RGPV(DiplomaWing)Bhopal	SEMESTERTEACHINGLEARNING&ASSESSMENTPLAN	FORMAT-6

NAMEOF PROGRAMME	THREEYEARSDIPLOMA	SCHEME	OBE	IMPLEMENTINGYEAR	2020-21

BRANCHCODE		NAMEOF BRANCH	*AGRICULTURE ENGG / AGRICULTURAL ENGG*	SEMESTER	*THIRD*

S. No	COURSEDETAILS						T-LPLAN		ASSESSMENTPLAN								
	COURSE CODE	COURSE NAME	CREDITS	PAPER CODE	No. of COs	No. of LOs	Total T-L Hrs.	T-L Hrs. /Week	Internal Assessment		ExternalAssessment(UniversityExam)						Grand Total of Marks
											TheoryPaper			PracticalExam*			
									No. of LOs	Total Marks	No. of LOs	Total Marks	Duration in Hrs	No.of LOs	Total Marks	Duration in Hrs	
1	301	HYDRALUICS	06	6900	05	16	90	08	03	50	09	70	03:00	01	30	03:00	150
2	302	SURVEYING	06	6901	04	14	120	08	03	50	07	70	03:00	01	30	03:00	150
3	303	ADVANCED GEOLOGY	06	7225	05	15	105	07	03	50	10	70	03:00	01	30	03:00	150
4	304	BASICS OF ELECTICAL AND ELECTRONICS	06	6933	05	15	120	06	05	50	07	70	03:00	01	30	03:00	150
5	305	PROFESSIONAL DEVELOPMENT-III	02		03	06	60	04	06	75							75
TOTAL																	
No.ofTheoryPapers											04			No.ofPracticalExams			04

**ExamforLOs(Psycho+ Affect.)#(C+P) =cognitive+ Psychomotor*

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT-3	Sheet No. 1/3

Branch	AGRICULTURAL ENGINEERING	Semester	3
Course Code	301	Course Name	HYDRAULICS	Course code:6900

Course Outcome 1	To measure pressure using various pressure measuring devices and to calculate hydrostatic pressure on different surfaces	Teach Hrs	Marks
Learning Outcome C0330111	Explain the terms related with Hydraulics and compute properties of fluid with given data.	6	8
Contents	Technical terms used in Hydraulics –fluid, fluid mechanics, hydraulics, hydrostatics and hydrodynamics, application of hydraulics. **Physical properties of fluid** Mass density, Weight density, Specific volume, Specific gravity, Surface tension and capillarity, Compressibility, Viscosity, Newton's law of viscosity – Dynamic and kinematics viscosity. Ideal and Real liquids		
Method of Assessment	*Internal: Mid Semester Exam - Pen paper test/Assignment*		
Learning Outcome C0330112	Calculate pressure using various pressure measuring devices Piezometer/ U tube manometer/ U tube differential manometer	8	12
Contents	**MEASUREMENT OF LIQUID PRESSURE IN PIPES**: Definition of pressure and its SI unit Concept of pressure head and its unit Variation of pressure with depth of liquid Types of pressure- atmospheric gauge and absolute pressure. Conversion of pressure head of one liquid in to other Devices for pressure measurements in pipes – Piezometer, U-tube manometer, Bourdon's pressure gauge. Explain and calculate pressure difference using differential manometer – U tube differential manometer / inverted U-tube differential manometer. Simple Numerical Problems.		
Method of Assessment	*External : End semester Examination-Pen Paper Test*		
Learning Outcome C0330113	Measure pressure using various pressure measuring devices Piezometer/ U tube manometer/ U tube differential manometer	6	

Content	1. Measurements of pressure and pressure head by Piezometer, U-tube manometer 2. Measurement of pressure difference by U-tube differential manometer. 3. Study of Bourdon's gauge		
Method of Assessment	*Internal : Task /Experiment performance in Laboratory*		
Learning Outcome C0330114	Compute Total pressure and centre of pressure for horizontal/Vertical/inclined surfaces	6	8
Contents	**HYDROSTATIC PRESSURE** : Hydrostatic pressure at point Pascal's law Pressure diagram – Concept and use Total hydrostatic pressure and center of pressure Determination of total pressure & center of pressure on horizontal, vertical & inclined immersed surfaces Determination of total pressure & center of pressure on sides and bottom of water tanks. Numerical Problems		
Method of Assessment	*External : End semester Examination-Pen Paper Test*		
Course Outcome 2	To understand fundamentals of fluid flow.	Teach Hrs	Marks
Learning Outcome C0330121	Differentiate various types of flows	3	4
Contents	**FUNDAMENTALS OF FLUID FLOW** : Concept of flow Gravity flow and pressure flow. Types of flow – steady and Unsteady, uniform and non-uniform, Laminar and turbulent Reynolds number and its application		
Method of Assessment	*External : End semester Examination-Pen Paper Test*		
Learning Outcome C0330122	Calculate flow parameters using continuity equation / Bernoulli's theorem	6	8
Contents	Discharge and its units Continuity equation for fluid flow. Various forms of energies present in fluid flow-potential, kinetic, & pressure energy. Bernoulli's theorem, its assumptions and limitations. Loss of head and modified Bernoulli's theorem. Application of Bernoulli's theorem. Simple Numerical Problems.		
Method of	*External : End semester Examination-Pen Paper Test Pen Paper*		

Assessment	*Test*		
Learning Outcome C0330123	Perform experiments related to fundamentals of fluid flow	4	
Content	1. Reynolds experiment to study types of flow. 2. Verification of Bernoulli's theorem		
Method of Assessment	*Internal: Mid Semester Exam - Pen paper test/Assignment/quiz*		
Course Outcome 3	To apply basic principles of hydraulics in pipe flow	Teach Hrs	Marks
Learning Outcome C0330131	Calculate major head loss / minor head losses in pipes/ size of equivalent pipe	10	14
Contents	**FLOW OF LIQUID THROUGH PIPES** : Major head loss in pipes due to friction and its calculation by Darcy-Weisbach Equation, Use of Nomograms Minor loss of head in pipe flow- loss of head due to sudden Contraction, sudden expansion, at entrance and exit of pipes and in various pipe fittings. Hydraulic gradient line and Energy gradient line Pipes in series and parallel Equivalent pipe – Dupuit's equation Simple Numericals		
Method of Assessment	*External : End semester Examination-Pen Paper Test*		
Learning Outcome C0330132	explain water hammer and siphon in pipe flow	3	4
Contents	Water hammer in pipes – cause, effects and remedial measures Siphon		
Method of Assessment	*Internal: Mid Semester Exam - Pen paper test /Assignment*		
Learning Outcome C0330133	Calculate discharge in a pipe for the given data using Venturimeter and Calculate and Determine Hydraulic coefficients of orifice	6	9
Contents	Discharge measuring device for pipe flow Venturimeter – construction & working Discharge measuring for a tank using orifice Hydraulic coefficients of orifice		
Method of Assessment	*External : End semester Examination-Pen Paper Test as well as Task /Experiment performance in lab*		
Learning Outcome C0330134	Determine Darcy's friction factor of a pipe and hydraulic coefficients for given venturimeter and orifice	6	

Contents	1. Determination of Darcy's friction factor for given pipe. 2. Determination of coefficient of discharge for a given Venturimeter. 3. Determination of hydraulic coefficients for sharp edge orifice.		
Method of Assessment	*Internal : Task /Experiment performance in Laboratory*		
Course Outcome 4	To determine fluid flow parameters in Open channel flow	Teach Hrs	Marks
Learning Outcome C0330141	Calculate velocity and discharge using Chezy's / Manning's equation and properties of most economical channel section for rectangular/ trapezoidal channel sections	10	14
Contents	**FLOW THROUGH OPEN CHANNEL** : Types of channels- artificial & natural, purposes of artificial channel, Different shapes of artificial channels.		
	Geometrical properties of channel section – wetted area, wetted Perimeter, hydraulics radius. Chezy's equation and Manning's equation for calculation of discharge through an open channel Most economical channel section, conditions for most economical rectangular and trapezoidal channel sections.		
Method of Assessment	*External : End semester Examination-Pen Paper Test*		
Learning Outcome C0330142	Explain specific energy diagram and hydraulic jump	3	4
Contents	Specific energy diagram, Froud's number and its significance. Critical, sub- critical and supercritical flow in channel. Hydraulic jump its occurrence in field, uses of hydraulic jump		
Method of Assessment	*Internal: Mid Semester Exam - Pen paper test / Assignment*		
Learning Outcome C0330143	Explain discharge / velocity measuring devices.	5	7
Contents	Discharge measuring devices – Triangular and rectangular notches, Weirs Velocity measurement devices - Floats, current meter and Pitot tube		
Method of Assessment	*External : End semester Examination-Pen Paper Test/ laboratory*		
Learning Outcome C0330144	Determination of coefficient of discharge for given rectangular or triangular notch.	2	
Content	1. Find out coefficient of discharge for given rectangular or triangular notch.		
Method of Assessment	*Internal : Task /Experiment performance in lab*		

Course Outcome 5	To select a suitable hydraulic pump for various applications.	Teach Hrs	Marks
Learning Outcome C0330151	Describe construction and working of centrifugal pump /Reciprocating pump and recognize selection criteria of hydraulic pumps	6	8
Contents	**HYDRAULIC PUMPS**: Pumps - Definition and types. Suction head, delivery head, static head and manometric head. Centrifugal pump - component parts and their functions, principle of working, priming. Reciprocating pump - component parts and working. Submersible pump and Jet pump. Selection and choice of pump.		
Method of Assessment	*External : End semester Examination-Pen Paper Test*		

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT- 3	Sheet No. 1/3

Branch	AGRICULTURAL ENGINEERING	Semester	II I
Course Code	302	Course Name	Surveying 6901

Course Outcome 1	Explain the basics of surveying and apply the principles of chain surveying to make the survey plans.	Teach Hrs (T)	Marks
Learning Outcome C0330211	Explain basics of surveying and use of equipments in chain surveying	4	8
Contents	Definition, Object, Principles and Scope of surveying. Classification of Surveying- Primary- plain & Geodetic. Secondary- based on instruments, Methods, Object & Nature of field. Principle of chain surveying Study and use of instrument required for chain surveying- Metric chain, Tapes, Ranging rod, Arrow, Pegs, Cross Staff and Optical Square.		
Method of Assessment	External assessment -Pen Paper Test		
Learning Outcome C0330211	Describe different terminology and operations of chain surveying	6	12
Contents	Ranging- Direct and indirect Ranging Chaining- plain and sloping ground. Different types of chain lines-Survey line, check line, tie lines and Base line Offsets- long, short. Survey station and their selection, Factors affecting the selection of survey station. Obstacles in chaining & oblique. Errors in chain surveying & applying Corrections for chain & Tape (Numerical problems).		
Method of Assessment	External assessment -Pen Paper Test		
Learning Outcome C0330211	Determine the distance with chain and tape on the ground and the area of the field.	4	8
Contents	Chain & cross staff survey for finding area of a field (Numerical problem) Plotting of field notes Use of conventional signs.		
Method of Assessment	Internal Assessment -Pen Paper Test		

Learning Outcome C0330211	Measure the distance and taking offsets using different instruments chain/tape, cross staff/optical square.	6	
Contents	1. Measurement of distance with chain and tape on ground with direct/indirect ranging.(3) 2. taking offsets by cross staff, optical square and plot the same.(3)		
Method of Assessment	Internal :Laboratory Assessment- *Task /Experiment performance in Laboratory*		
Course Outcome 2	Perform traversing using chain and compass survey.		
Learning Outcome C0330221	Explain bearing system, terminology and working of compass survey.	6	12
Contents	Principle of Compass survey Bearing of lines, Meridian– True, magnetic and arbitrary meridian, Bearing – fore bearing, back bearing. Systems of bearings- whole circle bearing & quadrantal bearing, Conversion of bearing. Calculate included angles from bearings. Prismatic compass component, construction and use. Numerical problems on calculation of bearing, angles.		
Method of Assessment	External assessment -Pen Paper Test		
Learning Outcome C0330222	Calculate corrected angles after elimination of local attraction.	4	8
Contents	Local attraction- causes, precautions to be taken to avoid it and correction of bearing affected due to local attraction. Numerical problem on local attraction.		
Method of Assessment	External assessment -Pen Paper Test		
Learning Outcome C0330223	Explain traversing and plotting the details.	3	6
Contents	Traversing by chain and compass, open and closed traverse, check on open and closed traverse and graphical adjustment for closing errors. Plotting of traverse using conventional signs.		
Method of Assessment	Internal assessment -Pen Paper Test		
Learning Outcome C0330224	Perform traverseing and measure the bearings and angles using compass.	12	

Contents	1. Use of prismatic compass and measuring fore bearing and back bearing of 5-6 side closed polygon. Identifying station affected by local attraction and calculation of corrected fore bearing and back bearing.(3)		
	2. Measuring fore bearing and back bearing for an open traverse (5-6 sides), calculate direct angles between successive lines.(3) 3. Measurement of fore bearing, back bearing and length of lines of a 5-6 side closed traverse. Calculation of included angles, locating details, plotting them and adjustment of closed error graphically.(6)		
Method of Assessment	Internal :Laboratory Assessment- *Task /Experiment performance in Laboratory*		
COURSE OUTCOME 3	Apply basic techniques and engineering tools for leveling.		
Learning Outcome C0330231	Explain basics of leveling and working of Auto level.	6	12
Contents	Definitions, meaning of various terms used in leveling – Level surface, Level line, horizontal line, Vertical line, Datum surface , Reduced level, Bench mark and its types Study and use of tilting level and dumpy level. Auto level –Components, Construction, Line of sight, Line of Collimation, Bubble tube axis, temporary adjustment of auto level. Fundamental axes and their relationship. Leveling Staff – Telescopic and folding. Foresight, back sight, Intermediate sight, Change point, Height of collimation (height of instrument). Recording in level book.		
Method of Assessment	External assessment -Pen Paper Test		
Learning Outcome C0330232	Calculate R.L. by different methods	9	20
Contents	Method of Reduction of levels – Height of instrument method and Rise and fall method. Arithmetical checks, Numerical problems. Computation of missing readings. Classifications of leveling - simple, differential, profile, cross sectional, fly and check leveling. Plotting L-section & Cross-section. Sources of errors in leveling, precautions and difficulties faced in leveling.		
Method of Assessment	External assessment -Pen Paper Test		
Learning Outcome C0330233	Determine the R. L. Using auto level by different methods, setting out banch mark and ploting - plan, L-section and C- section.	27	

Contents	1. Use of Auto level, temporary adjustment, taking reading on levelling staff and record on field book.(3) 2. Differential leveling practice, calculation of R.L. by H.I. and rise and fall methods.(6) 3. Carrying bench mark from one station to another by fly levelling with Auto Level.(6) 4. Running longitudinal section for a road of length of 500m and take cross section suitably. Plotting plan, L-section and C-section.(12)		
Method of Assessment	Internal :Laboratory Assessment- *Task /Experiment performance in Laboratory*		
COURSE OUTCOME 4	Apply basics of plane table survey for making plan.		
Learning Outcome C0330241	Explain basics of plane table survey and various operations of plane table survey	3	6
Contents	Principles of plane table survey, Accessories required. Setting out of plane table, Leveling, Centering and orientation. Situations where plane table survey is used. Use of Telescopic Alidade.		
Method of Assessment	Internal assessment -Pen Paper Test		
Learning Outcome C0330242	Describe various methods of plane table survey	3	8
Contents	Methods of plane table surveying – Radiation, Intersection, and Traversing. Merits and Demerits of plane table Surveying.		
Method of Assessment	External assessment -Pen Paper Test		
Learning Outcome C0330243	Perform plane table survey by different methods and plotting.	12	
Contents	1. Plane table survey by radiation method.(3) 2. Plane table survey by intersection method.(3) 3. Plane table survey by traversing method and adjustment of closing error (if any) graphically.(6)		
Method of Assessment	Internal :Laboratory Assessment- *Task /Experiment performance in Laboratory*		

Note: Any one LO for external assessment of Psychomotor domain (practicals)

List of Experiments of Surveying:

1. Measurement of distance with chain and tape on ground with direct/indirect ranging taking offsets by cross staff, optical square and plot the same.
2. Use of prismatic compass and measuring fore bearing and back bearing of 5-6 side closed polygon. Identifying station affected by local attraction and calculation of corrected fore bearing and back bearing.
3. Measuring fore bearing and back bearing for an open traverse (5-6 sides), calculate included angles.
4. Measurement of fore bearing, back bearing and length of lines of a 5-6 side closed traverse. Calculation of included angles, locating details, plotting them and adjustment of closed error graphically.
5. Use of Auto level, temporary adjustment, taking on levelling staff and record on field book.
6. Differential levelling practice, calculation of R.L. by H.I. and rise and fall methods.
7. Carrying bench mark from one station to another by fly levelling with Auto Level.
8. Running longitudinal section for a road of length of 500m and take cross section suitably. Plotting plan, L-section and C-section.
9. Plane table survey by radiation method.
10. Plane table survey by intersection method.
11. Plane table survey by traversing method and adjustment of closing error (if any) graphically.

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT-3	Sheet No. 1/3

Branch	AGRICULTURAL ENGINEERING	Semester	III

Course Code	303	Course Name	ADVANCE GEOLOGY 7225

Course Outcome 1	Explain various hypothesis of Origin of earth.	Teach Hrs	Marks
Learning Outcome M0730311	Describe branches of General Geology.	08	10
Contents	Branches, Sub branches Essential and Allied branches Scope of geology		
Method of Assessment	*Internal: Pen paper test -Mid Semester Exam/Assignment/quiz*		
Learning Outcome M0730312	Illustrate origin of earth.	07	05
Contents	Origin of Earth- various hypothesis. Age of earth - Various methods of age determinations, radioactive methods and their advantages.		
Method of Assessment	*External : End Semester Theory Exam - Pen paper test*		
Learning Outcome M0730313	Describe interior of earth crust.	06	05
Contents	Interior of earth crust, mantle and core. Continental drift isostacy		
Method of Assessment	*External : End Semester Theory Exam - Pen paper test*		
Course Outcome 2	To understand aspects of physical Geology.		
Learning Outcome M0730321	To illustrate erosion & weathering	12	10
Contents	Erosion & weathering - Erosion, Transport and Deposition Vent facts, Pedestal rocks, sand dunes, and loess. Weathering: Physical Weathering and chemical Weathering. Exfoliation and spheroidal weathering**.** River & wind erosion- Erosion, transport and deposition, water falls, meanders, oxbow lakes, alluvial fans, flood plains, delta. **Work of Wind**: Erosion, Transport and Deposition Vent facts, Pedestal rocks, sand dunes, and loess.		

Method of Assessment	*External : End Semester Theory Exam - Pen paper test*		
Learning Outcome M0730322	Describe various types of tectonic activities.	09	10
Contents	Earth quake - seismographs, Earthquake waves, Classification of earthquakes, Elastic rebound theory, Richter scale of earthquake intensity, Distribution of Earthquakes. Volcano. Types of volcanoes, volcanic products volcanic cones, Distribution of volcanoes.		
Method of Assessment	*External : End Semester Theory Exam - Pen paper test*		
Course Outcome 3	To identify common minerals by their physical properties.		
Learning Outcome M0730331	Describe physical properties of minerals.	12	10
Contents	Definition, Physical Properties of minerals colour, Streak, Lusture, Hardness, Habit, Cleavage, Fracture		
Method of Assessment	*Internal: Pen paper test -Mid Semester Exam/Assignment/quiz*		
Learning Outcome M0730332	To identify common minerals.	15	10
Contents	Identification of common minerals Orthoclase, Plagioclase, Augite, Hornblende, Biotite, Muscovite, Olivine, Quartz Asbestos, Calcite, dolomite, corundum, Gypsum Talc..		
Method of Assessment	*Internal: Practical ,Performance of Task in laboratory , observation & Viva Voce.*		
Course Outcome 4	Explain classification of rocks.		
Learning Outcome M0730341	Describe Igneous rock.	10	10
Contents	Rock cycle and characteristics of various Rock types. Igneous Rocks – acid and basic rocks. Texture of Igneous rocks- Glassy, vesicular, Porphyritic, Coarse Grained, medium grained, fine grained, and cryptocrystalline. Classification- Plutonic, Hypobyssal and Volcanic rocks. Tabular Classification Igneous bodies- Batholiths, Laccoliths, sill and dyke Lava flows, common Igneous rocks-granite, syenite, Gabbro, basalt, Trachyte and Rhyolite. Structure Classification, occurrence & uses.		
Method of Assessment	*Internal: Pen paper test -Mid Semester Exam/Assignment/quiz*		
Learning Outcome M0730342	Describe sedimentary rock.	08	05

Contents	Sedimentary Rocks - Definition, Classification-Mechanically formed, Organically formed and chemically formed rocks, Sedimentary Structures; Stratification, Lamination Graded bedding, Current bedding and ripple marks. Common sedimentary rocks-Conglomerate sandstone, Shale, minestone and breccias.		
Method of Assessment	*External : End Semester Theory Exam - Pen paper test*		
Learning Outcome M0730343	Describe metamorphic rocks. (05)(04)	10	05
Contents	Metamorphic Rocks - Definition; Agents of Metamorphism- Heat, Uniform pressure, directed pressure. Chemically active fluids and gases. Structures and textures of metamorphic rocks-slaty, Schistose, Gneissose, and Granulose. Common metamorphic rocks-slaty Schist, Gneiss, Quartzite, and marble..		
Method of Assessment	*External : End Semester Theory Exam - Pen paper test*		
Course Outcome 5	**Explain different types of structure found in rocks.**		
Learning Outcome M0730351	Describe the elements of folds**.**	09	10
Contents	Strike & Dip Apparent Dip, True Dip Folds- Elements of Folds, anticline and syncline, limbs, axial plane, Axis of fold. Types of fold- symmetrical, Asymmetrical, Overturned, recumbent, Isoclinal, Plunging folds ,Anticlinorium, Synclinorium ,Open fold, close fold, Dome and Basin		
Method of Assessment	*External : End Semester Theory Exam - Pen paper test*		
Learning Outcome M0730352	Describe elements of faults.	06	05
Contents	Faults- Fault Terminology, Fault-plane, Hade, Dip and strike, throw, Heave, Slip, Hanging wall and foot-wall. Classification of faults-normal and reverse faults, Dip fault, strike-fault and oblique-faults, High and low angle faults, parallel faults, step-faults, Graben, Horst, Radial faults, Peripheral faults.		
Method of Assessment	*External : End Semester Theory Exam - Pen paper test*		
Learning Outcome M07303553	Describe different types of unconformity & joints. (05)(04)	08	06
Contents	unconformity- Definition, Types-Angular unconformity, Disconformity, Nonconformity. Joints and cleavages- Classification- Strike Joints, dip Joints oblique Joints, bedding Joints, master		

	Joints, sheet Joints and Columnar Joints. Outlier and Inlier..		
Method of Assessment	*External : End Semester Theory Exam - Pen paper test*		
Learning Outcome M0730354	Able to identify the various types of rocks		20
Contents	Identification of igneous , sedimentary, and metamorphic rocks in a given sample		
Method of Assessment	*External: End Semester Practical Exam - Performance of Task & Viva Voce*		

List of experiments.

1. Identification of Minerals in sets. Colour Form Cleavage Fracture Lusture Streak Moh's scale of hardness.

2. Identification of Minerals on the basis of physical properties in hand specimens. Asbestos, Augite, Biotite,Calcite, Corundum,Dolomite, Gypsum,Hornblende, Muscovite, Kaolinite, Orthoclase, Plagioclase, Quartz, Talc.

3. Identification of Igneous Rocks in Hand specimen. - Granite, Rhyolite, Syenite, Gabbro, Basalt,Trachyte.

4. Identification of sedimentary rocks in Hand specimen. - Conglomerate, Sandstone, Shale, Limestone. 5.Identification of Metamorphic rocks in Hand specimen. - Slate, Schist, Gneiss, Quartzite, Marble.

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT-3	Sheet No. 1/3

Branch	AGRICULTURAL ENGINEERING	Semester	III

Course Code	303	Course Name	BASIC ELECTRICAL AND ELECTRONICS 6933

Course Outcome 1	Calculate electrical quantity for given electrical circuit	Teaching Hrs	Marks
Learning Outcome 1	Define various terms used in electrical engineering. (Cognitive domain)	4	5
Contents	• Concept of electric current, potential and potential difference. • Classification of D.C. and A.C. sources. • Overview of AC voltage generation, transmission and distribution. • Electrical Power, energy and their units.		
Method of Assessment	Internal : Mid semester Test-1 (Pen paper test)		
Learning Outcome 2	Explain fundamentals of D.C. circuit and calculate electrical quantity. (Cognitive domain)	10	12
Contents	• Ohm's Law, Concept of resistance, conductance, resistivity, conductivity and their units. Effect of temperature on resistance, Temperature coefficient of resistance. • Series, Parallel connections of resistance and their combinations, Simple Numerical. • Kirchhoff's Voltage Law, Kirchhoff's Current Law, Simple Numerical		
Method of Assessment	External : End semester theory examination (Pen paper test)		
Learning Outcome 3	Explain fundamentals of A.C. circuit and determine electrical quantity of single phase AC circuit. (Cognitive domain)	10	12
Contents	• Concept of Cycle, Frequency, time period, amplitude, phase and phase difference. • Define Instantaneous value, average value, RMS value and peak value of sinusoidal electrical quantities, form factor and peak factor. • Concept of reactance, impedance and power factor in AC circuit. • Concept of current, voltage, power in purely resistive, inductive, capacitive, RL, RC and RLC Series circuit • Active power, reactive power and apparent power. • Three phase AC supply: three phase three wire and three phase four wire system, Relationship between line voltage, phase voltage, line current and phase current in star and delta connection .		

Method of Assessment	External : End semester theory examination (Pen paper test)		
Learning Outcome 4	Verify Kirchhoff's laws and determine the electrical quantities for a given electrical circuit. (Psychomotor domain)	10	
Contents	● Verification of Kirchhoff's current Law and Kirchhoff's voltage Law ● Calculate Impedance, power and power factor by measuring voltage across each element and current for a given RLC series circuit.		
Method of Assessment	External: End semester practical exam- Performance of task and viva voce		
Course Outcome 2	**Select an appropriate electrical machine for particular application.**	**Teach Hrs**	**Marks**
Learning Outcome 5	Describe various parts of the DC machines, explain the working principle and applications of DC generator (Cognitive domain)	8	10
Contents	● Concepts of Electromagnetism, Faraday's Law, Lenz's Law, Fleming's Left Hand and Right Hand Rule. ● D.C. Machines: Construction, its main parts & their functions and classification. ● D.C. Generator: Working principle, emf equation ● Types and applications of DC Generators.		
Method of Assessment	Internal : Mid semester-I theory examination (Pen paper test)		
Learning Outcome 6	Explain the working principle and choose a DC motor for particular application. (Cognitive domain)	4	6
Contents	● D.C. Motor: Working principle ● Significance of back emf, torque equation ● Types and applications of DC motors ● Need of starter		
Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome 7	Describe various parts of the AC machine, explain its working principle and select the AC machine for particular application.(Cognitive domain)	12	12
Contents	● Single Phase Transformer: Construction, working principle, emf equation, transformation ratio, simple numerical. ● Step up and step down transformers and their application. ● Three-phase Induction motor: Construction, types, principle of operation, concept of Slip and applications. ● Single-phase Induction motor: types of single phase induction motor- capacitor start, capacitor run, shaded pole and their applications.		

Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome 8	Apply field & armature control methods to vary speed of DC shunt motor and perform open circuit & short circuit test on single phase transformer to determine losses and efficiency (Psychomotor domain)	10	
Contents	● Field and armature control methods of DC shunt motor. ● Open circuit & short circuit test of single phase transformer.		
Method of Assessment	External: End semester practical exam- Performance of task and viva voce		
Course Outcome 3	**Use electrical measuring instruments and justify the need of the transducers. (Cognitive domain)**	**Teach Hrs**	**Marks**
Learning Outcome 9	Select an appropriate instrument for measurement of electrical quantities (Cognitive domain)	10	12
Contents	● Classification of Measuring Instruments: Absolute and secondary instruments. Indicating, Integrating and Recording instruments with examples. ● Working principle and construction of moving iron & moving coil type ammeter and voltmeter, electrodynamometer type wattmeter, induction type and electronic energy meter.		
Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome 10	Classify different types of transducer. (Cognitive domain)	8	10
Contents	● Transducer: Definition, primary and secondary transducers, active and passive transducers, analog and digital transducers. ● Principle and application of Strain gauge, LVDT, Thermocouple, Piezoelectric and Photoelectric Transducers.		
Method of Assessment	Internal : Mid semester-II theory examination (Pen paper test)		
Learning Outcome 11	Measure various electrical quantities by using suitable measuring instruments. (Psychomotor and affective domain)	12	
Contents	● Measurement of insulation resistance by megger. ● Measurement of earth resistance by earth tester. ● Measurement of linear displacement by LVDT.		
Method of Assessment	Internal: Performance of task, observation and viva voce		
Course Outcome 4	**Analyze various electronic devices and circuits.**	**Teach Hrs**	**Marks**
Learning Outcome 12	Explain concepts of various semiconductor devices and circuits.(Cognitive domain)	8	10

Contents	● Semiconductor PN Junction Diode, Zener diode, PNP and NPN transistor ● Forward and reverse bias of semiconductor diode. ● Applications of semiconductor diode, zener diode and transistor ● Single phase half wave and full wave rectifier: Circuit diagram, working and input-output waveforms.		
Method of Assessment	External: End semester theory examination (Pen paper test)		
Learning Outcome 13	Plot the V-I characteristics of semiconductor diode and measure output voltage of single phase rectifiers. (psychomotor domain)	8	
Contents	● V-I characteristics of semiconductor diodes. ● Measurement of output voltage in single phase half wave and full wave rectifier.		
Method of Assessment	External : Performance of task and viva voce		
Course Outcome 5	**Select electrical wiring material and apply electrical safety measures.**	**Teach Hrs**	**Marks**
Learning Outcome 14	Choose electrical wiring materials. (Cognitive domain)	4	5
Contents	● Types of Wiring and their Applications. ● Size of conductor, Standard Wire Gauge. ● Electrical Fixtures: switches, fuses, holders, sockets and MCB's.		
Method of Assessment	Internal : Mid semester test II (Pen paper test)		
Learning Outcome 15	Identify electrical safety measures in various working conditions. (Cognitive domain)	4	6
Contents	● Electric shock, its prevention, effect of electrical current on the human body and shock treatment. ● Earthing: Need and types of earthing.		
Method of Assessment	External: End semester theory examination (Pen paper test)		

Reference books

1	Basic Electrical Engineering, McGraw Hill Education, Noida, ISBN: 978-00-705-9357-2	Mittle, V.N. and Mittle, Arvind
2	Electrical Circuits (Hindi), Satya Prakashan New Delhi	Suresh Kumar Soni and Umesh Kumar Soni
3	A Text Book of Electrical Technology Vol-I, Vol-II and Vol-IV, S. Chand & Co. Ram-nagar, New Delhi,	Theraja, B. L. and Theraja, A. K;,
4	Electrical Machines, Vol-I, II, Khanna Book Publishing House, New Delhi 2 (ISBN: 978-9386173-447, 978-93-86173-607)	Bimbhra, P.S.
5	Electrical Measurements and Measuring Instruments, S. K. Kataria and sons, Delhi, ISBN: 9788188458264	Gupta J. B.
6	Electrical Installation Estimating & Costing, S. K. Kataria and sons, Delhi	Gupta J. B.
7	Principles of Electronics, S. Chand Publications, Delhi	V K Mehta and Rohit Mehta

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT- 3	Sheet No. 1/3

Branch	AGRICULTURAL ENGINEERING	Semester	III

Course Code	305	Course Name	PROFESSIONAL DEVELOPMENT-III

Course Outcome 1	**Student will be able to perform as the team leader of small team for solving a team problem in the given situation**	Teaching Hrs	Marks
Learning Outcome E0130511	Student will be able to demonstrate his/her understanding of leadership required in a team work performance	10	10
Contents	Team leaders, importance of team leader, role of team leaders, important qualities of good team leaders, behaviors of good team leaders		
Method of Assessment	Paper pen test		
Learning Outcome E0130512	Student will be able to play role of the leader of a team for solving a team problem in the given situation	10	15
Contents	Team leaders, importance of team leader, role of team leaders, important qualities of good team leaders, behaviors of good team leaders		
Method of Assessment	Student's role play		
Course Outcome 2	**Student will be able to apply professional ethics in a given problem situation**		

Learning Outcome E0130521	Student will be able to **demonstrate** his/her understanding of professional ethics	10	10
Contents	Professional ethics, its need and importance, seven ethics common to all professionals, general code of ethics for engineers, ethical issues for engineers, common problems related to professional ethics, ethical issues, identification of ethical issues in cases for engineers.		
Method of Assessment	Paper pen test		
Learning Outcome E0130522	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 issue, identification of the ethical stand, searching various possible solutions for the problem keeping ethical stand in focus, selection of appropriate solution.		
Method of Assessment	Paper pen test		
Course Outcome 3	**Student will be able to plan self-learning to complete the given task**	Teaching Hrs	Marks
Learning Outcome E0130531	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 lifelong learning, identification of learning needs		
Method of Assessment	Assessment through student activity		
Learning Outcome E0130532	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, self directed learning plan, examples.
Method of Assessment	Assessment through student activity