RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT- 3	Sheet No. 1/5

Branch	CSE	Semester	II
Course Code		Course Name	BEEM

Course Outcome 1	Analyse DC circuits	Teach Hrs.	Marks
Learning Outcome 1	Explain fundamental concepts and laws use in D.C circuit**(Cognitive)**		10
Contents	Concept of current, voltage, resistance, conductance, resistivity and conductivity. Their units and effect of temperature, resistance temperature coefficient, Ohm's law.Power & Energy and its SI units.		
Method of Assessment	Internal		
Learning Outcome 2	Apply fundamental concepts and law to solve D.C circuit problems**(Cognitive)**		10
Contents	Kirchhoff's Laws & its applications in simple DC Circuits, Analysis of series, parallel circuits. Series & Parallel combination of resistance and wattage, Consideration with Simple Problems.		
Method of Assessment	External		
Learning Outcome 3	Experiment and verify various law of basic electric circuit. **(Psychomotor)**		10
Contents	To verify Ohm's law. To verify Kirchhoff's current & voltage law. To verify series & parallel connection of resistances (On Trainer-Kit/breadboard and/or Simulation Software)		
Method of Assessment	External		

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Branch	CSE	Semester	II

Course Code		Course Name	BEEM

Course Outcome 2	Explain the concepts of A.C. circuits and electro-magnetism.	Teach Hrs.	Marks
Learning Outcome 4	Define fundamental concept and solve A.C. circuit problems.**(Cognitive)**		10
Contents	Alternating voltage and currents, their mathematical and graphical representation, comparison between AC and DC. Concept of cycle period, frequency, instantaneous, peak, average, r.m.s. values, peak factor, and form factor, phase difference, lagging, leading and in phase quantities and phasor representation. A.C. through pure resistors, inductors and capacitors. RL & RLC seriescircuits. numerical problems.		
Method of Assessment	External		
Learning Outcome 5	Describe fundamentals concept of Magnetic circuits **(Cognitive)**		10
Contents	Magnetic effect of electrical current, Concepts of m.m.f, flux, flux density, reluctance, permeability and field strength, their units and relationship, Comparison of electrical & magnetic circuits. Faraday's Laws of electromagnetic induction, statically and dynamically induced emf's, self and mutual inductance, coefficient of coupling		
Method of Assessment	Internal		
Learning Outcome 6	Verify the characteristic of different components in A.C. circuit. **(Psychomotor)**		10
Contents	Study and verify the characteristic of with resistor, inductor and capacitor in A.C. circuitboth individually and in combinedckt. (On Trainer-Kit/breadboard and/or Simulation Software)		
Method of Assessment	Internal		

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Branch	CSE	Semester	II

Course Code		Course Name	BEEM

Course Outcome 3	**Categorize the semiconductor, P-N junction and its circuits.**	Teach Hrs.	Marks
Learning Outcome 7	Explain the fundamental concept of semiconductor and P-N junction. **(Cognitive)**		10
Contents	Fundamentals of semiconductor – Energy bands (conduction & valence), Effect of temperature on conductivity, Intrinsic & Extrinsic semiconductor, Doping, P-type and N-type semiconductor, Concept of majority and minority carriers. Concept of P-N junction, Diffusion & Drift, Barrier potential, Depletion region. Biasing (forward and reverse) and characteristic of P-N junction diode with specification, Zener diode and its V-I Characteristics, Breakdown mechanism.		
Method of Assessment	External		
Learning Outcome 8	Construct various diode based circuits with different parameters.**(Cognitive)**		10
Contents	Diode as half wave and full wave rectifiers (Centre tapped and bridge type), Circuit operation of the rectifiers, Input & output waveforms for voltage & current, Average value of voltage & current, Ripple, Ripple factor, Ripple frequency, Form factor, PIV of diode used, Rectifier efficiency.		
Method of Assessment	External		
Learning Outcome 9	Verify the characteristics of diodes and plot input-output waveform of its various circuit. **(Psychomotor)**		10
Contents	Plot the V-I characteristics of a Diode (Silicon, Germanium and Zener) and Verify it Assemble / setup the circuit of Half Wave rectifier& Full Wave rectifiers (Centre tapped andbridge type) and observe input-output waveform. (On Trainer-Kit/breadboard and/or Simulation Software)		
Method of Assessment	External		

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Branch	CSE	Semester	II
Course Code		Course Name	BEEM

Course Outcome 4	Classify various transistor and regulated power supply	Teach Hrs	Marks
Learning Outcome 10	Compare different typeBJT and its configuration.**(Cognitive)**		10
Contents	Construction of NPN & PNP types transistor, Symbols, Packaging, Working principle of NPN and PNP transistor – current flow, relation between different currents. Transistor configurations – CB, CE, CC, circuit diagram and input & output characteristics for each configuration, Comparison betweenthree configurations. General introduction of UJT, FET and SCR		
Method of Assessment	External		
Learning Outcome 11	Select voltage regulator for particular application. **(Cognitive)**		10
Contents	Need of regulation, voltage regulation factor, Concept of load regulation & line regulation, Block diagram of regulated power supply. Zener diode voltage regulator and its limitation, Transistorised regulated power supply (Shunt and series) – circuit diagram and operation. Regulator IC's- IC78xx, IC79xx, IC723, SMPS – Meaning, working, block diagram, advantages, ratings.		
Method of Assessment	Internal		
Learning Outcome 12	Plot the input and output characteristics of BJT for different configuration and verify the working of voltage regulators. **(Psychomotor)**		10
Contents	Setup the BJT for CE, CB and CC configuration circuit and obtain input and output characteristics Study of various voltage regulator. (On Trainer-Kit/breadboard and/or Simulation Software)		
Method of Assessment	Internal		

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Branch	CSE	Semester	II

Course Code		Course Name	BEEM

Course Outcome 5	**Explain construction and working principle of various measuring instruments.**	Teach Hrs	Marks
Learning Outcome 13	Define various parameters related to measurement.**(Cognitive)**		10
Contents	Accuracy, Precision, Sensitivity, Resolution, Dynamic range, Response and Repeatability of measuring instruments, Definition of Errors and type of errors.		
Method of Assessment	External		
Learning Outcome 14	Illustrateconstruction and working principle of measuring instrument. **(Cognitive)**		10
Contents	Working principle and construction of Ammeter and Voltmeter, Comparison between them, Extension of range and simple numerical problems. Working principle and construction of Wattmeter (dynamometer type) and Energy meter (static type), Digital Multi Meter, Advantages of DMM over Conventional Multi Meter. Block diagram of CRO, constructional features of CRT		
Method of Assessment	External		
Learning Outcome 15	Demonstrate the working and calculate various parameter using measuring instrument.**(Psychomotor)**		10
Contents	Study the operation and measure the particular parameters using - (a) Multimeter (b) Oscilloscope (c) AC/DC Voltmeter (d) AC/DC Ammeter (e) AC/DC Wattmeter (On Trainer-Kit/breadboard and/or Simulation Software)		
Method of Assessment	Internal		

SUGGESTED LIST OF EXPERIMENT:

S.N.	Experiment
1.	To verify ohm's law.
2.	To verify Kirchhoff's law.
3.	To measure voltage, current & power in single-phase circuit. (with resistive load).
4.	Study AC circuit with resistor, inductor and capacitor at constant frequency
5.	To plot the V-I characteristics of P-N junction diode
6.	To construct half-wave & full-wave rectifier circuit & draw input, output waveforms.
7.	To Plot the V-I characteristics of Zener diode.
8.	To study the Zener diode as voltage regulator & calculate load regulation.
9.	To plot the input & output characteristics of a BJT in CE or CB mode
10.	To construct a power supply on bread board, observe and measure the waveform on CRO.
11.	Study of regulator ICs- 78XX & 79XX.
12.	To study the operation and to use- (a) Multimeter (b) Oscilloscope (c) AC/DC Voltmeter (d) AC/DC Ammeter (e) AC/DC Wattmeter