K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU-560109

DEPARTMENT OF BASIC SCIENCE

SESSSION: 2020-2021 (EVEN SEMESTER)

LESSON PLAN

NAME OF THE STAFF	: Mrs. Swarna S
COURSE CODE/TITLE	: 18CHE22/ENGINEERING CHEMISTRY
SEMESTER/YEAR	: II / 1-C-Sec (CSE)

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	Execution Date
	MODULE 1						
1	**Module-1: Electrochemistry and Energy storage systems.** Use of free energy in chemical equilibria: Thermodynamic functions: Introduction, I law of thermodynamics, Definition of energy & free energy. II law of thermodynamics, definition of entropy. Cell potential: Meaning of EMF.	L+D	online M.S. Teams	1	1	19/05/2021	19/5/21
2	Derivation of Nernst equation for single electrode potential.	L+I	M.S.Teams	1	2	20/05/2021	20/5/21
3	Numerical problems on Nernst equation.	PS	M.S.Teams	1	3	21/05/2021	21/5/21
4	Numerical problems on Nernst equation.	PS	M.S.Teams	1	4	24/05/2021	24/5/21
5	Electrochemical energy systems: Introduction, types of electrodes, Meaning of reference electrodes, construction, working, advantages and applications of Calomel electrode.	L+AV	M.S.Teams	1	5	26/05/2021	26/5/21
6	Ion-selective electrode – Definition, examples, membrane electrodes, construction and principle of Glass electrode.	L+AV	M.S.Teams	1	6	27/05/2021	27/5/21
7	Determination of pH using glass electrode, Concentration cells: Definition, examples, derivation of an equation to find the EMF of concentration cells,	L+AV,	M.S.Teams	1	7	28/05/2021	27/5/21
8	Numerical problems on Concentration	PS	M.S.Teams	1	8	31/05/2021	31/5/21

	cell						
9	**Energy storage systems:** Introduction, classification - primary, secondary and reserve batteries with examples.	L+D	M.S. Teams	1	9	02/06/2021	2/6/21
10	Construction, working and applications of Ni-MH and Li-ion batteries.	L+AV	M.S. Teams	1	10	03/06/2021	4/6/21

MODULE 2

11	**Module-II:Corrosion and Metal Finishing** **Corrosion:** Definition, Wet & Dry corrosion, Electrochemical theory taking corrosion of iron as an example.	L+D	M.S. Teams	1	11	04/06/2021	5/6/21
12	Factors affecting the rate of corrosion: ratio of anodic to cathodic areas, nature of corrosion product, nature of medium – pH (greater than 10, between 3 and 10, lower than 3), conductivity and temperature.	L+I	M.S. Teams	1	12	05/06/2021	5/6/21
13	Types of corrosion- Differential metal corrosion and differential aeration corrosion: Pitting and water line corrosion with diagrams,	L+I	M.S. Teams	1	13	7/06/2021	7/6/21
14	Corrosion control: Anodizing – Anodizing of aluminium.Metal coatings – Galvanization.	L+I	M.S. Teams	1	14	9/06/2021	9/6/21
15	Cathodic protection : Definition, sacrificial anode and impressed current methods,	L+ AV	M.S. Teams	1	15	11/06/2021	10/6/21
16	**Metal Finishing:** Definition and technological importance of metal finishing,	L+D	M.S. Teams	1	16	14/06/2021	10/6/21
17	Principles governing metal finishing- Polarization, decomposition potential and overvoltage.	L+B	M.S. Teams	1	17	16/06/2021	14/6/21
18	Electroplating: Introduction, Electroplating of chromium (hard and decorative), its applications.	L+I	M.S. Teams	1	18	17/06/2021	15/6/21
19	Electroless plating: Introduction, electroless plating of nickel.	L+I	M.S. Teams	1	19	18/06/2021	16/6/21
20	Electroless plating of copper and its applications, distinction between electroplating and electroless plating processes.	L+I	M.S. Teams	1	20	19/06/2021	17/6/21

MODULE 3

21	**Module-III: Energy System** **Chemical Fuels:** Introduction,	L+ D	M.S. Teams	1	21	24/06/2021	18/6/21

	classification based on occurrence and state of aggregation, definitions of CV, LCV and HCV.						
22	Determination of calorific value of solid/liquid fuel using bomb calorimeter: Principle, diagram, construction, working and calculation.	L+ AV	M.S. Teams	1	22	25/06/2021	19/6/21
23	Numerical problems on calorific values.	PS	M.S. Teams	1	23	28/06/2021	21/6/21
24	Numerical problems on calorific values.	PS	M.S Teams	1	24	30/06/2021	23/6/21
25	Knocking of petrol engine – Definition, mechanism, ill effects and prevention,	L+I	M.S Teams	1	25	01/07/2021	24/6/21
26	Power alcohol, unleaded petrol and biodiesel.	L+I	M.S. Teams	1	26	02/07/2021	25/6/21
●	**Fuel Cells:** Introduction, differences between conventional cell and fuel cell, limitations & advantages.	L+I	M.S Teams	1	27	03/07/2021	1/7/21
28	Construction, working & applications of methanol-oxygen fuel cell with H_2SO_4 electrolyte, and solid oxide fuel cell (SOFCs).	L+I	M.S. Teams	1	28	05/07/2021	2/7/21
29	**Solar Energy:** Photovoltaic cells- introduction, construction and working of a typical PV cell.	L+I	M.S. Teams	1	29	7/07/2021	3/7/21
30	Preparation of solar grade silicon by Union Carbide Process/Method. Advantages & disadvantages of PV cells.	L+I	M.S. Teams	1	30	14/07/2021	7/7/21
MODULE 4							
●	**MODULE -IV: Environmental Pollution and Water Chemistry Environmental Pollution:** Introduction, Air pollutants: Sources, effects and control of primary air pollutants: Carbon monoxide &Particulate matter,	L+I	offline BB	1	31	15/07/2021	18/8/21
32	Primary air pollutants Oxides of nitrogen and hydrocarbons.	L+I	B.B	1	32	16/07/2021	18/8/21
33	Oxides of sulphur, Carbon diooxide, Mercury and Lead.	L+I	B.B	1	33	19/07/2021	19/8/21
34	Secondary air pollutant: Ozone, Ozone depletion.	L+I	B.B	1	34	22/07/2021	23/8/21
35	**Waste Management:** Solid waste, e-waste, Biomedical waste: Sources, Characteristics & disposal methods (Scientific land filling, composting, recycling and reuse).	L+I	B.B	1	35	23/07/2021	24/8/21
36	**Water Chemistry:** Introduction,	L+I	B.B	1	36	29/07/2021	25/8/21

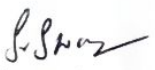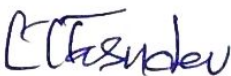|								
	sources and impurities of water; boiler feed water, boiler troubles with disadvantages-scale and sludge formation.							
37	Boiler corrosion (due to dissolved O_2, CO_2 and $MgCl_2$), Sources of water pollution, Sewage, Definitions of Biological oxygen demand (BOD) and Chemical Oxygen Demand (COD), Determination of COD.	L+I	B.B	1	37	30/07/2021	25/8/21
38	Numerical problems on COD.	PS	Online M.S.Teams	1	38	31/07/2021	13/9/21
39	Chemical analysis of water: Sulphates (gravimetry) and Fluorides (colorimetry).	L+I	M.S Teams	1	39	2/08/2021	16/9/21
40	Sewage treatment: Primary, secondary (activated sludge) and tertiary methods. Softening of water by ion exchange process. Desalination of sea water by reverse osmosis.	L+I	M.S.Teams	1	40	04/08/2021	17/9/21
MODULE V								
41	**MODULE-V: Instrumental methods of analysis and Nanomaterials** **Instrumental methods of analysis:** Introduction, principle, advantages and limitations.	L+D	M.S. Teams	1	41	5/08/2021	20/9/21
42	Instrumentation and applications of Colorimetry (Estimation of copper in brass),	L+D,	M.S. Teams	1	42	6/08/2021	20/9/21
43	Flame Photometry(estimation of sodium and potassium).	L+D	M.S. Teams	1	43	7/08/2021	22/9/21
44	Instrumentation and applications of Atomic Absorption Spectroscopy,	L+D,	M.S. Teams	1	44	9/08/2021	22/9/21
45	Potentiometry (estimation of FAS).	L+D	M.S.Teams	1	45	11/08/2021	23/9/21
46	Instrumentation and applications of Conductometry (Strong acid with a strong base, weak acid with a strong base, mixture of strong acid and a weak acid with a strong base).	L+D	M.S. Teams	1	46	12/08/2021	23/9/21
47	**Nanomaterials:** Introduction, size dependent properties: Surface area, Electrical, Optical, Catalytic and Thermal properties.	L+I	M.S. Teams	1	47	13/08/2021	23/9/21
48	Synthesis of nanomaterials: Top down and bottom up approaches, Synthesis by bottom up approach: Sol-gel.	L+I	M.S. Teams	1	48	16/08/2021	23/9/21

49	Synthesis of nanomaterials: precipitation and chemical vapour deposition method.	L+I	M.S. Team	1	49	17/08/2021	27/9/21
50	Nanoscale materials: Fullerenes, Carbon nanotubes and graphenes – properties and applications (synthesis not required).	L+I	M.S. Teams.	1	50	18/08/2021	23/9/21 & 29 30/9/21
51	**Revision**	L+D		0	50	19/08/2021	
52	**Revision**	L+D		0	50	23/08/2021	
53	**Revision**	L+D		0	50	25/08/2021	
54	**Revision**	L+D		0	50	03/9/2021	

Total No. of Lecture Hours = 50

Total No. of Revision Hours =4

Course In charge

Head of the Department
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Principal
Dr. K. RAMA NARASIMHA
Principal/Director
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Bengaluru - 560 109

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109
DEPARTMENT OF BASIC SCIENCE
SESSION: 2020-2021 (EVEN SEMESTER)
LESSON PLAN

NAME OF THE STAFF : VINUTHA S.V.

COURSE CODE/TITLE : 18MAT21/ ADVANCED CALCULUS AND LINEAR METHODS

SEMESTER/YEAR : II / I – A SEC(CSE)

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	Execution Date
MODULE 1							
1	**Vector Calculus: Vector Differentiation:** Scalar and vector fields.	L,PS	MS Teams	1	1	19-5-2021	22-5-2021
2	Gradient, directional derivative; curl and divergence-physical interpretation	L,PS	MS Teams	2	3	21-5-2021 22-5-2021	24-5-2021 25-5-2021
3	Solenoidal and irrotational vector fields- Illustrative problems	L,PS	MS Teams	2	5	24-5-2021 25-5-2021	26-5-2021 27-5-2021
4	**Vector Integration:** Line integrals Green's Theorem-Problems	L,PS	MS Teams	2	7	26-5-2021 28-5-2021	28-5-2021 31-5-2021
5	Stokes Theorem-Problems	L,PS	MS Teams	1	8	31-5-2021	1-6-2021
6	Gauss divergence theorem	L,PS	MS Teams	1	9	01-6-2021	2-6-2021
7	Applications to work done by a force and flux	L,PS	MS Teams	1	10	02-6-2021	3-6-2021
8	REVISION	L,PS	MS Teams	0	10	04-6-2021	3-6-2021
MODULE 2							
9	**Differential Equations of higher order:**-Second order linear ODE's with constant coefficients-Inverse differential operators.	L,PS	MS Teams	1	11	05-6-2021	10-6-2021
10	Inverse differential operators-Problems	L,PS	MS Teams	3	14	07-6-2021 08-6-2021 09-6-2021	11-6-2021 14-6-2021

11	Method of variation of parameters	L,PS	MS Teams	1	15	11-6-2021	15-6-2021
12	Cauchy's homogeneous equations-Problems	L,PS	MS Teams	2	17	14-6-2021 15-6-2021	16-6-2021 17-6-2021
13	Legendre homogeneous equations-Problems	L,PS	MS Teams	2	19	16-6-2021 18-6-2021	18-6-2021 18-6-2021
14	Applications to oscillations of a spring and L-C-R circuits	L,PS	MS Teams	1	20	19-6-2021	19-6-2021 21
15	REVISION	L,PS	MS Teams	0	20	25-6-2021	21-6-2021
MODULE 3							
16	Partial Differential Equations(PDE's):-Formation of PDE's by elimination of arbitrary constants and functions	L,PS	MS Teams	2	22	28-6-2021 29-6-2021	22-6-2021 23-6-2021
17	Elimination of PDE's by elimination of arbitrary functions	L,PS	MS Teams	1	23	30-6-2021	26-6-2021
18	Solution of non-homogeneous PDE by direct integration	L,PS	MS Teams	1	24	02-7-2021	2-7-2021
19	Homogeneous PDEs involving derivative with respect to one independent variable only	L,PS	MS Teams	2	26	05-7-2021 06-7-2021	3-7-2021 3-7-2021
20	Derivation of one dimensional heat equations	L,PS	MS Teams	1	27	07-7-2021	7-7-2021
21	Derivation of one dimensional wave equations	L,PS	MS Teams	1	28	14-7-2021	16-7-2021
22	Solution of one dimensional heat and Wave equations by the method of separation of variables	L,PS	MS Teams	2	30	16-7-2021 17-7-2021	16-7-2021
23	REVISION	L,PS	MS Teams	0	30	19-7-2021	
MODULE 4							
24	Elementary Numerical Methods: Finite differences - Interpolation/extrapolation using Newton's forward and backward difference	L,PS	MS Teams	1	31	20-7-2021	17-7-2021
25	Interpolation/extrapolation using Newton's forward and backward difference	L,PS	MS Teams	2	33	23-7-2021 30-7-2021	19-7-2021
26	Newton's divided difference	L,PS	MS Teams	2	35	31-7-2021 02-8-2021	23-7-2021
27	Lagrange's formulae-problems	L,PS	MS	1	36	03-8-2021	24-7-2021
28	Solution of polynomial and transcendental equations. Newton-Raphson methods	L,PS		1	37	04-8-2021	14-9-2021
29	Regula-Falsi method	L,PS		1	38	06-8-2021	14-9-2021
30	Numerical integration: Simpson's 1/3 rule	L,PS		1	39	07-8-2021	15-9-2021
31	Elementary Numerical Methods: Finite differences - Interpolation/extrapolation using Newton's forward and backward difference	L,PS		1	40	09-8-2021	15-9-21

32	REVISION	L,PS		0	40	10-8-2021	15-9-21
		MODULE 5					
33	**Infinite Series:** Convergence and divergence of infinite series-	L,PS		1	41	11-8-2021	16-9-21
34	Cauchy's root test –Problems D'Alembert's ratio test	L,PS		2	43	13-8-2021 16-8-2021	16-9-21
35	**Power series solutions**-Series solution of Bessel's differential equation leading to $J_n(x)$- Bessel's function of first kind-	L,PS		1	44	17-8-2021	17-9-21
36	Series solution of Bessel's differential equation leading to $J_n(x)$- Bessel's function of first kind-	L,PS		2	46	18-7-2021 23-8-2021	20-9-21
37	Bessel's function of first kind orthogonality.	L,PS		1	47	24-8-2021	21-9-21
38	Series solution of Legendre's differential equation leading to $P_n(x)$	L,PS		2	49	25-8-2021 03-9-2021	22-9-21
39	Rodrigues formula	L,PS		1	50	04-9-2021	23-9-21
40	REVISION	L,PS		0			
41	REVISION	L,PS		0			

Total No. of Lecture Hours = 50

Total No. of Tutorial Hours = 00

Total No. of Revision Hours =04

Course In charge

Head of the Department
Dr. C. VASUDEV
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K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109
DEPARTMENT OF BASIC SCIENCE
SESSION: 2020-2021 (EVEN SEMESTER)
LESSON PLAN

NAME OF THE STAFF   : VINUTHA S.V.

COURSE CODE/TITLE   : 18MAT41/ COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS

SEMESTER/YEAR   : IV / II-EC B

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	Execution Date
MODULE 1							
1	Review of function of a complex variable, limits, continuity, and differentiability.	L+D,PS	MS Teams	1	1	19-4-2021	19-4-2021
2	Analytic functions: Cauchy-Riemann equations in Cartesian	L+D,PS	MS Teams	2	3	21-4-2021 / 22-4-2021	21-4-2021 / 22-4-2021
3	Construction of analytic functions: Milne-Thomson method- Problems.	L+D,PS	MS Teams	2	5	23-4-2021 / 24-4-2021	23-4-2021 / 24-4-2021
4	Construction of analytic functions: Milne-Thomson method- Problems.	L+D,PS	MS Teams	3	8	26-4-2021 / 28-4-2021 / 29-4-2021	26-4-2021 / 27-4-2021 / 28-4-2021
5	REVISION	L+D,PS	MS Teams	0	8	30-4-2021	29-4-2021
6	REVISION	L+D,PS	MS Teams	0	8	03-5-2021	30-4-2021
7	REVISION	L+D,PS	MS Teams	0	8	05-5-2021	3-5-2021, 4-5-21
MODULE 2							
8	Introduction. Discussion of transformations: $w = z^2, w = e^z, w = z + \frac{1}{z}, z \neq 0$.	L+D,PS	MS Teams	3	11	06-5-2021 / 07-5-2021 / 08-5-2021	5-5-2021 / 6-5-2021 / 7-5-2021
9	Bilinear transformations- Problems	L+D,PS	MS Teams	2	13	10-5-2021 / 12-5-2021	8-5-2021 / 10-5-2021
10	Complex integration: Line integral of a complex function- Cauchy's theorem and Cauchy's integral formula and problems	L+D	MS Teams	3	16	17-5-2021 / 19-5-2021 / 20-5-2021	13-5-2021 / 17-5-2021 / 18-5-2021
11	REVISION	L+D,PS	MS Teams	0	16	21-5-2021	26-5-2021
12	REVISION	L+D,PS	MS Teams	0	16	27-5-2021	27-5-2021

13	REVISION	L+D.PS	M S Teams	0	16	28-5-2021	4-6-2021

MODULE 3

14	Probability Distributions: Review of basic probability theory. Random variables (discrete and continuous),	L+D,PS	MS Teams	2	18	31-5-2021 02-6-2021	5-6-2021 5-6-2021 7-6-2021
15	Binomial distributions- problems	L+D,PS	MS Teams	2	20	03-6-2021 04-6-2021	7-6-2021 9-6-2021
16	Poisson distributions- problems	L+D,PS	MS Teams	1	21	05-6-2021	16-6-2021
17	Exponential distributions- problems	L+D,PS	MS Teams	1	22	07-6-2021	17-6-2021
18	Normal distributions- problems	L+D,PS	MS Team	2	24	16-6-2021 17-6-2021	19-6-2021 21-6-2021
19	REVISION	L+D.PS	MS Teamy	0	24	18-6-2021	23-6-2021
20	REVISION	L+D.PS	MS Teams	0	24	19-6-2021	23-6-2021
21	REVISION	L+D.PS	MS Teams	0	24	21-6-2021	23-6-2021

MODULE 4

22	Statistical Methods: Correlation and regression-Karl Pearson's coefficient of correlation and rank correlation-problems	L+D,PS	MS Teams	3	27	23-6-2021 24-6-2021 25-6-2021	24-6-2021 25-6
23	Regression analysis- lines of regression –problems.	L+D,PS	MS Teams	2	29	01-7-2021 02-7-2021	28-6-2021 28-6-2021
24	Curve Fitting: Curve fitting by the method of least squares-fitting the curves of the form $y = ax + b, y = ax^2 + bx + c, y = ax^b$	L+D,PS	MS Teams	3	32	03-7-2021 05-7-2021 07-7-2021	29-6-2021
25	REVISION	L+D.PS	MS Teams	0	32	08-7-2021	1-7-2021
26	REVISION	L+D.PS	MS Teams	0	32	09-7-2021	1-7-2021
27	REVISION	L+D.PS	MS Teams	0	32	12-7-2021	1-7-2021

MODULE 5

28	Joint probability distribution: Joint Probability distribution for two discrete random variables, expectation and covariance	L+D,PS	MS teams	2	34	14-7-2021 15-7-2021	19-7-2021 22-7-2021
29	Sampling Theory: Introduction to sampling distributions, standard error, Type-I and Type-II errors. Test of hypothesis for means	L+D,PS	MS teams	3	37	16-7-2021 19-7-2021 22-7-2021	23-7-2021 26-7-2021 27-7-2021
30	Student's t-distribution ,Chi square distribution as a test of goodness of fit	L+D,PS	MS teams	3	40	23-7-2021 26-7-2021 28-7-2021	29-7-2021 30-7-2021
31	REVISION	L+D.PS	B. B	0	40	06-8-2021	2-8-2021
32	REVISION	L+D.PS	B. B	0	40	07-8-2021	3-8-2021
33	REVISION	L+D	B. B	0	40		4-8-2021
34	REVISION	L+D	B. B	0	40		4-8-2021

35	REVISION		L+D		0	40		
	REVISION		L+D		0	40		
	REVISION		L+D		0	40		

Total No. of Lecture Hours = 40

Total No. of Tutorial Hours = 00

Total No. of Revision Hours = 14

Course In charge

Head of the Department

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Principal

Principal/Director
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K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109
DEPARTMENT OF BASIC SCIENCE
SESSION: 2020-2021 (EVEN SEMESTER)
LESSON PLAN

NAME OF THE STAFF : KUSUMA M

COURSE CODE/TITLE : 18PHY22/ ENGINEERING PHYSICS

SEMESTER/YEAR : I/II

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	Execution Date
	MODULE 1						
1	Definition of SHM and derivation of differential equation of motion for SHM	L+D	LCD MS Teams	1	1	19/05/2021	19/5/2021
2	Mass suspended to spring, Derivation of expressions for force constants for series and parallel combination of springs. Complex notation of simple harmonic motion ($Ae^{i(\omega t + c)}$), Phasor representation of simple harmonic motion	L+D	LCD MS Teams	1	2	20/05/2021	20/5/2021
3	Definition of free oscillations with examples, mention the equation of motion, Natural frequency of vibration. Damped oscillations: Definition with examples, Derivation of decaying amplitude	L+D	LCD MS Teams	1	3	21/05/2021	21/5/2021
4	Discussion of 3 cases viz, over damping, critical damping and underdamping. Quality factor: Definition, equation and its significance,	L+D	LCD MS Teams	1	4	24/05/2021	24/5/2021
5	Forced oscillations: Definition, derivation of expressions for amplitude and phase of forced vibrations. Discussion of 3 cases (i) p<<ω, (ii) p= ω and (iii) p>> ω	L+D	LCD MS Teams	1	5	26/05/2021	25/5/2021
6	Resonance: Definition, Examples, Condition for resonance and mention expression for maximum amplitude. Sharpness of Resonance: Definition and significance, mention the effect of damping on sharpness of resonance, Helmholtz Resonator- Description and mention the expression for resonant frequency.	L+D	LCD MS Teams	1	6	27/05/2021	26/5/2021

7	Shock waves: Definition of Mach number, classification of objects based on Mach number (subsonic, supersonic, Transonic and hypersonic). Definition and properties of shock waves. Definition of control volume, Laws of conservation of mass, energy and momentum.	L+D	LCD MS Teams	1	7	28/05/2021	27/5/2021
8	Construction and working of Reddy shock tube. Applications of shock waves.	L+D	LCD MS Teams	1	8	31/05/2021	28/5/2021
9	Revision	L+D	LCD MS Teams	1	9	2/06/2021	31/5/2021
10	Numerical problems	PS	LCD MS Teams	1	10	3/06/2021	2/6/2021
MODULE 2							
11	Introduction to need Quantum mechanics, Wave nature of particles: De-Broglie hypothesis followed by wavelength equations, extended to accelerated electron	L+D	LCD MS Teams	1	11	4/06/2021	3/6/2021
12	Heisenberg's uncertainty principle and its application, (Non-existence of electron inside the nucleus)	L+D	LCD MS Teams	1	12	5/06/2021	4/6/2021
13	Wave function, Properties and physical significance of wave function, Probability density and Normalization of wave function, Setting up of one dimensional time independent Schrodinger wave equation.	L+D	LCD MS Teams	1	13	7/06/2021	5/6/2021
14	Eigen values and Eigen functions. Application of Schrodinger wave equation for a particle in a potential well of infinite depth and for free particle	L+D	LCD MS Teams	1	14	9/06/2021	7/6/2021
15	Explanation of the process of induced absorption, Spontaneous and Stimulated emission, Einstein's coefficients (expression for energy density).	L+D	LCD MS Teams	1	15	10/06/2021	9/6/2021
16	Requisites of a Laser system, Condition for laser action.	L+D	LCD MS Teams	1	16	11/06/2021	10/6/2021
17	Mention different modes of vibrations of CO_2, Construction and working of CO_2 laser	L+D	LCD MS Teams	1	17	14/06/2021	11/6/2021
18	Construction and working of semiconductor Laser, Application of Lasers in Defense (Laser range finder), Application of Lasers in Engineering (Data storage)	L+D	LCD MS Teams	1	18	16/06/2021	16/6/2021
19	Revision	L+D	LCD MS Teams	1	19	17/06/2021	17/6/2021
20	Numerical problems	PS	LCD MS Teams	1	20	18/06/2021	18/6/2021
MODULE 3							
21	Review of classical free electron theory, Failure of classical free electron theory, Quantum free electron theory, Assumptions.	L+D	LCD MS Teams	1	21	19/06/2021	19/6/2021

No.	Topic						
22	Fermi factor at different temperature, density of states (qualitative only) Fermi–Dirac Statistics, Mention the expression for electrical conductivity based on quantum free electron theory.	L+D	LCD MS Teams	1	22	24/06/2021	21/6/2021
23	Derivation of the expression for Fermi energy at zero Kelvin, Merits of quantum free electron theory.	L+D	LCD MS Teams	1	23	25/06/2021	23/6/2021
24	Fundamentals of semiconductor. Description of Fermi level in intrinsic semiconductor. Mention the expression for electron and hole concentration in intrinsic semiconductors. Derivation of relation between Fermi energy and energy gap for an intrinsic semiconductor.	L+D	LCD MS Team	1	24	28/06/2021	24/6/2021
25	Derivation of the expression for electrical conductivity of semiconductors	L+D	LCD MS Teams	1	25	30/06/2021	25/6/2021
26	Explanation of Hall effect with Hall voltage and Hall field, Derivation of the expression for Hall coefficient.	L+D	LCD MS Teams	1	26	1/07/2021	1/7/2021
27	Fundamentals of dielectrics. Polarization, mention the relation between dielectric constant and polarization. Types of polarization. Polar and non-polar dielectrics	L+D	LCD MS Teams	1	27	2/07/2021	2/7/2021
28	Definition of internal field in case of solids and mention its expression for one dimensional case and three dimensional cases and Lorentz field. Derivation of Clausius-Mossotti equation, Description of solid, liquid and gaseous dielectrics. Applications of dielectrics in transformers.	L+D	LCD MS Team	1	28	3/07/2021	3/7/2021
29	Revision	L+D	LCD MS Teams	1	29	5/07/2021	7/7/2021
30	Numerical problems	PS	LCD	1	30	7/07/2021	16/8/2021
MODULE 4							
31	Elasticity: Explain the concept of elasticity, plasticity, and stress and strain. Discuss two types of stresses namely tensile stress and compressive stress.	L+D	LCD	1	31	14/07/2021	23/8/2021
32	Explain Hooke's law, stress strain curve, strain hardening and softening. Briefly discuss the effect of stress, temperature, annealing, impurities on elasticity,	L+D	LCD	1	32	15/07/2021	23/8/2021
33	Explain three different elastic moduli. Poisson's ratio: Define lateral strain and linear strain and hence Poisson's ratio	L+D	LCD	1	33	16/07/2021	24/8/2021
34	Relation between shear strain, longitudinal and compression strain. Show that longitudinal strain + compression strain = shear strain by considering a cubical elastic body. Derive the relation between Y, σ and η	L+D	LCD	1	34	17/07/2021	25/8/2021

35	Derive the relation between K, Y and σ. Derive the relation between K, η and Y. Discuss the limiting values of σ and limitations of Poisson's ratio.	L+I, PS	LCD	1	35	19/07/2021	13/9/2021
36	Bending of beams: Definition of beams, different types of beams, neutral surface/plane and neutral axis. Define bending moment. Derive the expression for bending moment in terms of moment of inertia.	L+I, DE, PS	LCD	1	36	22/07/2021	15/9/2021
37	Mention the expression for bending moment for circular and rectangular cross sections. Describe a single cantilever and hence derive the expression for Y.	L+I, DE, PS	LCD	1	37	23/07/2021	16/9/2021
38	Twisting couple on cylindrical wire, explain torsional oscillations, derive the expression for couple per unit twist for a solid cylinder. Mention the expression for Time period of torsional Oscillations.	L+D	LCD	1	38	29/07/2021	20/9/2021
39	Revision	L+D	LCD	1	39	30/07/2021	23/9/2021
40	Numerical problems	PS	LCD	1	40	31/07/2021	23/9/2021
MODULE 5							
41	Description of propagation mechanism of light through an optical fiber. Angle of acceptance and numerical aperture (NA): Theory with condition for propagation. Modes of propagation and V number and types of optical fibers(qualitative)	L+D	LCD	1	41	2/08/2021	17/8/2021
42	Attenuation: Definition of attenuation, name the three types of attenuation, Causes of attenuation: Explain absorption, scattering and radiation losses. Mention the expression for attenuation coefficient	L+D	LCD	1	42	4/08/2021	18/8/2021
43	Application of optical fiber: Point to point communication: Explain with the help of block diagram. Merits and de merits of optical fiber communication.	L+D	LCD	1	43	5/08/2021	19/8/2021
44	Briefly explain scalar, product, vector product, del operation, concept of divergence, gradient and curl along with physical significance	L+D	LCD	1	44	6/08/2021	23/8/2021
45	Derivation of Gauss divergence theorem and mention Stokes' theorem. Explain briefly Gauss flux theorem in electrostatics and magnetism	L+D	LCD	1	45	7/08/2021	23/8/2021
46	Explain Ampere's law, Biot-Savart's law and Faraday's laws of electromagnetic induction, Discuss continuity equation, displacement current.	L+D	LCD	1	46	9/08/2021	23/8/2021

47	Derive the expression for displacement current, Maxwell-Ampere's law. List four Maxwell's equations in differential form. Derive wave equation in terms of electric field using Maxwell's equations.	L+D	LCD	1	47	11/08/2021	24/8/2021
48	Mention of plane electromagnetic waves in vacuum along with the equations for E, B and c. Explain the transverse nature of electromagnetic waves, three types of polarization.	L+D	LCD	1	48	12/08/2021	24/8/2021
49	Revision	L+D	LCD	1	49	13/08/2021	25/8/2021
50	Numerical problems	PS	LCD	1	50	16/08/2021	25/8/2021
REVISION29							
51	Revision	L+D	LCD	0	50	18/08/2021	—
52	Revision	L+D	LCD	0	50	23/08/2021	—
53	Revision	L+D	LCD	0	50	25/08/2021	—
54	Revision	L+D	LCD	0	50	25/08/2021	—

Total No. of Lecture Hours = 50

Total No. of Tutorial Hours = 5

Total No. of Revision Hours =4

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Bengaluru - 560 109

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF   : SANTHOSH KUMAR S

SUBJECT CODE/NAME   : 18CS61/SYSTEM SOFTWARE AND COMPILERS

SEMESTER/SEC/YEAR   : VI / A /III

ACADEMIC YEAR   : 2020-2021

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	Execution Date
	MODULE 1						
1	Introduction to System Software.	L+D	Online	1	1	19/4/21	19/4/21
2	Machine Architecture of SIC	L+D	Online	1	2	20/4/21	20/4/21
3	Machine Architecture of SIC cont	L+D	Online	1	3	22/4/21	22/4/21
4	Machine Architecture of SIC/XE	L+D	Online	1	4	26/4/21	26/4/21
5	Machine Architecture of SIC/XE cont.	L+D	Online	1	5	27/4/21	27/4/21
6	Assemblers: Basic assembler functions,	L+D	Online	1	6	29/4/21	29/4/21
7	machine dependent assembler features	L+D	Online	1	7	3/5/21	3/5/21
8	machine dependent assembler features cont.	L+D, PS	Online	1	8	4/5/21	4/5/21
9	Program Relocation	L+D, PS	Online	1	9	6/5/21	6/5/21
10	Programs on object generation	L+D, PS	Online	1	10	8/5/21	8/5/21
11	machine independent assembler features	L+D, PS	Online	1	11	10/5/21	10/5/21
12	machine independent assembler features cont..	L+D	Online	1	12	11/5/21	11/5/21
13	assembler design options	L+D	Online	1	13	12/5/21	12/5/21
14	assembler design options cont..	L+D	Online	1	14	18/5/21	18/5/21
15	**Basic Loader function**	L+D	Online	1	15	19/5/21	19/5/21
	MODULE 2						
16	Compiler Cont. Introduction: Language Processors,	L+D	Online	1	16	20/5/21	20/5/21
17	The structure of a compiler	L+D	Online	1	17	22/5/21	22/5/21

|							
18	The evaluation of programming languages,	L+D	Online	1	18	24/5/21	24/5/21
19	The science of building compiler, Applications of compiler technology,	L+D	Online	1	19	25/5/21	25/5/21
20	Lexical Analysis: The role of lexical analyzer, Input buffering,	L+D	Online	1	20	26/5/21	26/5/21
21	Specifications of token,	L+D	Online	1	21	22/5/21	22/5/21
22	Specifications of token cont	L+D	Online	1	22	3/6/21	3/6/21
23	Recognition of tokens	L+D	Online	1	23	5/6/21	5/6/21
24	Recognition of tokens cont	L+D	Online	1	24	7/6/21	7/6/21
MODULE 3							
25	Syntax Analysis:	L+D	Online	1	25	8/6/21	8/6/21
26	Syntax Analysis: Cont.	L+D	Online	1	26	9/6/21	9/6/21
27	Introduction, Role Of Parsers,	L+D, PS	Online	1	27	10/6/21	10/6/21
28	Role Of Parsers Cont.	L+I, PS	Online	1	28	14/6/21	14/6/21
29	Introduction: Role Of Parsers Cont..	L+I	Online	1	29	15/6/21	15/6/21
30	Context Free Grammars	L+D	Online	1	30	16/6/21	16/6/21
31	Writing a grammar	L+D, PS	Online	1	31	17/6/21	17/6/21
32	Top Down Parsers	L+I, PS	Online	1	32	19/6/21	19/6/21
33	Bottom-Up Parsers	L+D, PS	Online	1	33	21/6/21	21/6/21
34	Bottom-Up Parsers Cont.	L+I, PS	Online	1	34	22/6/21	22/6/21
MODULE 4							
35	Lex and Yacc –The Simplest Lex Program,	L+D	Online	1	35	23/6/21	23/6/21
36	Grammars, Parser-Lexer Communication.	L+D	Online	1	36	24/6/21	24/6/21
37	A YACC Parser, The Rules Section, Running LEX and YACC	L+D	Online	1	37	25/6/21	25/6/21
38	LEX and Hand- Written Lexers	L+D	Online	1	38	29/6/21	29/6/21
39	Using LEX - Regular Expression, Examples of Regular Expressions	L+D, PS	Online	1	39	30/6/21	30/6/21
40	A Word Counting Program, Using YACC – Grammars, Recursive Rules	L+D, PS	Online	1	40	1/7/21	1/7/21
41	Shift/Reduce Parsing,	L+D	Online	1	41	3/7/21	7/7/21
42	What YACC Cannot Parse, A YACC Parser - The Definition Section, The Rules Section, The LEXER,	L+D, PS	Online	1	42	8/7/21	8/7/21

43	Compiling and Running a Simple Parser	L+D	Online	1	43	20/7/21	20/7/21
44	Arithmetic Expressions and Ambiguity.	L+D, PS	Online	1	44	21/7/21	21/7/21
MODULE 5							
45	Syntax Directed Translation	L+D	Online	1	45	8/7/21	27/7/21
46	Syntax Directed Translation cont..	L+D	Online	1	46	28/9/21	27/7/21
47	Examples	L+D	Online	1	47	27/8/21	27/7/21
48	Intermediate code generation.	L+D	Online	1	48	27/7/21	28/7/21
49	Code generation	L+D	Online	1	49	29/7/21	29/7/21
50	Code generation cont.	L+D	Online	1	50	31/7/21	31/7/21
REVISION							
	Revision	L+D	Online	0	50	31/7/21	31/7/21

Total No. of Lecture Hours = 50

Total No. of Revision Hours = 1

Course In charge

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K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109

DEPARTMENT OF CIVIL ENGINEERING

SESSION: 2020-2021 (EVEN SEMESTER)

LESSON PLAN

NAME OF THE STAFF : Mr. Shashi Prasad N

COURSE CODE/TITLE : 18CV643 / ALTERNATIVE BUILDING MATERIALS

SEMESTER/YEAR : VI / III

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	Execution Date
	MODULE 1						
1	Energy in building materials, Environmental issues concerned to building materials.	Online	LCD	01	01	19/04/2021	19/04/21
2	Embodied energy and life-cycle energy.	Online	LCD	01	02	21/04/2021	21/04/21
3	Global warming and construction industry, Green concepts in buildings.	Online	LCD	01	03	22/04/2021	22/04/21
4	Tutorials	Online	LCD	00	03	24/04/2021	24/04/21
5	Green building ratings – IGBC and LEED manuals – mandatory requirements.	Online	LCD	02	05	26/04/2021	26/04/21
6	Rainwater harvesting & solar passive architecture.	Online	LCD	01	06	29/04/2021	29/04/21
7	Environmental friendly and cost effective building technologies.	Online	LCD	01	07	03/05/2021	03/05/21
8	Requirements for buildings of different climatic regions.	Online	LCD	01	08	05/05/2021	05/05/21
	MODULE 2						
9	Elements of Structural Masonry: Elements of Structural Masonry. Masonry materials, requirements of masonry units	Online	LCD	01	09	06/05/2021	06/05/21
10	Tutorials	Online	LCD	01	00	08/05/2021	08/05/21
11	Characteristics of bricks, stones, clay blocks, concrete blocks, stone boulders, laterite Blocks, Fal- G blocks and Stabilized mud block.	Online	LCD	01	10	10/05/2021	10/05/21
12	Manufacture of stabilized blocks.	Online	LCD	01	11	12/05/2021	12/05/21

No.	Topic	Mode	Aids	Tut	Lec No.	Date	Date (handwritten)
13	Structural Masonry Mortars: Mortars, cementations materials, sand, natural & manufactured, types of mortars, Classification of mortars as per BIS, characteristics and requirements of mortar, selection of mortar. Uses of masonry, masonry bonding, Compressive strength of masonry elements,	Online	LCD	01	12	17/05/2021	17/05/21
14	Factors affecting compressive strength, Strength of Prisms/wallets and walls, Effect of brick bond on strength, Bond strength of masonry: Flexure and shear,	Online	LCD	01	13	19/05/2021	19/05/21
15	Elastic properties of masonry materials and masonry,	Online	LCD	01	14	20/05/2021	20/05/21
16	Design of masonry compression elements subjected to axial load	Online	LCD	02	16	27/05/2021	27/05/21
MODULE 3							
17	Alternate Building Materials: Lime, Pozzolana cements, Raw materials, Manufacturing process	Online	LCD	01	17	02/06/2021	02/06/21
18	Properties and uses. Fibers- metal and synthetic, Properties and applications.	Online	LCD	02	19	03/06/2021	03/06/21
19	Tutorials	Online	LCD	00	19	05/06/2021	05/06/21
20	Fiber reinforced plastics, Matrix materials, Fibers organic and synthetic, Properties and applications	Online	LCD	02	21	09/06/2021	09/06/21
21	Building materials from agro and industrial wastes, Types of agro wastes	Online	LCD	01	22	14/06/2021	14/06/21
22	Types of industrial and mine wastes, Properties and applications.	Online	LCD	01	23	16/06/2021	16/06/21
23	Masonry blocks using industrial wastes. Construction and demolition wastes.	Online	LCD	01	24	17/06/2021	17/06/21
24	Tutorials	Online	LCD	00	24	19/06/2021	19/06/21
MODULE 4							
25	Alternate Building Technologies: Use of arches in foundation, alternatives for wall constructions,	Online	LCD	01	25	21/06/2021	21/6/21
26	Composite masonry, confined masonry, cavity walls, rammed earth,	Online	LCD	01	26	23/06/2021	23/06/21
27	Ferro cement and ferroconcrete building components, Materials and specifications,	Online	LCD	01	27	24/06/2021	24/06/21
28	Properties, Construction methods,	Online	LCD	01	28	01/07/2021	01/07/21
29	Applications. Top down construction,	Online	LCD	01	29	03/07/2021	03/07/21
30	Mivan Construction Technique.	Online	LCD	01	30	05/07/2021	05/07/21
31	Alternate Roofing Systems: Concepts, Filler slabs,	Online	LCD	01	31	07/07/2021	07/07/21

	Topic	Mode	Method	Hours	Planned Date	Actual Date
32	Composite beam panel roofs, Masonry vaults and domes.	Online	LCD	01	08/07/2021	८/७/२०२१
	MODULE 5					
33	Equipment for Production of Alternate Materials: Machines for manufacture of concrete,	Online	LCD	01	12/07/2021	२९/७/२०२१
34	Equipments for production of stabilized blocks,	Online	LCD	01	14/07/2021	३१/७/२०२१
35	Moulds and methods of production of precast elements,	Online	LCD	02	15/07/2021	२/८/२०२१
36	Cost concepts in buildings, Cost saving techniques in planning,	Online	LCD	02	22/07/2021	५/८/२०२१
37	Design and construction,	Online	LCD	01	28/07/2021	७/८/२०२१
38	Cost analysis: Case studies using alternatives.	Online	LCD	01	07/08/2021	७/८/२०२१

Total No. of Lecture Hours = 40

Total No. of Tutorial Hours = 04

Course In charge

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Principal

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K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
SESSION: 2020-2021 (EVEN SEMESTER)
LESSON PLAN

NAME OF THE STAFF	: TEJASWINI G V
COURSE CODE/TITLE	:18EE42/ POWER GENERATION AND ECONOMICS
SEMESTER/YEAR	: IV/II
ACADEMIC YEAR	: 2020-2021

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	Execution Date
MODULE 1							
1	**Hydroelectric Power Plants:** Hydrology, Run off and stream flow, Hydrograph, Flow duration curve.	L+D	LCD	1	1	20/4/2021	20/4/21
2	Mass curve, Reservoir capacity, Dam storage, Hydrological cycle, Merits and demerits of hydroelectric power plant	L+D	LCD	1	2	21/4/2021	21/4/21
3	Selection of site, General arrangement of hydel plant	L+D	LCD	1	3	22/4/2021	22/4/21
4	Elements of the plant, Classification of the plants based on water flow regulation	L+D	LCD	1	4	24/4/2021	24/4/21
5	Water head and type of load the plant has to supply, Water turbines – Pelton wheel, Francis turbine	L+D	LCD	1	5	27/4/2021	27/4/21
6	Kaplan and propeller turbines, Characteristic of water turbines, Governing of turbines, Selection of water turbines	L+D	LCD	1	6	28/4/2021	28/4/21
7	Underground, Small hydro and pumped storage plants	L+D	LCD	1	7	29/4/2021	29/4/21
8	Choice of size and number of units, Plant layout and auxiliaries.	L+D	LCD	1	8	4/5/2021	4/5/21
MODULE 2							
9	**Steam Power Plants:** Introduction, Efficiency of steam plants, Merits and demerits of plants, Selection of site, Working of steam plant,	L+D	LCD	1	9	5/5/2021	5/5/21 6/5/21

10	Power plant equipment and layout, Steam turbines, Fuels and fuel handling. Fuel combustion and combustion equipment	L+D	LCD	I	10	6/5/2021	11/5/21
11	Coal burners, Fluidized bed combustion, Combustion control, Ash handling. Dust collection. Draught systems, Feed water, Steam power plant controls, Plant auxiliaries	L+D	LCD	I	11	11/5/2021	12/5/21 18/5/21
12	**Diesel Power Plant:** Introduction, Merits and demerits, Selection of site.	L+D	LCD	I	12	12/5/2021	19/5/21
13	Elements of diesel power plant, Applications.	L+D	LCD	I	13	18/5/2021	20/5/21
14	**Gas Turbine Power Plant:** Introduction, Merits and demerits, Selection site	L+D	LCD	I	14	19/5/2021	22/5/21
15	Fuels for gas turbines, Elements of simple gas turbine power plant, Methods of improving thermal	L+D	LCD	I	15	20/5/2021	25/5/21
16	Efficiency of a simple steam power plant, Closed cycle gas turbine power plants, Comparison of gas power plant with steam and diesel power plants.	L+D	LCD	I	16	22/5/2021	26/5/21
MODULE 3							
17	**Nuclear Power Plants:** Introduction, Economics of nuclear plants	L+D	LCD	I	17	27/5/2021	27/5/21
18	Merits and demerits, selection of site, Nuclear reaction,	L+D	LCD	I	18	1/6/2021	3/6/21
19	Nuclear fission process, Nuclear chain reaction	L+D	LCD	I	19	2/6/2021	5/6/21
20	Nuclear Energy, Nuclear fuels, Nuclear plant and layout	L+D	LCD	I	20	3/6/2021	8/6/21
21	Nuclear reactor and its control	L+D	LCD	I	21	5/6/2021	9/6/21
22	Classification of reactors, Power reactors in use	L+D	LCD	I	22	8/6/2021	10/6/21
23	Power reactors in use	L+D	LCD	I	23	9/6/2021	15/6/21 16/6/21
24	Effects of nuclear plants, Disposal of nuclear waste and effluent, Shielding.	L+D	LCD	I	24	10/6/2021	17/6/21
MODULE 4							
25	**Substations:** Introduction to Substation, High Voltage Circuit Breakers	L+D	LCD	I	25	15/6/2021	22/6/21

#	Topic				#	Date	Sign
26	Switches, Lightning Arresters, High Voltage Insulators and Conductors	L+D	LCD	1	26	16/6/2021	23|6|21
27	Voltage Regulators, Storage Batteries, Reactors, Capacitors, Measuring Instruments	L+D	LCD	1	27	17/6/2021	24|6|21
28	power line carrier communication equipment, Classification of substations – indoor and outdoor	L+D	LCD	1	28	22/6/2021	29|6|21
29	Selection of site for substation, Bus bar arrangement schemes, Single line diagrams of Substations. Interconnection of power stations,	L+D	LCD	1	29	23/6/2021	30|6|21
30	Introduction to gas insulated substation, Advantages and economics of Gas insulated substation	L+D	LCD	1	30	24/6/2021	1|7|21
31	Grounding: Introduction, Difference between grounded and ungrounded system System grounding – ungrounded, Solid grounding, Resistance	L+D	LCD	1	31	1/7/2021	1|7|21
32	Grounding, Reactance grounding and resonant grounding. Earthing transformer. Neutral grounding	L+D	LCD	1	32	3/7/2021	20|7|21
MODULE 5							
33	Economics: Introduction, Effect of variable load on power system	L+D	LCD	1	33	6/7/2021	20|7|21
34	classification of costs, Cost analysis. Interest and Depreciation, Problems	L+D+PS	LCD	1	34	7/7/2021	27|7|21
35	Methods of determination of depreciation, Problems	L+D+PS	LCD	1	35	8/7/2021	27|7|21
36	Economics of Power generation, different terms considered for power plants and their significance	L+D	LCD	1	36	13/7/2021	27|7|21 29|7|21
37	Load sharing., Choice of size and number of generating plants. Tariffs, objective of tariffs , Problems	L+D+PS	LCD	1	37	14/7/2021	29|7|21
38	Factors affecting the tariff, Power factor,	L+D	LCD	1	38	15/7/2021	29|7|21
39	Disadvantages and causes of low power factor	L+D	LCD	1	39	17/7/2021	30|7|21

40	Methods of improving power factor	L+D	LCD	1	40	20/7/2021	30/7/21
REVISION							
41	Revision	L+D	LCD	1	41	22/7/2021	—
42	Revision	L+D	LCD	1	42	27/7/2021	—
43	Revision	L+D+PS	LCD	1	43	28/7/2021	—
44	Revision	L+D+PS	LCD	1	44	7/8/2021	—

Total No. of Lecture Hours = 40

Total No. of Tutorial Hours = 00

Total No. of Revision Hours = 04

Course in charge   **Head of the Department**   **Principal**

K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU - 560109
DEPARTMENT OF MECHANICAL ENGINEERING
SESSION: 2021-2022 (EVEN SEMESTER)
LESSON PLAN

NAME OF THE STAFF : Dr. P N Jyothi

COURSE CODE/TITLE : 17ME81/ OPERATIONS RESEARCH

SEMESTER/YEAR : VIII / VI

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	Execution Date
	MODULE 1						
1	Introduction: Evolution of OR, Definitions of OR, Scope of OR, Applications of OR,	L	PPT	01	01	19/4/2	19/4/2
2	Phases in OR study. Characteristics and limitations of OR	L	PPT	01	02	19/4/2	19/4/2
3	Models used in OR	L	PPT	01	03	20/4/2	20/4/2
4	Linear Programming Problem (LPP), Generalized LPP- Formulation of L.P.P.	L	BB	01	04	20/4/2	20/4/2
5	Problems on LPP formulation	L	BB	03	07	21; 24; 26/4/2	21/4/4 26/4/2
6	Problems on LPP formulation	L	BB	02	09	26; 27/4/2	27/4/2 (2)
7	Problems on LPP formulation	L	BB	02	11	27; 28/4/2	28/4/2; 3/5/2
8	Solutions to LPP by graphical method (Two Variables)	L	BB	02	13	3/5/2 (2)	4/5/2 (2)
9	Problems on LPP by graphical method (Two Variables)	L	BB	02	15	4/5/2 (2)	5/5/2; 3/5/2
10	Problems on LPP by graphical method (Two Variables)	L	BB	02	17	5/5/2; 8/5/2	8/5/2 (2)
	MODULE 3						
11	Transportation Problem: Formulation of transportation problem & types; Initial basic feasible solution using North-West Corner rule, Vogel's Approximation method.	L	BB	02	19	10/5/2 (2)	10/5/2 (2)
12	Problems on finding initial feasible solution	L	BB	02	21	11/5/2 (2)	11/5/2 (2)
13	Problems on finding initial feasible solution	L	BB	02	23	12; 17/5/2	17/5/2 (2)
14	Optimality in Transportation problem by Modified Distribution (MODI) method.	L	BB	02	25	17; 18/5/2	18/5/2 (2)

No.	Topic						
15	Problems on finding Optimum solution by MODI method	L	BB	02	27	18, 19/5/24	19&26/5/24
16	Problems on finding Optimum solution by MODI method	L	BB	02	29	22/5/24 (2)	24/5/24(2)
17	Solving Unbalanced T.P & Solving Maximization T.P	L	BB	02	31	24/5/24 (2)	25/5/24(2)
18	Degeneracy in transportation problems, application of transportation problem	L	BB	02	33	25/5/24 (2)	31/5/24(2)
19	Assignment Model formulation	L	BB	02	35	26/5/24 5/6/24	5/6 & 7/6/24
20	Solving Assignment problems by Hungarian Method	L	BB	02	37	7/6/24 (2)	7/6/24(2)
MODULE 4							
21	Network analysis: Introduction, Construction of networks, Fulkerson's rule for numbering the nodes, AON and AOA diagrams.	L	BB	01	38	23/6/24	8/6/24
22	Problems on drawing a network	L	BB	02	40	24/6/24 (2)	14/6/24
23	Critical path method to find the expected completion time of a project	L	BB	02	42	22/6/24 (2)	15/6/24
24	Determination of floats in networks,	L	BB	02	44	5/7/24(2)	16/6/24
25	Problems on CPM	L	BB	02	46	6/7/24(2)	19/6/24
26	PERT networks, determining the probability of completing a project, predicting the completion time of project; Cost analysis in networks.	L	BB	02	48	7/7/24	21/6/24
27	Problems on PERT	L	BB	02	50	12/7/24 (2)	22/6/24(2)
28	Crashing of networks- Problems	L	BB	03	53	13/7/24(2)	23/6/24, 26/6/24(2)
29	Queuing Theory: Queuing systems and their characteristics, Pure-birth and Pure-death models (only equations).	L	BB	01	54	14/7/24	26/6/24 1/7/24
30	Kendall & Lee's notation of Queuing, empirical queuing models – Numerical on M/M/1 and M/M/C Queuing models	L	BB	01	55	17/7/24	1/7/24
MODULE 5							
31	Game Theory: Definition, Pure Strategy problems, Saddle point, Max-Min and Min-Max criteria	L	BB	02	57	17/7/24	3/7/24
32	Problems on finding Saddle point	L	BB	02	59	19/7/24	3/7/24
33	Principle of Dominance, Solution of games with Saddle point-Problems	L	BB	02	61	20/7/24	5/7/24(2)
34	Mixed Strategy problems. Solution of 2X2 games by Arithmetic method, Solution of 2Xn m and mX2 games by graphical method. Formulation of games	L	BB	02	63	27/7/24	6/7/24(2) 8/7/24(2)
35	Problems on finding Value of game using graphical method	L	BB	02	65	25/7/24	9/7/24(2)

#	Topic						
36	Sequencing: Basic assumptions, Johnson's algorithm, sequencing 'n' jobs on single machine using priority rules	L	BB	02	67	2|8|21(2)	10|7|21
37	sequencing using Johnson's rule-'n' jobs on 2 machines	L	BB	02	69	3|8|21(2)	10|7|21
38	Sequencing problems on 'n' jobs on 3 machines, 'n' jobs on 'm' machines	L	BB	02	71	4|8|21(2)	12|7|21
39	Sequencing of 2 jobs on 'm' machines using graphical method.	L	BB	02	73	7|8|21 (2)	12|7|21 13|7|21
40	Sequencing Problems on 2 jobs on M machines	L	BB	02	75	12|8|21	13|7|21
MODULE 2							
41	Module 2: LPP: Simplex method, Canonical and Standard form of LP problem, slack, surplus and artificial variables,.	L	BB	02	77	13|8|21	14|7|21(2)
42	Solutions to LPP by Simplex method	L	BB	01	78	13|8|21	14|7|21
43	Solutions to LPP by Simplex method,	L	BB	01	79	18|8|21	17|7|21
44	Problems by Big-M Method	L	BB	01	80	19|8|21	19|7|21
45	Problems by Big-M Method	L	BB	01	81	19|8|21	19|7|21
46	Two Phase Simplex Method	L	BB	01	82	20|8|21	20|7|21
47	Two Phase Simplex Method	L	BB	01	83	20|8|21	20|7|21
48	Concept of Duality, writing Dual of given LPP. Solutions to L.P.P by Dual Simplex Method	L	BB	01	84	19|8|21	21|7|21
49	Problems on Dual LPP	L	BB	01	85	19|8|21	
50	Degeneracy in LPP.	L	BB	01	86	19|8|21	
REVISION							
51							
52							
53							
54							

Total No. of Lecture Hours = 86

Total No. of Tutorial Hours = —

Total No. of Revision Hours = —

Course In charge   Head of the Department   Principal