DEPARTMENT OF MECHANICAL ENGINEERING

S.No	Name of Experimental Setup	Quantity
THERMAL ENGINEERING LAB		
1	Load Test On Single Cylinder, Vertical, Water-Cooled Diesel Engine With Rope Brake Dynamometer	1
2	Load Test On Twin Cylinder Diesel Engine With Electrical Dynamometer.	1
3	Heat Balance Sheet Of Single Cylinder Slow Speed Diesel Engine.	1
4	Morse Test On 4-Cylinder 4-Stroke Matador Diesel Engine With Hydraulic Dynamometer.	1
5	Performance Test On Reciprocating Air Compressor.	1
6	Economical Speed Test On 4-Cylinder 4-Stroke Matador Diesel Engine With Hydraulic Dynamometer.	1
7	Valve Timing Diagram of a Four-Stroke Diesel Engine.	1
8	REDWOOD-I Viscometer.	1
9	SAYBOLT UNIVERSAL Viscometer.	1
10	CLEVLAND's Open Cup Apparatus.	1
MANUFACTURING TECHNOLOGY LAB-I		
1	To perform plain, step & taper turning operations on a given work piece.	9
2	To perform plain, step turning and thread cutting operations on a given work piece.	9
3	To perform plain, step turning, knurling & eccentric turning on a given work piece.	9
4	To prepare V-Groove on a given cast iron piece on shaping machine.	2
5	To prepare a spur gear for a round cast iron block on a milling machine.	1
6	To prepare a mould for a dumbbell shape.	12
7	To prepare a mould for handle shape.	12
8	To prepare a mould for connecting rod.	12
9	To prepare a lap welded joint with the given mild steal specimens.	2
10	To prepare a butt welded joint with the given mild steal specimens.	2
11	To prepare a T welded joint with the given mild steal specimens.	2
12	To prepare a corner welded joint with the given mild steal specimens.	2
13	To convert the round rod section of a given mild steal specimen to square section by forging.	3
14	Demonstration of capstan lathe, planning lathe & surface grinding machine.	1 Each
FLUID MECHANICS & MACHINERY LABORATORY		
1	To calculate the co-efficient of discharge of venturimeter and to find its variation with throat diameter.	1
2	To calculate the co-efficient of discharge and find its variation with the orifice diameters	1
3	To observe the variation in the coefficient of discharge of a mouth piece with that in the head above the mouth piece using a mouth piece apparatus by falling head method.	1
4	To observe the variation in the coefficient of discharge of a mouth piece with that in the head above the mouth piece using a mouth piece apparatus by constant head method.	1
5	To observe the variation in co-efficient of discharge of a V-notch with that in the heights of V-notch using V-notch apparatus.	1
6	To draw the characteristic curves of a reciprocating pump	1

7	To draw the performance curves of centrifugal pump	1
8	To draw the performance characteristic curves of Francis turbine	1
9	To draw the performance characteristic curves of Pelton wheel turbine	1
10	To verify Bernoulli's theorem.	1
11	To determine the coefficient of friction of a pipe.	1
STRENGTH OF MATERIALS LABORATORY		
1	To study the stress strain characteristics of metals by using UTM by tension test.	1
2	Determination of hardness using Brinnels hardness testing machine.	1
3	Determination of hardness using Rockwell'shardness testing machine	1
4	Determination of hardness using Vicker's hardness testing machine.	1
5	Impact test by using Izod method	1
6	To find stiffness & modulus of rigidity by conducting compression tests on springs	1
7	Impact test by using Charpy method	1
8	Determination of compression strength of wood	1
9	To study the stress strain characteristics of metals by using Hounsfield tensometer	1
10	Sieve analysis and determination of fineness number.	1
11	Torsion tests on M.S.Shafts.	1
12	Bulking of sand.	1
13	Punch shear test on UTM	1
MECHANICS OF SOLIDS LABORATORY		
1	Conduct a tensile test on UTM and draw stress – strain diagram for the given material.	1
2	Determine the Brinell hardness number for a given specimen using Brinell hardness testing machine.	1
3	Determine the rigidity modulus of closed and open coil helical spring. Plot the graph.	1
4	Determine the impact resistance of the given specimen using Charpy impact test.	1
5	Conduct a compression test on UTM and draw stress – strain diagram for the given material.	1
6	Calculate the rigidity modulus of the material using torsion testing machine. Plot the graph.	1
7	Double shear test on MS rod	1
METULLURGY LABORATORY		
1	Preparation and study of the Micro Structure of pure metals like Iron, Copper and Aluminum.	1
2	Preparation and study of the Micro Structure of pure metals Mild Steel, Low Carbon steel and High Carbon Steel..	1
3	Study of the Microstructures of Cast Iron	0
4	Study of the Micro Structures of Non-Ferrous alloys.	0
5	Study of the Micro structures of Heat-treated steels.	0
6	To find out the Hardness of various treated and untreated steels.	1
7	To determine the Hardenability of a given steel.	1
METROLOGY& INSTRUMENTATION LABORATORY		
1	Measurement of length, height and diameter by vernier callipers, vernier height gauge and micrometer.	2
2	Measurement of bore diameter using Dial bore indicator	1
3	Measurement of thickness of gear teeth by Vernier gear tooth calliper	1

4	To study the gear tooth nomenclature, rake angle.	1
5	To measure the surface roughness of a given specimen	1
6	Angle and taper measurement using Bevel Protractor and sine bar	1
7	Finding the straightness of a bed and flatness of surface using spirit level	2
8	Machine tool alignment test on the lathe	1
9	Machine tool alignment test on milling machine	1
10	Machine tool alignment test on drilling machine	1
11	Calibration of a Pressure gauge	1
12	Calibration of Transducer for Temperature Measurement	1
13	Study and calibration of LVDT transducer for Displacement Measurement	1
14	Calibration of Strain Gauge	1
15	Calibration of Thermo Couple	1
16	Calibration of Capacitive Transducer	Nil
17	Study and calibration of Photo and magnetic speed pickups	Nil
18	Calibration of Resistance Temperature Detector	1
19	Study and calibration of Rotameter	1
20	Study and use of Seismic pickup for the measurement of Vibration, Amplitude of an Engine bed at various loads	Nil
21	Study and calibration of Mcleod gauge for low pressure	Nil
CFD LAB		
1	Solution of Transcendental equations	35 Personal Computers with software MAT lab and ANSYS
2	Solution of Simultaneous algebraic equations	
3	Numerical differentiation	
4	Integration	
5	Solution of Ordinary Differential Equation	
6	Solution of a Tri-diagonal matrix using Thomas Algorithm	
7	Solution of 1-D heat conduction with (Finite Difference method)	
8	Steady State conduction	
9	Lumped heat transfer	
10	Convective heat transfer	
CAD/CAM LAB		
1	Introduction to CATIA	35 Personal Computers with software of CATIA, ANSYS , Simulation of CNC program
2	Basic Sketcher - 1	
3	Basic Sketcher – II	
4	Basic Sketcher – III	
5	Basic Sketcher – IV	
6	Basic Sketcher - V	
7	Part Modeling – I	
8	Part Modeling – II	
9	Assembly model	
10	Introduction to ANSYS	
11	Analysis Two Dimensional Truss	
12	Modal Analysis of a Cantilever Beam	
13	Harmonic Analysis of a Cantilever Beam	
14	Stress analysis of Rectangular Plate with a hole	
15	Analysis of a Bracket	
16	Simple Conduction Analysis	
17	Introduction to CAM and CNC Programming	
18	CNC program for Facing Operation	

19	CNC program for Step Turning Operation	
20	CNC program for Taper Turing Operation	
21	CNC program for Threading	

MECHANICAL VIBRATIONS LABORATORY

1	The radius of gyration using bifilar and Trifiller suspension	1
2	Natural frequency of free torsional vibrations of single rotor system (Horizontal System)	1
3	Natural frequency of free torsional vibrations of single rotor system (Vertical System)	1
4	Mode shape and natural frequency of cantilever beam	1
5	Mode shape and natural frequency of simply supported beam	1
6	CG of connecting rod using free vibration technique	1
7	Find the damping presence in a structure using logarthermic- decrement method	1
8	Harmonic excitaion of cantilever beam using electrodynmaic – shaker	1
9	Harmonic excitaion of simply supported beam using electrodynmaic – shaker	1
10	Natural frequency and mode shape of plate in different boundary condition	1

MACHINE DYNAMICS LABORATORY

1	Determination of the magnitude of gyroscopic couple, angular velocity of precession, and representation of vectors.	1
2	Static balancing of disc	1
3	Determination of the magnitude and orientation of the balancing mass in dynamic balancing.	1
4	Determination of friction, wear using pin-on-disc.	1
5	Harmonic excitation of cantilever beam using electrodynamic – shaker	1
6	Harmonic excitation of simply supported beam using electrodynamic – shaker	1
7	Natural frequency and mode shape of plate in different boundary condition	1

WORKSHOP LABORATORY

1	CARPENTRY	Carpenter's vice-**22** Steel rule-**20** Try square-**24** Hand saw or Cross cutsaw-**28**, Metal jackplane-**3** Firmer chisel-**20** Wooden mallet-**24**
2	FITTING	Bench vice-**9** Steel rule-**79** Try square-**59**

			ball-peen hammer-**9** Dot punch-**17** Set of files-**40** Hacksaw with blade-**67** Divide-**64**
3	BLACKSMITHY		Blacksmith furnace-**1** Tongs-**32** Anvil-**6** Swage block-**1** Sledge hammer -**3**
4	HOUSE WIRING		Cutting pliers-**1** Voltage tester-**2** Wire cutter-**1** Lamp holders-**3** Screwdriver-**1**
5	TIN SMITHY		Steel rule – **23** Mallet-**24** Nose Plier-**5** Standard wire gauge- Straight snip-**17** Anvil (Brick Iron Stake)-**6**

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

	Communications Lab	
	AC LAB	
S.No	**Name of Experimental Setup**	**Quantity**
1	Amplitude modulation and demodulation	2
2	Frequency modulation and demodulation	2
3	Balanced modulation	2
4	Pulse Amplitude modulation and demodulation	2
5	Pulse width modulation and demodulation	2
6	Phase locked loop	2
7	PRE-EMPHASIS and DE-EMPHASIS	2
8	Sampling Theorem	2
9	Radio receiver characteristics	2
10	Spectrum Analysis of Modulated signal using Spectrum Analyser	2
11	Pulse Position Modulation & demodulation	2
12	AGC Circuits	2
	DC LAB	
1	Time division multiplexing.	2
2	Pulse code modulation.	2
3	Differential pulse code modulation.	2
4	Delta modulation.	2
5	Frequency shift keying.	2
6	Phase shift keying .	2
7	Differential phase shift keying.	2
8	Companding	2
9	Source Encoder and Decoder	2
10	Linear Block Code-Encoder and Decoder	2
11	Binary Cyclic Code – Encoder and Decoder	2
12	Convolution Code – Encoder and Decoder	2
	I/II M.TECH (CS) I-SEM DATA COMMUNICATION LAB	
	Study of serial interface RS – 232	1
2	Study of pc to pc communication using parallel port	1
3	To establish pc-pc communication using LAN	1
4	Study of LAN using star topology, bus topology and tree topology	1
5	Study and configure modem of a computer	1
6	To configure a hub/switch	1
7	To study the interconnections of cables for data communication	1
8	Study of a wireless communication system	1
9	Set up of time division multiplexing using fiber optics	1

10	Digital Fiber Optical Transmitter and Receiver	1
I/II M.TECH (CS) I-SEM : Advanced Digital Signal processing lab		
	Basic Signal Representation	1
2	Correlation Auto And Cross	1
3	Stability Using Hurwitz Routh Criteria	1
4	Sampling FFT Of Input Sequence	1
5	Butterworth Low pass And High pass Filter Design	1
6	Chebychev Type I,II Filter	1
7	State Space Matrix from Differential Equation	1
8	Normal Equation Using Levinson Durbin	1
9	Decimation And Interpolation Using Rationale Factors	1
10	Maximally Decimated Analysis DFT Filter	1
11	Cascade Digital IIR Filter Realization	1
12	Convolution And M Fold Decimation &PSD Estimator	1
13	Estimation Of PSD	1
14	Inverse Z Transform	1
15	Group Delay Calculation	1
16	Separation Of T/F	1
17	Parallel Realization of IIR filter	1
I/II M.TECH (CS) II-SEM: ADVANCED COMMUNICATIONS LAB		
	Measurement of Bit Error Rate using Binary Data	1
2	Verification of minimum distance in Hamming code	1
3	Determination of output of Convolutional Encoder for a given sequence	1
4	Determination of output of Convolutional Decoder for a given sequence	1
5	Efficiency of DS Spread- Spectrum Technique	1
6	Simulation of Frequency Hopping (FH) system	1
7	Effect of Sampling and Quantization of Digital Image	1
8	Verification of Various Transforms (FT / DCT/ Walsh / Hadamard) on a given Image (Finding Transform and Inverse Transform)	1
9	Point, Line and Edge detection techniques using derivative operators.	1
10	Implementation of FIR filter using DSP Trainer Kit (C-Code/ Assembly code)	1
11	Implementation of IIR filter using DSP Trainer Kit (C-Code/ Assembly code)	1
12	Determination of Losses in Optical Fiber	1
13	Observing the Waveforms at various test points of a mobile phone using Mobile Phone Trainer	1
14	Study of Direct Sequence Spread Spectrum Modulation & Demodulation using CDMA-DSS-BER Trainer	1

15	Study of ISDN Training System with Protocol Analyzer	1
16	Characteristics of LASER Diode.	1
I/II M.TECH (CS) II-SEM: Advanced Digital Image and Video Processing lab		
1	Perform basic operations on images like addition, subtraction etc.	1
2	Plot the histogram of an image and perform histogram equalization	1
3	Implement segmentation algorithms	1
4	Perform video enhancement	1
5	Perform video segmentation	1
6	Perform image compression using lossy technique	1
7	Perform image compression using lossless technique	1
8	Perform image restoration	1
9	Convert a colour model into another	1
10	Calculate boundary features of an image	1
11	Calculate regional features of an image	1
12	Detect an object in an image/video using template matching/Bayes classifier	1
Microwave Lab		
1	Study of Gunn Diode Characteristics.	2
2	Study of Reflex Klystron Characteristics.	2
3	Measurement of Voltage Standing Wave Ratio (Vswr) and Reflection Coefficient.	1
4	Measurement of Unknown Impedance.	1
5	Study of Directional Coupler Characteristics.	2
6	Measurement of Frequency and Guide Wavelength.	1
7	Determination of Resonance and Dielectric Constant of Amicrostrip Ring Resonator.	1
8	Radiation Pattern of Horn Antenna.	2
9	Optical Fiber Analog Link & Digital Link.	2
10	Measurement of Scattering Parameter of Circulator.	1
11	Measurement of Scattering Parameter of Magic Tee.	1
12	Measurement of Scattering Parameters of Eplane.	2
Electronic Circuit Analysis – Lab		
1	Two Stage Rc Coupled Amplifier	1
2	Current Series Feedback Amplifier	1
3	Tuned Voltage Amplifier	1
4	Rc Phase Shift Oscillator	1
5	Colpitts Oscillator	1
6	Hartley Oscillaotr	1

List of Simulation Experiments using Systems		
7	Two Stage Rc Coupled Amplifier	1
8	Current Series Feedback Amplifier	1
9	Tuned Voltage Amplifier	1
10	Rc Phase Shift Oscillator	1
11	Colpitts Oscillator	1
12	Hartley Oscillaotr	1
Additional Experiments		
1	Voltage Series Feedback Amplifier (Hw)	1
2	Wein Bridge Oscillator (Hw&Sim)	1
3	Class - A Series Fed Power Amplifier (Sim)	1
4	Class – B Complementory Symmetry Power Amplifier (Sim)	1
5	Frequency Response Of Op-Amp (Hw & Sim)	1
6	Mini Project	1
Pulse Digital & Circuit – Lab		
1	Linear wave shaping.	1
2	Non Linear wave shaping – Clippers.	1
3	Non Linear wave shaping – Clampers.	1
4	Transistor as a switch.	1
5	Study of Logic Gates & Some applications.	1
6	Study of Flip-Flops & some applications.	1
7	Sampling Gates.	1
8	Astable Multivibrator.	1
9	Monostable Multivibrator.	1
10	Bistable Multivibrator.	1
11	Schmitt Trigger.	1
12	UJT Relaxation Oscillator.	1
13	Bootstrap sweep circuit.	1
Linear Integrated Circuit & Applications– Lab		
1	Study Of Op Amps – Ic 741, Ic 555, Ic 565, Ic 566, Ic 1496 – Functioning, Parameters And Specifications.	1
2	Op Amp Applications – Adder, Subtractor, Comparator Circuits.	1
3	Integrator And Differentiator Circuits Using Ic 741.	1
4	Active Filter Applications – LPF, HPF (First Order)	1
5	Active Filter Applications – Bpf, Band Reject (Wideband) And Notch Filters.	1
6	Ic 741 Oscillator Circuits – Phase Shift And Wien Bridge Oscillators.	1
7	Function Generator Using Op Amps.	1
8	Ic 555 Timer – Monostable Operation Circuit.	1
9	Ic 555 Timer – Astable Operation Circuit.	1
10	Schmitt Trigger Circuits – Using Ic 741 And Ic 555.	1
11	Ic 565 – Pll Applications.	1
12	Ic 566 – Vco Applications.	1
13	Voltage Regulator Using Ic 723.	1
14	Three Terminal Voltage Regulators – 7805, 7809, 7912.	1
EDC Lab-1		
1	PN JUNCTION DIODE CHARACTERISTICS Part-A: Germanium Diode (FB & RB) Part-B: Silicon Diode (FB)	Power Supply - 1
2	ZENER DIODE CHARACTERISTICS Part-A: V-I Characteristics	Power Supply - 1

	Part-B: Zener Diode as a Voltage Regulator	CRO-1
3	RECTIFIERS (Without and With Capacitor Filter) Part-A: Half-Wave Rectifier Part-B: Full-Wave Rectifier (Centre tapped) Part-C: Full-Wave Bridge Rectifier	Transformers-1 CRO-1
4.	BJT CHARACTERISTICS (CB / CE) Part-A: Input Characteristics Part-B: Output Characteristics	Power Supply – Dual Channel - 1
5.	FET CHARACTERISTICS (CS Configuration) Part-A: Drain Characteristics Part-B: Transfer Characteristics	Power Supply – Dual Channel - 1
6.	Transistor Biasing - Design Self Bias Circuit	Power Supply-1
7.	CRO Operation And Its Measurements	CRO-1
8.	BJT CE Amplifier	Power Supply-1, Fubction Generator-1, CRO-1
9.	Emitter Follower – CC Amplifier	Power Supply-1, Fubction Generator-1, CRO-1
10	FET-CS Amplifier	Power Supply-1, Function Generator-1, CRO-1
11	Characteristics of Ujt	Power Supply-1
12	Scr Characteristics	Power supply-1
13.	Transistor As A Switch	Power supply-1
Dsp/Computer Center		
1	TMS 320c5416dsp Trainer With CCS	2
2	TMS 320c6713dsp Trainer With CCS	2

CMOS Analog IC Design Lab

1	MOS Device Characterization and parametric analysis	1
2	Common Source Amplifier	1
3	Common Source Amplifier with source degeneration	1
4	Cascode amplifier	1
5	Simple current mirror	1
6	Cascode current mirror.	1
7	Wilson current mirror.	1
8	Differential Amplifier	1
9	Operational Amplifier	1
10	Sample and Hold Circuit	1
11	Direct-conversion ADC	1
12	R-2R Ladder Type DAC	1

CMOS Digital IC design Lab

1	Inverter Characteristics.	1
2	NAND and NOR Gate	1
3	XOR and XNOR Gate	1
4	2:1 Multiplexer	1
5	Full Adder	1
6	RS-Latch	1

7	Clock Divider	1
8	JK-Flip Flop	1
9	Synchronous Counter	1
10	Asynchronous Counter	1
11	Static RAM Cell	1
12	Dynamic Logic Circuits	1
13	Linear Feedback Shift Register	1

EDC Lab - II

Analog Communications lab

1	Amplitude modulation and demodulation	2
2	Frequency modulation and demodulation	2
3	Balanced modulation	2
4	Pulse Amplitude modulation and demodulation	2
5	Pulse width modulation and demodulation	2
6	Phase locked loop	2
7	PRE-EMPHASIS and DE-EMPHASIS	2
8	Sampling Theorem	2
9	Radio receiver characteristics	2
10	Spectrum Analysis of Modulated signal using Spectrum Analyser	2
11	Pulse Position Modulation & demodulation	2
12	AGC Circuits	2

Digital communications Lab

1	Time division multiplexing.	2
2	Pulse code modulation.	2
3	Differential pulse code modulation.	2
4	Delta modulation.	2
5	Frequency shift keying.	2
6	Phase shift keying .	2
7	Differential phase shift keying.	2
8	Companding	2
9	Source Encoder and Decoder	2
10	Linear Block Code-Encoder and Decoder	2
11	Binary Cyclic Code – Encoder and Decoder	2
12	Convolution Code – Encoder and Decoder	2

Pulse Digital & Circuit – Lab

1	Linear wave shaping.	1
2	Non Linear wave shaping – Clippers.	1
3	Non Linear wave shaping – Clampers.	1
4	Transistor as a switch.	1
5	Study of Logic Gates & Some applications.	1
6	Study of Flip-Flops & some applications.	1
7	Sampling Gates.	1
8	Astable Multivibrator.	1
9	Monostable Multivibrator.	1
10	Bistable Multivibrator.	1
11	Schmitt Trigger.	1
12	UJT Relaxation Oscillator.	1
13	Bootstrap sweep circuit.	1

Linear Integrated Circuit & Applications– Lab

1	Study Of Op Amps – Ic 741, Ic 555, Ic 565, Ic 566, Ic 1496 –	1

	Functioning, Parameters And Specifications.	
2	Op Amp Applications – Adder, Subtractor, Comparator Circuits.	1
3	Integrator And Differentiator Circuits Using Ic 741.	1
4	Active Filter Applications – LPF, HPF (First Order)	1
5	Active Filter Applications – Bpf, Band Reject (Wideband) And Notch Filters.	1
6	Ic 741 Oscillator Circuits – Phase Shift And Wien Bridge Oscillators.	1
7	Function Generator Using Op Amps.	1
8	Ic 555 Timer – Monostable Operation Circuit.	1
9	Ic 555 Timer – Astable Operation Circuit.	1
10	Schmitt Trigger Circuits – Using Ic 741 And Ic 555.	1
11	Ic 565 – Pll Applications.	1
12	Ic 566 – Vco Applications.	1
13	Voltage Regulator Using Ic 723.	1
14	Three Terminal Voltage Regulators – 7805, 7809, 7912.	1

8086 programs with interfacing		
1	SORTING THE PROGRAM	11
2.	Multibyte addition/subtraction	Programs using
3.	Addition of n-BCD numbers	8086 training kits
4.	Factorial of given n-numbers	25
5.	Multiplication and Division operations	computers
6.	D/A Interface through Intel 8255	25
7.	Seven segment display	Interfacing kits
8.	Generation of waveforms	

8051 Programs with interfacing		
9.	Finding number of 1's and number of 0's in a given 8-bit number	20
10.	Addition of even numbers from a given array	Programs using
11.	Ascending / Descending order	8086 training
12.	Average of n-numbers	kits
13.	Seven segment display	
14.	Stepper Motor Interface	
15	Traffic Light Controller	

Digital IC Lab		
1	Realization of gates	For all the experiments from 1 to 10
2.	Design of Full Adder using 3 modeling systems	
3.	3 to 8 Decoder -74138	
4.	8 to 3 Encoder (with and without parity)	1 Xilinx Vivado Software for 25 users
5.	8 x 1 Multiplexer-74151 and 2x 4 De-multiplexer-74155	8 Artix-7 FPGA Kit
6.	4- Bit comparator-7485	1

		Nexys DDR4 FPGA Board
7.	D Flip-Flop-7474	2 Zynq ZY Board z10 FPGA Kit
8.	Decade counter -7490	1 Zed Board
9.	Shift registers-7495	4 PYNQ Board
10.	8-bit serial in-parallel out and parallel in-serial out	1 P mods(Bundle 20 units)
11.	Verification of truth tables of Logicgates Two input (i) OR (ii) AND (iii) NOR (iv) NAND (v) Exclusive OR (vi) Exclusive NOR	11 Digital IC trainers for 11-21 lab experiments 25 computer systems
12.	Design a simple combinational circuit with four variables and obtain minimal SOP expression and verify the truth table using Digital Trainer Kit	
13.	4 variable logic function verification using 8 to 1multiplexer	
14.	Design full adder circuit and verify its functional table	
15	Verification of functional tables of (i) J K Edge triggered Flip – Flop (ii) J K Master Slave Flip – Flop (iii)D Flip -Flop	
16	Design a four bit ring counter using D Flip – Flops / JK Flip Flop and verify output	
17	Design a four bit Johnson's counter using D Flip-Flops / JK Flip Flops and verify output	
18	Verify the operation of 4-bit Universal Shift Register for different Modes of operation.	
19	Draw the circuit diagram of MOD-8 ripple counter and construct a circuit using T-Flip Flops and Test it with a low frequency clock and Sketch the output waveforms	
20	Design MOD – 8 synchronous counter using T Flip-Flop and verify the result and Sketch the output waveforms	
21	(a) Draw the circuit diagram of a single bit comparator and test the output (b) Construct 7 Segment Display Circuit Using Decoder and 7 Segment LED and test it	
12.	Design a simple combinational circuit with four variables and obtain minimal SOP expression and verify the truth table using Digital Trainer Kit	
13.	4 variable logic function verification using 8 to 1multiplexer	
14.	Design full adder circuit and verify its functional table	

FIRST YEAR ENGINEERING DEPARTMENT

S.No	Name of the Experimental setup	Quantity
	Chemistry Laboratory	
1	**Volumetric Analysis:**	
2	Burettes-50 ml(Borosilicate)	10
3	Burettes-50 ml(Borosil)	244
4	Burette stands (Iron)	105
5	Pipettes-10ml(Borosil)	128
6	Conical flasks-250ml(Borosil)	180
7	Volumetric flasks- 1000 ml(Borosil)	21
8	Volumetric flasks -500 ml(Borosil)	13
9	Volumetric flasks-100 ml(Borosil)	134
10	Beakers -250ml(polythene)	256
11	Beakers-250ml(Borosil)	190
12	Measuring jars-100ml(Borosil)	09
13	Measuring jars-25ml (polythene)	89
14	Measuring jars-25ml (Borosil)	34
15	Wash bottles-500ml(polythene)	162
16	Funnel4'' diameter	5
17	Reagent bottles-60ml	28
18	Droppers-6 with rubber teat	22
19	Watch glass-3	260
20	Spatula-6	3
21	Glazed Tiles	41
22	Buckets(Big +Small)	13
23	**Instrumental Analysis** :	
24	Digital Colorimeter ,model 112, systronics make	1
25	Digital Conductivity meter with Electrode	3
26	Digital Potentiometer with Electrode	3
27	PH-meter	3
28	Burettes-10 ml (Borosil)	5
	Physics Laboratory	
1	Rigidity modulus of a material – Torsional Pendulum	5
2	Acceleration due to Gravity and Radius of Gyration – Compound Pendulum.	5
3	Verification of Laws of vibrations in stretched strings – Sonometer	6
4	Magnetic field along the axis of a current carrying coil – Stewart and Gee's pparatus.	8
5	Dielectric constant by charging and discharging method.	5
6	Moment of Inertia of a Fly Wheel	5
7	Velocity of sound – Volume Resonator	5
8	Young's modulus by method of single cantilever oscillations.	5
9	Determination of wavelength of Laser by diffraction grating	6
10	Newton's rings – Radius of Curvature of Plano – Convex Lens	6
11	Determination of thickness of a spacer using wedge film and parallel interference fringes	6
12	Characteristics of Thermistor – Temperature Coefficients	5
13	Energy Band gap of a Semiconductor p-n junction	6
14	Determination of wavelength of a source – Diffraction Grating – Normal incidence	6
15	Resolving power of slit graduated	5
	English Communication Skills	
1	Headphones	25 Working

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

S.No	Name of the Lab	Name of Experimental Setup	Quantity
LAB-1	Python Programming Lab	Python IDLE 3.0	Open Source
	Software Architecture & Design Patterns Lab	IBM Rational Rose S/W	30
	Java Programming Lab	JDK 1.6	Open Source
LAB-2	Data Structures through C++ Lab	Linux RedHat 5.0	Open Source Purchased
	Operating System & Linux Programming Lab	Linux RedHat 5.0	Open Source Purchased
	UNIX Operating System Lab	Linux RedHat 5.0	Open Source Purchased
	Software Testing Lab	Win Runner	Open Source
LAB-3	Unified Modeling Lab	IBM Rational Rose S/W	30
	Database Management System Lab	Oracle 10g	Open Source
	Network Programming Lab	Linux RedHat 5.0	Open Source Purchased
LAB-4	Web Technologies Lab	HTML	Open Source
	Data Warehousing and Mining Lab	Weka Tool 3.8.4	Open Source
	Project Lab	Weka Tool 3.8.4, Hadoop 2.7	Open Source

DEPARTMENT OF INFORMATION TECHNOLOGY

COMMERCIAL SOFTWARES		
S.No.	**Name of the software**	**Cost in Rs.**
1	Rational Rose Enterprise Edition (45 users)	3,06,720.00
2	Adobe Creative Suite 3 Web Premium	84,240.00
3	RHEL 5Server Edition	72,840.00
4	Oracle 10g (renewal every year)	23,925.00
Total		**4,87,725.00**

OPEN SOURCE SOFTWARES		
S.No.	**Name of the software**	**Cost in Rs.**
1	Ubuntu	Freeware
2	Android Studio	Freeware
3	Apache Tomcat	Freeware
4	R Studio	Freeware
5	ITALC	Freeware
6	WEKA	Freeware
7	Microsoft Security Essentials	Freeware
8	Network Simulator 2	Freeware
9	MySQL	Freeware
10	PostgreSQL	Freeware
11	Oracle Developer Suite 10g	Freeware
12	XAMPP	Freeware
13	Star UML	Freeware
14	Visual Paradigm	Freeware
15	Umbrella	Freeware
16	JDK 1.8	Freeware
17	Netbeans IDE	Freeware
18	Eclipse IDE	Freeware
19	Turbo C++	Freeware
20	Notepad++	Freeware
21	Justin Mind Prototyper	Freeware
22	Adobe Flash Player	Freeware
23	dreamweaver	Freeware
24	JDK 7.0	Freeware
25	J2ME Wireless Toolkit	Freeware
26	ADT Bundle Android	Freeware

Department of Electrical and Electronics Engineering

Control Systems Lab
S.No	**Name of Experimental Setup**	**Quantity**
1	Synchro Transmitter and Receiver	01
2	D.C Motor speed control system	01
3	Speed Torque Characteristics Of Ac Servo Motor	01
4	Speed Torque Characteristics Of DC Servo motor	01
5	Magnetic Amplifier	01
6	Time response of second order system	01
7	Linear Variable Differential Transducer	01
8	Compensation Network (Lead/Lag)	01
9	Relay Control System	01
10	PID Control System	01
11	Digital logic gates implementation using PLC	01
12	Measurement of temperature using RTD	01
**DEMP LAORATORY**		
1	Arithmetic operation – Multi byte addition and subtraction, multiplication and division – Signed and unsigned arithmetic operation, ASCII – Arithmetic operation.	01
2	Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion.	01
3	By using string operation and Instruction prefix**:** Move block, Reverse string Sorting, Inserting, Deleting, Length of the string, String comparison.	01
4	Interfacing 8255–PPI	01
5	Interfacing 8259 – Interrupt Controller.	01
6	Interfacing 8279 – Keyboard Display.	01
7	Stepper motor control using 8253/8255.	01
8	Reading and Writing on a parallel port using 8051	01
9	Timer in different modes using 8051	01
10	Serial communication implementation using 8051	01
11	Understanding three memory areas of 00 – FF Using 8051 external interrupts.	01
12	Interface PIC 18 with an opt isolator	01
13	Interface PIC 18 with a DC motor Arithmetic operation – Multi byte addition and subtraction, multiplication	01
**Electronics Circuits and Devices**		
1	P-N Junction Diode Characteristics Part A: Germanium Diode (Forward bias& Reverse bias) Part B: Silicon Diode (Forward Bias only)	02
2	Zener Diode Characteristics Part A: V-I Characteristics Part B: Zener Diode as Voltage Regulator	02
3	Rectifiers (without and with c-filter) Part A: Half-wave Rectifier Part B: Full-wave Rectifier	02
4	BJT Characteristics(CE Configuration)	02

	Part A: Input Characteristics Part B: Output Characteristics	
5	FET Characteristics(CS Configuration) Part A: Drain Characteristics Part B: Transfer Characteristics	02
6	SCR Characteristics	02
7	UJT Characteristics	02
8	Transistor Biasing	02
9	CRO Operation and its Measurements	02
10	BJT-CE Amplifier	02
11	Emitter Follower-CC Amplifier	02
12	FET-CS Amplifier	02
Electrical Machines Lab-I		
1	Brake test on three phase induction motor	01
2	No-load & Blocked rotor tests on three phase induction motor	01
3	Regulation of a three –phase alternator by synchronous impedance &m.m.f. Methods	01
4	Synchronization of alternator with bus bars	01
5	Regulation of a three –phase alternator by synchronous impedance &m.m.f. Methods	01
6	Determination of Xd and Xq of a salient pole synchronous machine	01
7	Equivalent circuit of single phase induction motor	01
8	Load test on single phase induction motor	01
9	Equivalent circuit and circle diagram of three phase squirel cage induction motor	01
10	Induction generator	01
11	Magnetization characteristics of DC shunt generator	01
12	Brake test on DC shunt motor.	01
13	Hopkinson's test on DC shunt machines.	01
14	Swinburne's test and Predetermination of efficiencies as Generator and Motor	01
15	Speed control of DC shunt motor by Field and Armature Control	01
16	Separation of losses in DC shunt motor	01
17	OC & SC test on single phase transformer.	01
18	Sumpner's test on single phase transformer	01
19	Scott connection of transformers	01
20	Parallel operation of Single phase Transformers	01
21	Separation of core losses of a single phase transformer	01
ELECTRICAL MEASUREMENTS LAB		
1	Calibration and testing of single-phase energy meter.	01
2	Calibration of dynamometer wattmeter using phantom loading.	01
3	Measurement of power by three voltmeter and Ammeter method.	01
4	Measurement of three phase reactive power with single-phase wattmeter for balanced loading.	01
5	Calibration of LPF wattmeter by direct loading	01
6	Design Wheatstone bridge to measure resistance	01
7	Design Anderson's bridge to measure inductance	01
8	Design Desautys bridge to measure capacitance	01

9	Design Schering bridge to measure capacitance	01
10	Design Wien's bridge to measure frequency	01
11	Dielectric oil testing using H.T test kit	01
12	Measurement of Frequency using CRO	01

	Networks Lab	
1	Verification of Thevenin's and Norton's Theorems.	02
2	Verification of superposition theorem and maximum power transfer theorem	02
3	Verification of compensation theorem	02
4	Verification of reciprocity, Millmann's Theorems	02
5	Determination of time constants of R-L, R-C networks using CRO.	02
6	Series and parallel resonance	02
7	Determination of self, mutual inductances and coefficient of coupling	02
8	Z and Y Parameters	02
9	Transmission and hybrid parameters	02
10	Parameters of a choke coil.	02
11	Determination of cold and hot resistance of an electric lamp.	02

	Power Electronics Lab	
1	Study of Characteristics of Thyristor,Mosfet &IGBT	01
2	Single Phase Uncontrolled Bridge Rectifier with R,R-L Loads	01
3	Single Phase Half Controlled Rectifier With R,R-L Loads	01
4	Single Phase Fully Controlled Rectifier With R-RL Loads	01
5	MOSFET Based Dc to Dc Converter	01
6	THYRISTOR based DC Chopper	01
7	Speed control of Dc Motor by Single phase Semi converter	01
8	Series Inverter With R Load	01
9	Single Phase Cyclo converter With Center Tapped Configuration	01
10	Design & Development of a Firing Circuit for Thyristor.R,RC,UJT FIRING	01
11	Single Phase AC Voltage Regulator With R, R-L Loads, Motor loads	01
12	Single Phase Square wave Bridge Inverter with R, R-L Loads	01
13	Boost converter operation in DCM,CCM	01
14	Single Phase PWM Inverter with Sine triangle PWM technique	01

	Power System Simulation Lab & Power System Automation Lab	
1	Introduction to Matlab and its basic commands	02
2	Matlab program to simulate ferranti effect	02
3	Matlab program to model transmission lines	02
4	Matlab program to solve load flow equations by gauss-seidel method	02
5	Matlab program to find optimum loading of generators neglecting transmission losses	02
6	Matlab program to find optimum loading of generators with penalty factors	02
7	Matlab program to solve swing equation using point-by-point method	02
8	Simulink model of single area load frequency control with andwithout pi controller and without pi controller in simulink.	02
9	Simulink model for two area load frequency control	02
10	Simulink model for evaluating transient stability of single machine	02

		connected to infinite bus	
11		Implementation of Singly linked list	01
12		Implementation of Doubly linked list	01
13		Implementation of Multistack in a Single	01
14		Implementation of Circular Queue	01
15		Implementation of Binary Search trees	01
16		Implementation of Hash table	01
17		Implementation of Heaps	01
18		Implementation of Breadth First Search Techniques	01
19		Implementation of Depth First Search Techniques	01
20		Implementation of Prim's Algorithm	01
21		Implementation of Dijkstra's Algorithm	01
22		Implementation of Kruskal's Algorithm	01
23		Implementation of MergeSort	01
24		Implementation of Quick Sort	01
25		Implementation of Data Searching using divides and conquers technique	01

DEPARTMENT OF CIVIL ENGINEERING

S.No	Name of Experimental Setup	Quantity
COMPUTER CENTRE		
1	HP 406 G Desktops with licenced Bently sofwares	45
2	Auto CAD Software	45
3	Staad Pro Software	45
4	Revit Software	45
5	E-Tabs	45
6	ARC & GIS	35
CONCRETE LAB		
1	Veebee consist meter apparatus	1
2	Compaction factor apparatus	1
3	Tensile test mould	6
4	Flextural test mould	6
5	Flexture Testing Machine	1
6	Compression Testing Machine	1
7	Sound ness of cement apparatus	1
8	SIEVES Set	5
9	Vicat apparatus with dash pot	4
10	Slump cone test apparatus	1
11	Cube moulds	21
12	Density Bottles	4
13	Pycnometers	2
ENVIRONMENTAL ENGINEERING LAB		
1	pH and Electrical Conductivity	1
2	Iron Estimation	1
3	Turbidity	1
4	Chloride	1
5	COD	1
6	BOD	1
7	Volumetric analysis	36
GEO-TECHNICAL ENGINEERING LAB		
1	Density Bottles	2
2	Pycnometers	2
3	Casagrande's Liquid Limit Apparatus	2
4	Plastic Limit Apparatus	2
5	Shrinkage Limit Apparatus	2
6	Core cutters	2
7	Sand replacement setup	2
8	Set of Sieves	2
9	Hydrometers	2
10	Variable head Permeability test	1
11	IS Light Compaction test setup	1
12	Direct Shear test setup	1
13	Triaxial Compression test setup	1
14	Unconfined Compression test setup	1
15	Vane Shear test setup	1
16	Differential free swell (DFS)	1

17	CBR Test setup	1
SURVEYING LAB		
1	Chain Triangulation	15
2	Compass Traversing	16
3	Plane Table Setup	15
4	Levelling Setup	15
5	Theodolite Setup	15
6	Total Stations	3
7	DGPS	1
TRANSPORTATION ENGINEERING LAB		
1	Aggregate impact value apparatus	1
2	Aggregate crushing value apparatus	1
3	Standard penetrometer	1
4	Thickness gauage	2
5	Length gauage	2
7	Hot plate	1
8	SIEVES Set	2
9	pycnometers	2
10	Ductility testing apparatus	1
11	Ring and ball apparatus	1
12	Flash & fire point	1
13	Tar viscometer	1
14	Deval's abrasion testing machine	1