

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 1/5
Branch	Electrical & Electronics		Semester	3	
Course Code		Course Name	Digital Electronics		
Course Outcome 1	Examine the structure of various number system, codes and logic gates.		Teach Hrs	Marks	
Learning Outcome 1	List out different types of number system & code and convert one to another. (<i>Cognitive</i>)		5	8	
Contents	<p>Number System: Decimal number, binary number, octal and Hexadecimal number.</p> <p>Binary Codes: Weighted and un-weighted codes BCD, Gray, Excess-3.</p> <p>Conversion of number system and code: (Decimal number, binary number, octal and Hexadecimal number, BCD, Gray, Excess-3)</p>				
Method of Assessment	External: End semester theory examination (Pen paper test)				
Learning Outcome 2	Perform various binary arithmetic operation. (<i>Cognitive</i>)		6	10	
Contents	<p>Binary operations: Binary addition, subtraction, Multiplication, Division.</p> <p>Complement of number: Complements: 1's, 2's, 9's and 10's. Subtraction using 1's and 2's complement.</p>				
Method of Assessment	Internal: Mid semester-I theory examination (Pen paper test)				
Learning Outcome 3	Verify truth table of all the gates. (<i>Psychomotor</i>)		7	12	
Contents	<p>Logic Gates: Symbol, operation and truth-table: AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR Realization of logic gates using universal gates.</p> <p>Logic System: Positive and negative logic system.</p> <p>Verification of the basic logic gates (AND, OR, NOT NAND, NOR, EX-OR and EX-NOR).</p>				
Method of Assessment	External: Verification of given task and viva voce				

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 2/5
Branch	Electrical & Electronics			Semester	3
Course Code		Course Name	Digital Electronics		
Course Outcome 2	Construct and Examine simple combinational digital circuit.			Teach Hrs	Marks
Learning Outcome 4	Verify Boolean algebra laws and theorems. (<i>Psychomotor</i>)			5	8
Contents	Laws and theorems of Boolean algebra: Boolean laws, De-Morgan's Theorem and Duality Theorem, Complement of Boolean equations. Verification of De- Morgan's theorem.				
Method of Assessment	Internal: Verification of given task and viva voce				
Learning Outcome 5	Solve Boolean expressions using K-map and realize its logic circuit. (<i>Cognitive</i>)			6	10
Contents	Karnaugh-map: Boolean expressions: Sum of product and product of sum, Karnaugh maps and its use for simplification up to four variable Boolean expressions, Don't care condition. Realization of logic equations: The universal building blocks-NAND & NOR, AND-OR network, NAND-NAND Logic for implementation of Boolean expressions.				
Method of Assessment	External: End semester theory examination (Pen paper test)				
Learning Outcome 6	Implement different type of adder and subtractor circuits. (<i>Cognitive</i>)			8	14
Contents	Adder and Subtractor Circuit: Half adder, full adder, parallel binary adder, 8421 adder, half subtractor, full subtractor, parallel binary subtractor.				
Method of Assessment	External: End semester theory examination (Pen paper test)				
Learning Outcome 7	Design different type of coder and multiplexer circuits (<i>Psychomotor</i>)			4	7
Contents	Coder Circuit: Encoder, Decoder (2 to 4 line, 3 to 8 line, BCD to Decimal, Decimal to 7 segment) MUX Circuit: Multiplexers: 4 to 1 and 8 to 1. De-Multiplexers: 1 to 4 and 1 to 8. (Block Diagram and Truth table) Verification of encoder, decoder, multiplexer and de-multiplexer circuit.				
Method of Assessment	Internal: Performance of given task and viva voce				

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 3/5
Branch	Electrical & Electronics			Semester	3
Course Code		Course Name	Digital Electronics		
Course Outcome 3	Analyze flip-flop circuit, counters, shift registers and understand their operation.			Teach Hrs.	Marks
Learning Outcome 8	Analyze the working of various flip-flops and verify its outputs. (<i>Psychomotor</i>)			7	12
Contents	Flip-Flop: S-R flip-flops(FF), D FF, Types of Triggering, Glitch, JK FF race around condition and remedies, JK Master Slave FF and T FF. Verification of various flip-flops				
Method of Assessment	External: Performance of given task and viva voce				
Learning Outcome 9	Draw and explain different type of registers. (<i>Cognitive</i>)			6	10
Contents	Registers: Shift Register (3 to 4 bits only)- introduction, circuit diagram and waveforms of SISO, SIPO, PISO, PIPO shift registers.				
Method of Assessment	External: End semester theory examination (Pen paper test)				
Learning Outcome 10	Design different type of synchronous and asynchronous counters. (<i>Psychomotor</i>)			7	11
Contents	Counters: Asynchronous: Up/down counters, Up-down counters. Synchronous Counters. Up/down counters, Ring counter, Johnson counter. Design Mode-4 counters.				
Method of Assessment	External: End semester theory examination (Pen paper test)				

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 4/5
Branch	Electrical & Electronics			Semester	3
Course Code		Course Name	Digital Electronics		
Course Outcome 4	Demonstrate the functioning of A to D and D to A Converters.			Teach Hrs	Marks
Learning Outcome 11	Draw and explain various operation of D/A conversion circuits. (<i>Cognitive</i>)			6	10
Contents	D/A Conversion: Weighted resistor, R-2R ladder network.				
Method of Assessment	Internal: Mid semester-II theory examination (Pen paper test)				
Learning Outcome 12	Draw and explain various operation of A/D conversion circuits. (<i>Cognitive</i>)			6	10
Contents	A/D Conversion: Counter type, Successive approximation, Flash type, Dual slope type. (Theoretical aspects)				
Method of Assessment	External: End semester theory examination (Pen paper test)				

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 5/5
Branch	Electrical & Electronics			Semester	3
Course Code		Course Name	Digital Electronics		
Course Outcome 5	Compare various digital logic family.			Teach Hrs.	Marks
Learning Outcome 13	Compare digital ICs on different parameters. <i>(Cognitive)</i>			5	8
Contents	<p>Characteristics of digital ICs: Fan-in, Fan-out, Propagation delay, Power dissipation, Noise margins, Figure of merit.</p> <p>Logic ICs: NAND Gate using TTL, NOR gate using ECL.</p>				
Method of Assessment	External: End semester theory examination (Pen paper test)				
Learning Outcome 14	Construct universal gates and inverter using MOS and CMOS logic. <i>(Cognitive)</i>			6	10
Contents	<p>Classifications of logic families: Saturated and Non-saturated logic.</p> <p>MOS and CMOS Logic: MOS based NOT gate, Two input NAND & NOR gate. CMOS based NOT gate, Two input NAND & NOR gate.</p>				
Method of Assessment	External: End semester theory examination (Pen paper test)				
Learning Outcome 15	Make use of PAL & PLA for implementation of Boolean expression and design simple logic circuit. <i>(Cognitive/Affective)</i>			6	10
Contents	<p>PLD: PAL, PLA Implementation of Boolean expression using PAL, PLA (Up-to 2 variables)</p>				
Method of Assessment	Internal: Assignment and Quiz				