able to des l system. | scribe the automation a | nd automatic | Teacl Hrs | ¹ Marks |
| Learnin | g Outc | ome 1 | Studer autom | nt will be able to de ation. | fine the role and applie | cation of | 08 | 10 |
| Contents | 5 | | Define advant | e automation, role o tages of automation | f automation, applicat | ion of automa | ation, | |
| Method | of Ass | essment | Paper | pen test | | | | |
| Learnin | g Outc | ome 2 | Studen feed fo | nt will be able to state orward control. | te the principle of feed | lback and | 08 | 10 |
| Contents | 5 | | Princip charac concep system | ples of feedback and teristics of instruments of stability and one | d feed forward control ents and instrumentatio optimum control, block | , general perf on. Errors, ca c diagram of | formar librati instrui | ice and on, mentation |
| Method | of Ass | essment | Theor | y exam | | | | |
| Learning | g Outc | ome 3 | Studer autom | nt will be able to atic control system. | understand the differ | ent types of | 08 | 15 |
| Contents | 5 | | On off closed propor | f control system, co loop control system ctional control, integ | ontinuous control syste stem, transfer functio gral control, PI, PD, PI | m, open loop on of circui D control. | contr ts and | ol system, 1 devices, |
| Method | of Ass | essment | Labor | atory test by observ | ation | | | |
| Course (| Outcon | ne 2 | Studer monite | nt will be able to oring equipments. | explain about the r | neasuring & | Teacl Hrs | ¹ Marks |
| Learnin | g Outc | ome 1 | Studer pressu | nt will be able to de re measuring equip | scribe the temperature ments. | and | 08 | 10 |
| Contents | S of A sec | occ m ont | Therm thermo pyrom pressu transd pick u | ometer, Bimetalli opile, resistance te leter, optical pyron re elements, pressu ucer, LVDT type tr p ionization gauge. | c strip, Resistance emperature detectors (meter, thermal camer re transducers, potenti ansducer, variable cap | thermometer (RTD), therr a, thermal g al-metric dev acitance devi | , ther nostat, gun. N rice, st ice, pie | mocouple, , radiation /lechanical rain gauge ezoelectric |

| Learning Outcome 2 | Student will be able to explain in brief about the level & flow controllers. | 08 | 10 |
|--------------------|---|-------------------------------------|-----------------------|
| Contents | Level measurement, Different type of level controllers/Sensor Sensors (Prob type), Ultrasonic level sensors, Flow, Vibratic Weigh Feeders, and Solid Flow Meters.C ₂ S, C ₃ A, C ₄ AF), cha compound compositions of clinker. | rs, Level on, Feed racteristi | Control- cs of the |

| Method of Assessment | Quiz | | | | | | | | | |
|----------------------|---|-------------------------------|------------------------|--|--|--|--|--|--|--|
| Learning Outcome 3 | Student will be able to perform the test on different measuring and monitoring devices. | 08 | 10 | | | | | | | |
| Contents | Study of LVDT, RTD, thermocouple, resistance thermome strain gauge, orifice assembly etc. Calibration of pressure ga of temperature indicator. Measurement of displacement by L Measurement of displacement by LDR. | ter, ther uge. Cal VDT. | mistors, libration | | | | | | | |
| Method of Assessment | Laboratory test by observation | | | | | | | | | |
| Course Outcome 3 | Student will be able to describe the effect and control of process parameters. | Teach Hrs | Marks | | | | | | | |
| Learning Outcome 1 | Student will be able to define the different key parameters and control in different sections of cement plant. | 08 | 10 | | | | | | | |
| Contents | Key Parameters and Control in Raw Meal Preparation, Key Control in Pyro-processing, Key Parameters and Control in C | y Param Cement C | eters and Grinding. | | | | | | | |
| Method of Assessment | Theory exam | | | | | | | | | |
| Learning Outcome 2 | Student will be able to explain the interlocking of motors and trouble shooting.0810 | | | | | | | | | |
| Contents | Sequential interlocking for group/circuit of equipments, equipments with process parameters, hardware and software in logic, monitoring of alerts, types of alarms, trouble-shooting. | interloc nterlocks | king of s, ladder | | | | | | | |
| Method of Assessment | Paper pen test | | | | | | | | | |
| Course Outcome 4 | Student will be able to specify the quality control through automation. | Teach Hrs | Marks | | | | | | | |
| Learning Outcome 1 | Student will be able to draw a schematic of an On-line computerized raw mix proportioning operation. | 10 | 10 | | | | | | | |
| Contents | Schematic of an on-line computerized raw mix proportioning operation, set points, key parameters, X-ray fluorescence analysis, automatic samplers, Online X-ray analysis (Robo Labs), Off-line X-ray analysis, gas proportional detectors, gas filled detector, gas flow detector, spectrometer, types of spectrometers. ment Theory exam | | | | | | | | | |
| | | | | | | | | | | |

| Learning Outcome 2 | Student will be able to make a report on operation of XRay fluorescence analysis and on-line raw mix proportioning. | 10 | 10 |
|----------------------|--|-----------------------------------|---------------------------------|
| Contents | X-ray fluorescence analysis, X-Ray spectrometer, and On-lin proportioning operation. | ie raw m | ix |
| Method of Assessment | Laboratory test by observation | | |
| Learning Outcome 3 | Student will be able to follow the safety precautions during experiments. | 02 | 05 |
| Contents | Instructions related with safety precautions during experiment | its. | |
| Method of Assessment | Laboratory test by observation | | |
| Course Outcome 5 | Student will be able to optimize the plant operation through PLCs. | Teach Hrs | Marks |
| Learning Outcome 1 | Student will be able to draw a block diagram for mill feed control system and explain. | 08 | 10 |
| Contents | Principle of control for optimizing of grinding through a control through pholaphone, belt conveyor motor, separator meter, DDC control elements, Block diagram for each feed c | compute motor, a ontrol sy | er. Feed fineness vstem. |
| Method of Assessment | Theory exam | | |
| Learning Outcome 2 | Student will be able to prepare a report on optimizing cement and raw mill grinding using computer. | 10 | 10 |
| Contents | Block diagram for feed control system, Mill feed control through the belt conveyor motor, separator motor, fineness meter, DDC of | ough pho | olaphone, lements. |
| Method of Assessment | Laboratory test by observation | | |
| Learning Outcome 3 | Student will be able to describe the different model for the kiln control system. | 08 | 10 |
| Contents | Principle of control 'Ideal Model' Vs. Adaptive Model', prinvariable required, block diagram, kiln simulator, advantage conventional system, use of PLCs. | mary sub es of PL | osystem, Cs over |
| Method of Assessment | Theory exam | | |
| Learning Outcome 4 | Student will be able to draw a block diagram of fuzzy logic kiln control and hierarchial control system of kiln and describe. | 08 | 10 |
| Contents | Fuzzy logic kiln control, simplified flow charts for kiln con kiln control strategy according to 'Fuzzy logic'. Hierarch control technique of hierarchical structure and distribut schematic of control hierarchy for a cement plant. | trol sche ial kiln ed intel | eme and control, ligence, |
| Method of Assessment | Theory exam | | |

| DODU | | | | | Brai | nch C | ode | C | ourse | Code | CO | Code | LO | Code | |
|---------------|---------------------------------------|---|--|--|---|--|--|------|-------------|-----------------|----------------------------|--|-----------|-----------------|------------------------|
| RGPV (| Diploma | Wing) Bhopal | SCHEME FO | R LEARNING OUTCOME | <i>C</i> | 0 | 1 | 5 | 0 | 2 | | 1 | | 1 | Format No. 4 |
| COURS NAME | SE | Automation in | Cement Manu | facturing | | | 1 | 1 | | | 1 | | 1 | 1 | |
| CO Des | cription | Student will be | able to describe | the automation and automatic | c contro | l syste | em. | | | | | | | | |
| LO Des | cription | Student will be | able to define th | e role and application of auto | mation. | | | | | | | | | | |
| SCHEM | 1E OF ST | UDY | | | | | | | | | | | | | |
| S. No. | Learning | g Content | | Teaching-LearningMethod | Descrip Process | otion | of | T | ' -L | Teach Hrs. | P H | ract. /Tu [rs. | ut I F | LRs Required | Remarks |
| 1. | Define a application automation | Interactive classroom teaching, demonstration, quiz, assignments. | Teachen contents handour Teachen assignm make their kn | will s an ts to winents/ studer owled | expla id p stu ll co qui nts p lge. | ain prove uder ond z ract | the ide its. uct to ice | 08 | N | ΊL | H c b F b c | Handouts, chalk coard, PPT, tex cook, charts. | NIL t | | |
| SCHEM | 1E OF AS | SESSMENT | | | | | | | | | | | | | |
| S. No. | Method | of Assessment | Descriptio | on of Assessment | | | | | N N | Iaximu Iarks | m | Resour | ces R | Required | External / Internal |
| 1. | Paper per | n test | will be asked to describe the n. | role ar | id app | olicatio | on d | of 1 | 0 | | Test pa scale | aper | + rating | g Internal | |
| | | | ADDITIO | NAL INSTRUCTIONS FOR | R THE | HOD | / FAC | CUI | ΔTY | (IF AN | Y) | | | | |
| | | | | Part of Prog | ressive | - I | | | | | | | | | |

| DODU | | | | | TCOME | Bran | nch Co | ode | Cou | rse C | ode | CO Co | de | LO Code | |
|--|--|-----------------|------------------|-------------------------|--|---|---|--|--------------------------------|-------------------|-------------|------------|-------------------|--|------------------------|
| RGPV (| Diploma | Wing) Bhopal | SCHEME F | OR LEARNING OU | JICOME | С | 0 | 1 | 5 | 0 | 2 | 1 | | 2 | Format No. 4 |
| COURS NAME | E | Automation in | Cement Mar | nufacturing | | | | | | | | | | · | |
| CO Dese | cription | Student will be | able to descril | be the automation and | automatic o | contro | l syste | m. | | | | | | | |
| LO Deso | cription | Student will be | able to state th | ne principle of feedbac | ck and feed | forwa | rd con | trol. | | | | | | | |
| SCHEM | IE OF ST | UDY | | | | | | | | | | | | | |
| S. No. | Learning | g Content | Descriptio | on of T | ſ-L Pr | ocess | | Teacl Hrs. | 1 Pi /T | ract. 'ut Hrs. | LR | s Required | Remarks | | |
| 1.Principles of feedback and feed forward control, general performance and characteristics of instruments and instrumentation. Errors, calibration, concepts of stability and optimum control, block diagram of instrumentation system.Learning frection rectance classroom teaching, demonstration, quiz, assignments. | | | | | Teacher contents at to studer conduct a make stud knowledge | will nd pro nts. ssignn dents e. | expla ovide Teach nents/ practi | ain t handou er w quiz ce th | he uts vill to eir | 08 | N | IL | Har boa boo | ndouts, cha ard, PPT, te ok, charts. | lk NIL xt |
| SCHEM | IE OF AS | SESSMENT | | | | | | | | - | | | | | |
| S. No. | Method o | of Assessment | Descrip | tion of Assessment | | | | | | Max Mar | kimu Sks | m R | esour | ces Required | External / Internal |
| 1. | . Theory exam Students will be asked to state the p forward control. | | | | | | | k and f | feed | 10 | | Q ra | uestio ting s | on paper cale | + External |
| | | | ADDITI | ONAL INSTRUCTI | ONS FOR | THE | HOD | FAC | ULT | Y (IF | ANY | Y) | | | |
| | | | | | NIL | | | | | | | | | | |

| DODU | D' | | aai | | | TOOME | Brar | nch C | ode | Co | urse C | ode | CO Cod | e | LO Code | e _ | |
|--|---|-----------------|------|---------|----------------------------|-------------|---------|----------|--------|--------------------|----------|-------------|-------------------|-------------------------|--|-----------------------|------------------------|
| RGPV (| Diploma | Wing) Bhopal | SCI | HENIE | FOR LEARNING OU | TCOME | C | 0 | 1 | 5 | 0 | 2 | 1 | | 3 | ľ | format No. 4 |
| COURS NAME | SE | Automation in | Cem | nent M | anufacturing | | 1 | | | | 1 | | 1 | | | | |
| CO Des | cription | Student will be | able | to desc | ribe the automation and | automatic o | contro | l syste | em. | | | | | | | | |
| LO Des | cription | Student will be | able | to unde | erstand the different type | es of autom | atic co | ontrol | systen | n. | | | | | | | |
| SCHEM | SCHEME OF STUDY | | | | | | | | | | | | | | | | |
| S. No. | Learning Content Teaching Learning Method Description of T-L Proce | | | | | | | | | | | h P /] | ract. Fut Hrs. | LR | s Require | d | Remarks |
| 1.On off control system, continuous control system, closed loop control system, closed loop control system, transfer function of circuits and devices, proportional control, integral control, PI, PD, PID control.Lab Lab demonstration, hands on practice, lab assignments, assignments, quiz, assignments,Teacher will demonstration, | | | | | | | | | | the nts. ugh | 02 | 0 | 5 | Har mar cha | ndout/ nual, text b rts, video : | lab oook, film. | NIL |
| SCHEM | 1E OF AS | SESSMENT | | | | | | | | | | | | | | | |
| S. No. | Method | of Assessment | | Descr | iption of Assessment | | | | | | Ma Ma | ximu rks | m Re | sour | ces Requi | red | External / Internal |
| 1.Laboratory observationtestbyStudents will be asked to describe the automatic control system. | | | | | | | | ferent | t type | es of | 15 | | Ob sch /rat | serva edule ing s | tion e/check-lis cales /rub | st rics | Internal |
| | | | | ADDI | FIONAL INSTRUCTI | ONS FOR | THE | HOD | / FAC | CUL | ГY (II | FAN | Y) | | | | |
| | | | | | Р | art of Lab | Work | <u>K</u> | | | | | | | | | |

| DODU | PV (Diploma Wing) Bhopal SCHEME FOR | | | | Bra | nch Co | ode | Cou | rse | Code | CO Co | de | LO Code | |
|---------------|---|--|--|--|--|--|---------------|----------|---------------|---------------|--|---------------------|------------------------|--------------|
| RGPV | Diploma | Wing) Bhopal | SCHEME FOR | LEARNING OUTCOM | | 0 | 1 | 5 | 0 | 2 | 2 | | 1 | Format No. 4 |
| COURS NAME | SE | Automation in | Cement Manufac | cturing | · | · · · | | | | | | | · · · · | |
| CO Des | cription | Student will be | able to explain abo | out the measuring & monit | oring eq | uipme | nts. | | | | | | | |
| LO Des | cription | Student will be | able to describe the | e temperature and pressure | e measu | ing eq | uipme | nts. | | | | | | |
| SCHEN | IE OF ST | UDY | | | | | | | | | | | | |
| S. No. | Learning | g Content | | Teaching –Learning Method | Descrij Proces | otion s | of | T-I | L T H | 'each Irs. | Prac Hrs. | ct. /Tu | t LRs Required | Remarks |
| 1. | Thermon thermom resistance thermosta pyromete Mechanic transduce gauge tra variable pick up ic | Interactive classroom teaching, tutorial, quiz, assignments. | Teache content handou Teache quiz/tut to make their kr | r will s and ts to r wil orial/a e stude owled | explai d pr stud l co ssignn nts pra ge. | in the ovide dents onduc nents actice | e 0 e t | 8 | NIL | | Handouts, chalk board, PPT, tex book, charts, video film | NIL .t | | |
| SCHEM | IE OF AS | SESSMENT | | | | | | | 1 | | | | | |
| S. No. | Method | of Assessment | of Assessment | | | | | Ma Ma | aximu arks | R | esourc | es Required | External / Internal | |
| 1. | 1.Theory examStudents will be asked to describe the measuring equipments. | | | | | | | sure | 10 | | Q ra | uestion ting sca | ale paper | + External |
| | | | ADDITIONA | AL INSTRUCTIONS FO | R THE | HOD/ | FAC | ULT | Y (I | FAN | Y) | | | |
| | | | | NI | L | | | | | | | | | |

| DODU | | | GOUEME | | | Bra | nch C | ode | Co | urse | Code | CO Code | L | O Code | |
|---|----------|-----------------|--------------------|-----------------|----------------------|--|---|---|--|-------------------------------------|-----------------|---------|-------|--|------------------------|
| RGPV (| Diploma | Wing) Bhopal | SCHEME | FOR LEAR | NING OUTCOM | | 0 | 1 | 5 | 0 | 2 | 2 | | 2 | Format No. 4 |
| COURS NAME | SE | Automation in | Cement Ma | nufacturing | | 1 | 1 | | | 1 | | 1 | | ' | |
| CO Des | cription | Student will be | able to expla | in in brief abo | out the measuring | & monit | oring | equipr | nent | s. | | | | | |
| LO Des | cription | Student will be | able to expla | in in brief abo | out the level & flow | w contro | llers. | | | | | | | | |
| SCHEM | IE OF ST | UDY | | | | | | | | | | | | | |
| S. No. | Learning | -Learning | Descrip Process | otion S | of | T- | L T E | 'each Irs. | Pract. / Hrs. | Гut | LRs Required | Remarks | | | |
| 1. Level measurement, Different type of level controllers/Sensors, Level Interactive classroon teaching, tutorial, quiz assignments. Sensors (Prob type), Ultrasonic level sensors, Flow, Vibration, Feed Control- Weigh Feeders, and Solid Flow Meters. assignments. | | | | | | Teacher content handou Teacher quiz/tut to make their kn | r will s an ts to r wi corial/a e stude owled | expla ad pro- stu b stu ll co assigni ents pro- lge. | in the rovice adention du mention caction | ne 0 de cs. ct cs ce | 8 | NIL | | Handouts, chalk board, PPT, tex book | t NIL |
| SCHEM | IE OF AS | SESSMENT | | | | | | | | | | | | | |
| S. No. | Method | of Assessment | Descri | ption of Asse | essment | | | | | Ma Ma | aximu arks | m Resou | irces | Required | External / Internal |
| 1.QuizStudents will be asked to explain in controllers. | | | | | | ef about | the le | vel & | flow | / 10 | | Rubri | cs/ra | ting scales | Internal |
| | | | ADDIT | IONAL INS | TRUCTIONS FO | R THE | HOD | / FAC | CUL | ГY (I | FAN | Y) | | | |
| | | | | | Part of Te | rm Wor | 'k | | | | | | | | |

| DODU | GPV (Diploma Wing) Bhopal SCHE | | | | | | Brai | nch Co | ode | Cou | rse (| Code | CO Co | de | LO Code | | |
|---|---|-----------------|---------|---------|--------------------|------------------|--------------------|---|-------------------------------|----------------------------------|---------------|---------------|----------------|-----------------------------|---|--------------------|------------------------|
| KGPV (| Diploma | Wing) Bhopal | SCHE | SME F | OR LEARNIN | NG OUTCOMI | | 0 | 1 | 5 | 0 | 2 | 2 | | 3 | FO | ormat No. 4 |
| COURS NAME | SE | Automation in | Cemer | nt Mar | nufacturing | | | 11 | | | | | | | | | |
| CO Des | cription | Student will be | able to | explai | n in brief about | the measuring | & monite | oring e | equipn | nents | | | | | | | |
| LO Des | cription | Student will be | able to | perfor | m the test on dif | fferent measurin | ng and n | nonitor | ing de | evices | 5. | | | | | | |
| SCHEM | 1E OF ST | UDY | | | | | | | | | | | | | | | |
| S. No. | Learning | g Content | | | Teaching Method | -Learning | Descrip Process | otion | of | T-I | L T H | 'each Irs. | Prac Hrs. | t. /Tu | ıt LRs Requir | ed | Remarks |
| 1. SCHEM | 1. Study of LVDT, RTD, thermocouple, resistance thermometer, thermistors, strain gauge, orifice assembly etc. Calibration of pressure gauge. Calibration of temperature indicator. Measurement of displacement by LVDT. Measurement of displacement by LDR. Lab demonstration, hands or practice, lab assignments quiz, assignments, quiz, assignments, strain gauge, orifice assembly etc. SCHEME OF ASSESSMENT SCHEME OF ASSESSMENT | | | | | | | will o ocedun nents. S w practi | demor re of vill ce. | nstrato f lal The learn | e N e n | IIL | 08 | | Handou chalk board, PPT, book, charts, video fi Models | ts, text lm, | NIL |
| S. No. | Method | of Assessment | D | Descrip | otion of Assessm | nent | | | | | Ma Ma | aximu arks | m R | esouro | ces Requir | ed | External / Internal |
| 1.Laboratory observationtestby Student will be asked to perform the content. | | | | | | | ifferent t | est me | ention | ed in | 10 | | O sc /ra | bserva hedule ating s | tion e/check-list cales /rubri | cs | External |
| | | | AI | DDITI | ONAL INSTR | UCTIONS FO | R THE | HOD | / FAC | ULT | Y (I | FAN | Y) | | | | |
| | | | | | | Part of end pr | ractical | exam | | | | | | | | | |

| DODU | | | | | Bra | nch C | ode | Co | urse | Code | COO | Code | LO Code | |
|---------------|---|--|--|--|--|--|-------------------------------------|------|----------|---------------|--|---------------------|-------------------|--------------------------|
| RGPV | Diploma | Wing) Bhopal | SCHEME FOR | LEARNING OUTCOME | C | 0 | 1 | 5 | 0 | 2 | | 3 | 1 | Format No. 4 |
| COURS NAME | SE | Automation in | Cement Manufa | acturing | | 1 | 11 | | 1 | 1 | 1 | I | | 1 |
| CO Des | cription | Student will be | able to describe the | he effect and control of proc | ess para | ameter | s. | | | | | | | |
| LO Des | cription | Student will be | able to define the | different key parameters an | d contro | ol in d | ifferer | t se | ctions | of cer | ment pl | ant. | | |
| SCHEM | IE OF ST | 'UDY | | | | | | | | | | | | |
| S. No. | Learning | g Content | | Teaching –Learning Method | Descrip Process | otion | of | T | L T H | 'each Irs. | Pr Hı | ract. /Tu rs. | ıt LRs Require | d Remarks |
| 1. | Key Para Preparati in Pyro-J Control i | Interactive classroom teaching, quiz, assignments. | Teacher content handou Teacher assignn make their kn | will s an ts to wi nents/ studer owled | expla id pr stu stu ll co qui nts pr lge. | in th rovid dent ondu z actio | ne 0 de ts. ct to ce | 8 | NI | L | Handout chalk board, PPT, te book a video films. | s, NIL ext nd | | |
| SCHEM | IE OF AS | SESSMENT | | | | | | | | | | | | |
| S. No. | Method | of Assessment | Description | n of Assessment | | | | | Ma Ma | aximu arks | m | Resourc | ces Require | d External / Internal |
| 1. | Theory e | xam | l be asked to define the diffe ifferent sections of cement p | erent ke olant. | y para | meters | s and | 1 10 | | | Question rating sc | n paper cale | + External | |
| | | | ADDITION | AL INSTRUCTIONS FO | R THE | HOD | / FAC | 'UL' | TY (I | F AN | Y) | | | |
| | | | | NII | Ĺ | | | | | | | | | |

| DODU | | | COUDME | | | Brai | nch Co | ode | Co | urse | Code | COC | ode | LC | O Code | |
|---|------------------|-----------------|---------------|--------------------|------------------|-----------------|--|---|--|--------------------------------------|---------------|----------------|--------|------|---|------------------------|
| RGPV (| Diploma | Wing) Bhopal | SCHEME | FOR LEARNIN | NG OUTCOM | | 0 | 1 | 5 | 0 | 2 | 3 | | | 2 | Format No. 4 |
| COURS NAME | SE | Automation in | Cement Ma | nufacturing | | 1 | | | | | | 1 | | | | |
| CO Des | cription | Student will be | able to descr | ibe the effect and | d control of pro | cess para | ameter | s. | | | | | | | | |
| LO Des | cription | Student will be | able to expla | in the interlockin | ng of motors an | d trouble | e shoot | ing. | | | | | | | | |
| SCHEM | IE OF ST | UDY | | | | | | | | | | | | | | |
| S. No. | otion S | of | T- | -L] F | Feach Irs. | Pra Hrs | ct. /T | ut | LRs Required | Remarks | | | | | | |
| 1.Sequential interlocking for group/circuit of equipments, interlocking of equipments with process parameters, hardware and software interlocks, ladder logic, monitoring of alerts, types of alarms, trouble-shooting.Interactive classroom teaching, lab demonstration quiz, assignments. | | | | | | | will s an ts to c will nents/ studen owled | expla d pr stu ll co quiz ts pr ge. | in th rovid ident ondu z ractio | he 0 de ts. ict to ce | 8 | NIL | , | | Handouts, chalk board, PPT, tex book, charts, video film Models. | , NIL .t , |
| SCHEM | IE OF AS | SESSMENT | | • | · | | | | | | | | | i | | |
| S. No. | Method | of Assessment | Descri | ption of Assessi | ment | | | | | M M | aximu arks | ^m I | Resour | rces | Required | External / Internal |
| 1. | o explain the in | nterlockin | ng of r | notors | s and | ¹ 10 | |] s | Test p cale | aper | r + rating | g Internal | | | | |
| | | | ADDIT | IONAL INSTR | RUCTIONS FO | OR THE | HOD | / FAC | CUL | TY (l | IF AN | Y) | | | | |
| | | | | | Part of Prog | gressive | - II | | | | | | | | | |

RGPV (Diploma Wing) BhopalSCHEME FOR LEARNING OUTCOMEBranch CodeCourse CodeCO CodeLO CodeFormat No. 4

| | | | | | | C | 0 | 1 | 5 | 0 | 2 | 4 | 1 | |
|--|---|-----------------|-----------------|--------------------|----------------|-----------|--|--|--|---------------------|-----------------------------------|-------------------|---|------------------------|
| COURS NAME | SE | Automation in | Cement Mar | ufacturing | | | | 1 | I | | I I | | | |
| CO Des | scription | Student will be | able to specify | y the quality cont | trol through a | utomatio | n. | | | | | | | |
| LO Des | cription | Student will be | able to draw a | schematic of an | On-line comp | puterized | raw n | nix pro | oporti | onin | g opera | tion. | | |
| SCHEME OF STUDY | | | | | | | | | | | | | | |
| S. No. Learning Content Teaching -Learning | | | | | | | | of | T-l | L T H | each Irs. | Pract. /T Hrs. | ut LRs Required | Remarks |
| 1. | 1.Schematic of an on-line computerized raw mix proportioning operation, set points, key parameters, X-ray fluorescence analysis, automatic samplers, On-line X-ray analysis (Robo Labs), Off-line X-ray analysis, gas proportional detectors, gas filled detector, gas flow detector, spectrometer types of spectrometersInteractive teaching, assignments.classroom teaching, assignments. | | | | | | r will s an ts to r wi nents/ studer owled | expla d prostu stu ll co quiz nts pr ge. | in the rovid idents onduc z te cactic | e 10 e t e |) | NIL | Handouts, chalk board, PPT, text book, charts, video film, Models. | NIL |
| SCHEN | AE OF AS | SESSMENT | | | | | | | | | | | | |
| S. No. | Method | of Assessment | Descrip | tion of Assessm | ent | | | | | Ma Ma | nximum nrks | Resour | ces Required | External / Internal |
| 1. | I.Student will be asked to draw a schematic of an on-l computerized raw mix proportioning operation and/or about X-ray fluorescence analysis. | | | | | | | | | | 10 Question paper rating scale | | | External |
| | ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) | | | | | | | | | | | | | |
| NIL | | | | | | | | | | | | | | |

| BCDV (Diploma Wing) Phonal | | | GOU | UEME FOR LEADNING OUTCOME | | | Bra | nch C | ode | Coi | ırse (| Code | CO Code | LC |) Code | |
|---|----------------------------|-----------------|---------|---------------------------|---|--|---|------------------------------|-----------------------|----------|---------------|-------------------|--|-----------------|----------|------------------------|
| KGPV | Diploma | wing) Bhopai | SCH | ENE | OK LEAKNII | | | 0 | 1 | 5 | 0 | 2 | 4 | | 2 | Format No. 4 |
| COURS NAME | SE | Automation in | Ceme | ent Ma | nufacturing | | | 1 | II | | | 1 | | | | |
| CO Des | cription | Student will be | able to | o specif | y the quality co | ontrol through au | utomatio | n. | | | | | | | | |
| LO Des | cription | Student will be | able to | o make | a report on oper | ration of X-Ray | fluoresc | ence a | analysi | s and | d on- | line ra | w mix propor | tionin | ıg. | |
| SCHEME OF STUDY | | | | | | | | | | | | | | | | |
| S. No. Learning Content Teaching –Learning I Method | | | | | | Descrip Process | otion S | of | T- | L T H | 'each Irs. | Pract. // Hrs. | Fut | LRs Required | Remarks | |
| 1. X-ray fluorescence analysis, X-Ray spectrometer, and On-line raw mix proportioning operation. Lab demonstration, hands on practice, lab assignments, to quiz, assignments, to the second secon | | | | | Teacher the pr experim students through | r will cocedu nents. s v n pract | demor re of vill ice. | nstrat f la Th lear | te 04 b ne n | 4 | 06 | | Handouts, chalk board, PPT, tex book, charts, video film Models. | NIL t | | |
| SCHEN | IE OF AS | SESSMENT | | | | | | | | | | | | | | |
| S. No. | Method | of Assessment |] | Descrij | ption of Assess | ment | | | | | Ma Ma | aximu arks | m Resou | rces] | Required | External / Internal |
| Laboratory observationtestbyStudents will be asked to make a repo spectrometer and/or on-line raw mix p | | | | | | rt on operoportion | t on operation of X-Ray oportioning. 10 Obser sched /ratin | | | | | | rvation dule/check-list dule/check-list dule/check-list dule/check-list dule/check-list dule/check-list dule/check-list | | External | |
| ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) | | | | | | | | | | | | | | | | |
| | Part of end practical exam | | | | | | | | | | | | | | | |

 RGPV (Diploma Wing) Bhopal
 SCHEME FOR LEARNING OUTCOME
 Branch Code
 Course Code
 CO Code
 LO Code

| | | | | | | | C | 0 | 1 | 5 | 0 | 2 | 4 | | 3 I | Format No. 4 |
|--|--|-----------------|------|-----------|------------------|----------------|---|---|-------------------------------|------------------------------|----------------------|------|--------------------|--|-----------------|------------------------|
| COURS NAME | E | Automation in | Cen | nent Ma | nufacturing | | | | | | | | | | | |
| CO Des | cription | Student will be | able | to explai | n in brief about | the measuring | & monito | oring e | equipr | nents | 5. | | | | | |
| LO Des | cription | Student will be | able | to follow | the safety prec | autions during | experime | ents. | | | | | | | | |
| SCHEME OF STUDY | | | | | | | | | | | | | | | | |
| S. No. Learning Content Teaching —Learning Method | | | | | | | | Description of T-I Process | | | | | Pract. Hrs. | /Tut | LRs Required | Remar ks |
| 1. | 1. Instructions related with safety precautions during experiments. Lab demonstration, hands on practice, lab assignments, quiz, assignments, | | | | | | Teacher the pr experim students through | will ocedu nents. s v pract | demoi re o vill ice. | nstrat f la Th lear | te N b ne n | NIL. | 02 | 2 Handouts, chalk board, PPT, text book, charts, video film. | | NIL |
| SCHEM | IE OF AS | SESSMENT | | | | | 1 | | | | | | | | · | |
| S. No. | S. No. Method of Assessment Description Desc | | | | | | | | | | | | | | | |
| Laboratory observationtestbyStudents will be asked to follow sa experiments. | | | | | | | | afety precautions during | | | | | Obs sch /rat | Observation schedule/che /rating scale | | Internal |
| ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) | | | | | | | | | | | | | | | | |
| Part of Lab work | | | | | | | | | | | | | | | | |

| DODU | RGPV (Dinloma Wing) Bhonal SCHEME 1 | | | Brai | nch C | ode | Co | urse | Code | CO Code | | O Code | Format No. 4 | |
|---|--|-----------------|---------------|---|--|--|--|--|------------------------------------|---------------|----------------|----------------|---|------------------------|
| KGPV (| Diploma | wing) Bhopai | SCHEME | FOR LEARNING OUTCOME | | 0 | 1 | 5 | 0 | 2 | 5 | | 1 | Format No. 4 |
| COURS NAME | SE | Automation in | Cement Ma | anufacturing | | | | | | | | | | |
| CO Des | cription | Student will be | able to optim | ize the plant operation through I | I PLCs. | | | | | | | | | |
| LO Des | cription | Student will be | able to draw | a block diagram for mill feed co | ontrol sy | stem a | and ex | plain | | | | | | |
| SCHEME OF STUDY | | | | | | | | | | | | | | |
| S. No. Learning Content | | | | Teaching –Learning Method | Descrip Process | otion | of | T- | L T E | 'each Irs. | Pract. Hrs. | 'Tut | LRs Required | Remarks |
| 1.Principle of control for optimizing of grinding through a computer. Feed control through pholaphone, belt conveyor motor, separator motor, fineness meter, DDC control elements, Block diagram for each feed control system.Interactive teaching, lab de quiz, assignment | | | | Interactive classroom teaching, lab demonstration, quiz, assignments. | Teacher contents handour Teacher assignm make their kn | will s an ts to winents/ studer owled | expla ad p stu b stu ll co qui nts p lge. | in the rovid ident ondue z t ractio | ne 0 le s. ct to ce | 8 | NIL | | Handouts, chalk board, PPT, tex book, charts, video film models. | NIL t |
| SCHEN | IE OF AS | SESSMENT | | | | | | | | | | | | |
| S. No. | Method | of Assessment | Descri | ption of Assessment | | | | | Ma Ma | aximu arks | m Reso | urces | s Required | External / Internal |
| 1. | 1.Student will be asked to make a brown on the control system and explain. | | | | | | k diagram for mill feed 10 | | | | | tion ; scal | paper - e | + External |
| | ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) | | | | | | | | | | | | | |
| | NIL | | | | | | | | | | | | | |

| | | | | | | | С | 0 | 1 | 5 | 0 | 2 | 5 | 2 | |
|---|----------|-----------------|------|-----------|-------------------|-----------------|---|--------------------------|-------|--------|----------|----------------|---------------------------------|---|------------------------|
| COURS NAME | SE | Automation in | Cen | nent Ma | nufacturing | | I | | | | | | | · / | |
| CO Des | cription | Student will be | able | to optim | ize the plant ope | eration through | PLCs. | | | | | | | | |
| LO Des | cription | Student will be | able | to prepar | re a report on op | otimizing cemer | nt and ray | w mill | grind | ling u | sing | comput | er. | | |
| SCHEME OF STUDY | | | | | | | | | | | | | | | |
| S. No. Learning Content Teaching –Learning Method | | | | | | | Description of T-I Process | | | | | leach Irs. | Pract. /T Hrs. | ut LRs Required | Remarks |
| 1. Block diagram for feed control system, Mill feed control through pholaphone, belt conveyor motor, separator motor, fineness meter, DDC control elements. | | | | | | | Teacher will demonstrate 02 the procedure of lab experiments. The students will learn through practice. | | | | | | 08 | Handouts, chalk board, PPT, text book, charts, video film, Models. | NIL |
| SCHEM | 1E OF AS | SESSMENT | | | | | | | | | | | | | |
| S. No. | Method | of Assessment | | Descrip | otion of Assessi | ment | | | | | Ma Ma | aximun arks | ¹ Resour | ces Required | External / Internal |
| Laboratory observationtestby Student will be asked to make a report of raw mill grinding using computer. | | | | | | | | on optimizing cement and | | | | | Observa schedul /rating s | Observation schedule/check-list /rating scales /rubrics | |
| ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) | | | | | | | | | | | | | | | |
| Part of end practical exam | | | | | | | | | | | | | | | |

| DODU | DCDV (Diploma Wing) Phonal SCHEM | | | | Brai | Branch Code | | | urse | Code | CO Code | | LO Code | |
|---|----------------------------------|-----------------|---------------|--|---|----------------------------|-------|----|--------------------------------------|---------------|-----------------------|---------------|--|------------------------|
| RGPV | (Diploma | Wing) Bhopal | SCHEME | FOR LEARNING OUTCOME | | 0 | 1 | 5 | 0 | 2 | 5 | ; | 3 | Format No. 4 |
| COURS NAME | SE | Automation in | Cement Ma | Manufacturing | | | | | | | | | | |
| CO Des | scription | Student will be | able to optim | nize the plant operation through H | PLCs. | | | | | | | | | |
| LO Des | cription | Student will be | able to descr | ibe the different model for the ki | iln contr | ol sys | stem. | | | | | | | |
| SCHEME OF STUDY | | | | | | | | | | | | | | |
| S. No. Learning Content Tea Me | | | | Teaching –Learning Method | Descrip Process | otion | of | T- | L] I | Feach Irs. | Pra Hrs | ct. /Tu s. | t LRs Required | Remarks |
| 1. Principle of control 'Ideal Model' Vs. Adaptive Model', primary subsystem, variable required, block diagram, kiln simulator, advantages of PLCs over conventional system, use of PLCs. | | | | Interactive classroom teaching, tutorial, quiz, assignments. | Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz to make students practice their knowledge. | | | | ne () le ss. ct to ce | | NIL | _ | Handouts chalk board, PPT, tex book, charts, video filn models. | , NIL st n, |
| SCHEN | IE OF AS | SESSMENT | | | | | | | | | | | | |
| S. No. | Method | of Assessment | Descri | ption of Assessment | | | | | M M | aximu arks | m F | Resourc | es Required | External / Internal |
| 1.Theory examStudent will be asked to describe the difficult1.Control system. | | | | | | fferent model for the kiln | | | | | 10 Question rating sc | | | + External |
| ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) | | | | | | | | | | | | | | |
| | NIL | | | | | | | | | | | | | |

| DODV | RCPV (Dinloma Wing) Bhonal SCHEN | | GOUEME | | Bra | nch C | ode | Co | ourse | Code | CO Code | LO Code | | |
|---|---|--|---|--|--|---|----------------------|-----------------|-----------------|---------------|-------------------|---|--------------------------|--|
| RGPV | (Diploma | Wing) Bhopal | SCHEME | FOR LEARNING OUTCOM | E C | 0 | 1 | 5 | 0 | 2 | 5 | 4 | Format No. 4 | |
| COURS NAME | SE | Automation in | Cement Ma | Manufacturing | | | | | | | | | | |
| CO Des | cription | Student will be | able to optim | nize the plant operation through | PLCs. | | | | | | | | | |
| LO Description Student will be able to draw a block diagram of fuzzy logic kiln control and hierarchial control system | | | | | | | | | ystem of kiln a | nd describe. | | | | |
| SCHEME OF STUDY | | | | | | | | | | | | | | |
| S. No. Learning Content | | | | Teaching –Learning Method | Descrij Proces | Description of T-I Process | | | | | Pract. /T Hrs. | ıt LRs Require | ed Remarks | |
| 1. | Fuzzy lo flow cha and kiln 'Fuzzy lo control structure schemati cement p | ogic kiln control arts for kiln con control strategy a ogic'. Hierarchial technique of and distributed c of control hier alant. | , simplified trol scheme according to kiln control, hierarchical intelligence, rarchy for a | Interactive classroom teaching, tutorial, quiz, assignments. | Teache content handou Teache assignn make their kr | Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz to make students practice their knowledge. | | | | | NIL | Handou chalk board, PPT, t book, charts, video fil models. | s, NIL ext m, | |
| SCHEM | AE OF AS | SSESSMENT | | | | | | | | | | | | |
| S. No. | Method | of Assessment | Descri | ption of Assessment | | | | | M M | aximu arks | m Resour | ces Require | d External / Internal | |
| 1. | k diagra In and de | diagram of fuzzy logic n and describe. | | | | | Question rating s | n paper cale | + External | | | | | |
| ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY) | | | | | | | | | | | | | | |
| | | | | N | IL | | | | | | | | | |

REFERENCES:

- 1. Electrical and Electronic Measurements and Instrumentation A.K.Sawhney Dhanpat Rai & Sons Publishers.
- 2. Instrumentation Devices and Systems C.S. Rangan, G.R.Sazuna & V.S.V.Mani Tata McGraw Hill
- 3. Mechanical and Industrial Measurements R.K.Jain Khanna Publishers.
- 4. Electronic Instrumentation and Measurement Techniques Cooper W.D. and Halftrack A.D. Prentice Hall of India Pvt. Ltd.
- 5. Instrumentation for engineering Measurements Cerni and Foster John wiley and sons.
- 6. Industrial Instrumentation and control S.K.Singh Tata McGraw Hill.
- 7. Engineering Instrumentation and Control D.C. Ramsay ELBS Edition, Avon Britain.
- 8. Applied Instrumentation in the Process Industries, Vol.I, and IV by Andrews.
- 9. Automation and Process Control in Cement Plants, by Smith WORLD CEMENT
- 10. Modern Cement Plants, World Cement.
- 11. Outlines of chemical Instrumentation Process Control., bySuryanarayana, Khanna Publishers.
- 12. Computer Aided Process Plant Design 1982 By M.E.Leesly, International Book House Pvt. Ltd., Bombay 23.
- 13. Computer Programming for science and Engineering, By L.L.Bhirud, International Book House Pvt. Ltd., Bombay 23.
- 14. Introduction to Microprocessors using laboratory Exercises By L.C. Jain, Khanna Publishers
- 15. Introduction to Microprocessors, Software, Hardware, Programming by Leventhal, Prentice Hall of India.
- 16. Microcomputers/Microprocessors, Hardware, Software and Applications, by Hilburn and Julich, Prentice Hall of India.