

# HINDU COLLEGE OF ENGINEERING, SONEPAT



## LECTURE PLAN

**SEMESTER/CLASS**

**ELECTRICAL- 4TH**

**SESSION**

**JAN. - JUNE 2018**

**SUBJECT: CONTROL SYSTEM ENGINEERING**

**SUBJECT CODE : EE-210-B**

**SESSIONAL MARKS: 25**

**THEORY MARKS: 75**

**DURATION OF EXAMS: 3 HOURS**

**NAME OF TEACHER: DR. AARTI GUPTA**

**DEPARTMENT : ELECTRICAL ENGG.**

**OBJECTIVES OF CONCERNED SUBJECT:** To understand the purpose of a control system. How to check for the stability of a control system. To learn the process of interconnected components to achieve a desired purpose. To understand the purpose of a control system, it is useful to examine examples of control systems through the course of history. To study the various stability techniques and controllers.

**OUTCOME OF CONCERNED SUBJECT:** Students should be able to analyze and implement a transfer function. Understanding of the various stability techniques and their comparative usage should be clear to the students **after taking this course.**

Lecture No.	Lecture Dates	TOPICS	TEXT/REFERENCE BOOKS
		UNIT1: INTRODUCTORY CONCEPTS	
1	08/01/18	System/Plant Model	NAGRATH GOPAL
2	09/01/18	Types Of Models	
3	11/01/18	Illustrative Examples Of Plants And Their Inputs And Outputs	NAGRATH GOPAL
4	12/01/18	Laplace Transform	NAGRATH GOPAL
5	15/01/18	Numerical On Lt	
6	16/01/18	Basic Networks	NAGRATH GOPAL
7	18/01/18	Closed Loop Control System, Illustrative Examples Of Open-Loop	NAGRATH GOPAL
8	19/01/18	Feedback Control Systems	
9	23/01/18	Continuous Time And Sampled Data Control Systems.	NAGRATH GOPAL
10	24/01/18	Electrical Examples	NAGRATH GOPAL
11	29/01/18	Concept Of Transfer Function, Relationship Between Transfer Function And Impulse Response	HASSAN SAEED
12	30/01/18	Order Of A System, Block Diagram Algebra	HASSAN SAEED
13	01/02/18 02/02/18	Numerical On Block Diagram	
14	05/02/18	Signal Flow Graphs	
15	06/02/18	Numerical On Sfg	
16	08/02/18	Mason's Gain Formula & Its Application, Characteristic Equation,	HASSAN SAEED

17	9/02/18	Derivation Of Transfer Functions Of Electrical And Electromechanical Systems.	HASSAN SAEED
18	12/02/18	Transfer Functions Of Cascaded And Non-Loading Cascaded Elements.	HASSAN SAEED
19	13/02/18	Some Examples	HASSAN SAEED
		Time Domain Analysis	
20	15/02/18	Typical Test Signals, Time Response Of First Order Systems To Various Standard Inputs	HASSAN SAEED
21	16/02/18	Time Response Of 2nd Order System To Step Input, Relationship Between Location Of Roots Of Characteristics Equation	HASSAN SAEED
22	19/02/18/	$\omega$ And $\omega_n$ , Time Domain Specifications Of A General And An Under-Damped 2nd Order System,	N.K JAIN/HASSAN SAEED
23	20/02/18	Steady State Error And Error Constants	
24	22/02/18	Dominant Closed Loop Poles, Concept Of Stability,	N.K JAIN/HASSAN SAEED
25	23/02/18	Pole Zero Configuration And Stability, Necessary And Sufficient Conditions For Stability.	N.K JAIN/HASSAN SAEED
26	26/02/18	Hurwitz Stability Criterion Routh Stability Criterion And Relative Stability.	N.K JAIN/HASSAN SAEED
27	27/02/18, 01/02/18	Root Locus Concept, Development Of Root Loci For Various Systems, Stability Considerations.	HASSAN SAEED
28	05/03/18	Numerical On Root Locus	
		Frequency Domain Analysis , Compensation & Control Component	N.K JAIN/ HASSAN SAEED
29	12/03/18,	Relationship Between Frequency Response And Time-Response For 2nd Order System,	HASSAN SAEED
30	13/03/18	Polar Plot	
31	15/03/18	Nyquist, Stability	N.K JAIN/HASSAN SAEED
32	16/03/18	Numerical On Nyquist	
33	19/03/18	Bode Plots,	
34	20/03/18	Numerical On Bode Plots Gain-/Margin Phase	
35	22/03/18	Quiz	
36	23/03/18	Relative Stability, Frequency Response Specifications.	HASSAN SAEED
37	29/03/18/	Necessity Of Compensation, Compensation Networks,	HASSAN SAEED
38	30/03/18	Application Of Lag And Lead Compensation,	
39	2/03/18	Synchros, Ac And Dc Techno-Generators	HASSAN SAEED
40	03/04/18	Quiz	
41	05/04/18	Servomotors, Stepper Motors, & Their Applications	HASSAN SAEED
42	06/04/18	Magnetic Amplifier	C.L. SHARMA
43	09/04/18	Solution Of Previous Year Question Paper	
44	10/04/18	Solution Of Previous Year Question Paper	

**TEXT/REFERENCE BOOKS:**

- A. AUTO Matic CONTROL SYSTEM- HASSAN SAEED**
- B. CONTROL SYSTEM ENGG.-NAGRATH GOPAL**
- C. AUTO Matic CONTROL SYSTEM- N.K JAIN**

**Home Assignments: 4 –5 assignments are given during the semester.**

**Evaluation Procedure**

<b>1.</b>	<b>Surprise Quiz/ Tutorial Test</b>	<b>5 Marks</b>
<b>2.</b>	<b>Assignment / Project / Performance in the Class</b>	<b>5 Marks</b>
<b>3.</b>	<b>Minor Tests (Two tests having equal weightage)</b> <b>Minor Test I : 06 – 09 March, 2018</b> <b>Minor Test II : 17 -20 April, 2018</b>	<b>15 Marks</b>
<b>4.</b>	<b>Major test (University Examination)</b>	<b>75 Marks</b>

**Attendance Record – Candidate should attend at least 75% attendance of the total classes held of the subject**

**Chamber consultation hour: Any vacant period.**

**Note:**

- In the semester examination, the examiner will set 08 questions in all selecting two from each unit (1 & 2 from unit I, 3 & 4 from unit II, 5 & 6 from unit III and 7 & 8 from unit IV). The students will be required to attempt only 5 questions selecting at least one question from each unit. All questions will carry equal marks.**
- The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.**



**LECTURE PLAN**

**SEMESTER/CLASS**

EE-4<sup>TH</sup>

**SESSION**

JAN. - JUNE 2018

**SUBJECT:**

**NETWORK ANALYSIS-II**

**SUBJECT CODE : EE-202-B**

**SESSIONAL MARKS: 25**

**THEORY MARKS: 75**

**DURATION OF EXAMS: 3 HOURS**

**NAME OF TEACHER: ER.CHARAN JEET MADAN**

**DEPARTMENT: ELECTRICAL ENGG.**

**OBJECTIVES OF CONCERNED SUBJECT:**

- 1 To prepare the students to have a basic knowledge in the analysis of Electric Networks
- 2 To distinguish between tie set and cut set methods for solving various circuits.
- 3 To design various types of filters.
- 4 To relate various two port parameters and transform them.

**OUTCOME OF CONCERNED SUBJECT:**

After successful completion of the course, student will be able to

- design filter and their analysis
- apply mathematics in analyzing and synthesizing the networks in time and frequency domain
- apply the fundamental concepts in solving and analyzing different Electrical networks
- select appropriate and relevant technique for solving the Electrical network in different conditions
- estimate the performance of a particular network from its analysis

Lecture No.	Lecture Dates	TOPICS	TEXT/REFERENCE BOOKS
<b>Unit 1(TWO PORT NETWORKS)</b>			
1-3	08/01/2018 - 10/01/2018	Characteristics and Parameters of two port networks, Network Configurations	A,B
4-5	12/01/2018, 15/01/2018	Short circuit Admittance parameters(Y), Open-circuit impedance parameters(Z)	A,B
6-7	16/01/2018, 17/01/2018	Transmission parameters(ABCD), hybrid parameters(h)	A,B
8-9	19/01/2018, 23/01/2018	Condition for reciprocity & symmetry of two-port networks in different parameters representations	A,B
10	24/01/2018	Inter-relationships between parameters of two-port network sets	A,B
11	29/01/2018	Expression of input & output impedances in	A,B

		terms of two port parameters,	
12	30/01/2018	Interconnection of two port networks	A,B
13	31/01/2018	Analysis of typical two-port networks, Image impedances	A,B
14	02/02/2018	<b>TEST &amp; DISCUSSION (UNIT-1)</b>	
<b>Unit 2 (NETWORK FUNCTIONS &amp; GRAPH THEORY)</b>			
15	05/02/2018	Terminal pairs or Ports, Network functions for one-port and two-port networks	A,B
16	06/02/2018	Concept of poles and zeros in Network functions, Restrictions on pole and zero Locations for driving point functions and transfer functions	A,B
17	07/02/2018	Time domain behavior from the pole-zero plot	A,B
18	09/02/2018	Principles of network topology, graph matrices, Network analysis using Graph Theory	A,B
19	12/02/2018	<b>TEST &amp; DISCUSSION (UNIT-2)</b>	
<b>Unit 3(FILTERS)</b>			
20	13/02/2018	Types of filters and their characteristics	A
21	16/02/2018	Filter fundamentals, classification of Filters	A
22	19/02/2018	Analysis & design of prototype high-pass filter	A
23	20/02/2018	Analysis & design of prototype low-pass	A
24	21/02/2018	Analysis & design of prototype band-pass	A
25	26/02/2018	Analysis & design of prototype band-reject Filter	A
26-27	27/02/2018, 28/02/2018	m-derived low-pass & high-pass filters	A
28	05/03/2018	Low-pass filter and High-pass filter with RC & RL circuits	A
29	12/03/2018	Band pass filter with RLC circuit	A
<b>Unit 4(NETWORK SYNTHESIS)</b>			
30	13/03/2018	Hurwitz polynomials, Properties of Hurwitz polynomials	A
31-32	14/03/2018, 16/03/2018	Positive real functions, procedure of testing of PR functions	A
33	19/03/2018	Concept and procedure of network synthesis Properties of expressions of driving point	A

		immitances of LC networks	
34-35	20/03/2018, 21/03/2018	LC Network synthesis: Foster's I & II Form	A
37-36	26/03/2018, 27/03/2018	Cauer's I & II form	A
38	28/03/2018	RC & RL Network synthesis	A
39	30/03/2018	Foster's & Cauer's form of synthesis of lossy networks	A
40	02/04/2018	<b>TEST &amp; DISCUSSION (UNIT-3 &amp; 4)</b>	
41	03/04/2018	<b>REVISION OF SYLLABUS</b>	

**TEXT/REFERENCE BOOKS:**

- A. Circuit Theory by A.Chakarbarti, Dhanpat Rai**
- B. A Course in Electrical Circuit Analysis by Soni & Gupta; Dhanpat Rai Publication**

**Home Assignments: 4 –5 assignments are given during the semester.**

**Evaluation Procedure**

<b>1.</b>	<b>Surprise Quiz/ Tutorial Test</b>	<b>5 Marks</b>
<b>2.</b>	<b>Assignment / Project / Performance in the Class</b>	<b>5 Marks</b>
<b>3.</b>	<b>Minor Tests (Two tests having equal weightage)</b>  <b>Minor Test I : 06 – 09 March, 2018</b>  <b>Minor Test II : 17 -20 April, 2018</b>	<b>15 Marks</b>
<b>4.</b>	<b>Major test (University Examination)</b>	<b>75 Marks</b>

**Attendance Record – Candidate should attend at least 75% attendance of the total classes held of the subject**

**Chamber consultation hour: Any vacant period.**

**Note:**

- In the semester examination, the examiner will set 08 questions in all selecting two from each unit (1 & 2 from unit I, 3 & 4 from unit II, 5 & 6 from unit III and 7 & 8 from unit IV). The students will be required to attempt only 5 questions selecting at least one question from each unit. All questions will carry equal marks.**
- The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.**

**HINDU COLLEGE OF ENGINEERING,  
SONEPAT**



**LECTURE PLAN**

**SEMESTER/CLASS**

EE, 4<sup>th</sup>

**SESSION**

**JAN. - JUNE 2018**

**SUBJECT:** ELECTRICAL MACHINE-1

**SUBJECT CODE :** EE-206-B

**SESSIONAL MARKS: 25**

**THEORY MARKS: 75**

**DURATION OF EXAMS: 3 HOURS**

**NAME OF TEACHER:** MR. NAVEEN KAUSHIK

**DEPARTMENT:** ELECTRICAL ENGG.

**OBJECTIVES OF CONCERNED SUBJECT:** The objective of this subject is to teach students about introductory knowledge of electrical transformers & DC machines. The syllabus focuses on basic laws involved in designing, operation and controlling of transformers and DC machines.

**OUTCOME OF CONCERNED SUBJECT:** The learning outcome of this subject is to know about the principles, working operation, application of transformers and DC machines. The students should be able to bear knowledge about the fundamental of electrical machines used in various walk of life.

Lecture No.	Lecture Dates (Approx.)	TOPICS	TEXT/REFERENCE BOOKS
1	08/01/18	Introduction To Transformer & Application	A
2	09/01/18	Principle Of Transformer, Construction & Working	A
3	10/01 /18	Principle Of Transformer, Construction & Working	A
4	11/01/18	E.M.F Equation & Phasor Diagram, Equivalent Ckt.	A
5	11/01/18	E.M.F Equation & Phasor Diagram, Equivalent Ckt.	A
6	15/0118	Numericals	A,B
7	16/01/18	Numericals	A,B
8	22/01/18	Voltage Regulation, Losses, Efficiency	B
9	16/02/18	O.C & S.C Test, Sumpenens Test	A
10	22/01/18	Numericals	A,B
11	30/01/18	P.U Presentation & Parallel Operation Of T/F	A
12	31/01/18	Construction & Working Of Auto T/F,	A
13	01/02/18	Saving In Copper And Its Application	B

14	15/02/18	Numericals	B
15	06/02/18	3 Phase T/F, Construction, & Operation	A
16	07/02/18	Types Of Connections, Inrush Current	A
17	08/02/18	Harmonic Phenomenon, Parallel Operation	A
18	12/02/18	Numericals	B
19	13/02/18	Phase Conversion, Scott Connection	A
20	15/02/18	C.T & P.T, Their Applications	A
21	19/02/18	Principal And Construction Of D.C Machine	B
22	20/02/18	Emf Equation, & Numericals	B
23	21/02/18	Types And Their Characteristics	B
24	26/02/18	Voltage Buildup Phenomenon, Types Of Windings	B
25	27/02/18	Armature Reaction	B
26	28/02/18	Method Of Improving Commutation	B
27	01/03/18	Parallel Operation & Numericals	B
28	05/03/18	Numericals	B
29	12/03/18	Construction, Operation, Torque Equation	B
30	13/03/18	Torque Equation	B
31	14/03/18	Numericals	B
32	15/03/18	Numericals	B
33	19/03/18	Types And Characteristics	B
34	20/03/18	Types And Characteristics	B
35	21/03/18	Method Of Starting, Starter	B
36	26/03/18	Method Of Starting, Starter	B
37	27/03/18	Methods Of Speed Control	B
38	28/03/18	Losses And Efficiency, DC Motor Test,	B
39	02/04/18	Numericals	B
40	03/04/18	Types Of Braking	B
41	04/04/18	Numericals	B
42	05/04/18	Numericals	B



43	09/04/18	Numericals	B
44	10/04/18	Problem Solution Tutorial	A,B
45	11/04/18	Problem Solution Tutorial	A,B
46	12/04/18	Problem Solution Tutorial	A,B
47	16/04/18	Problem Solution Tutorial	A,B
48	26/04/18	Problem Solution Tutorial	A,B

**TEXT/REFERENCE BOOKS:**

- A. Electrical Machinery by P.S.Bhimbhra**
- B. Electrical Technology by Vol.-2,by B.L.Thereja**

**Home Assignments: 4 –5 assignments are given during the semester.**

**Evaluation Procedure**

<b>1.</b>	<b>Surprise Quiz/ Tutorial Test</b>	<b>5 Marks</b>
<b>2.</b>	<b>Assignment / Project / Performance in the Class</b>	<b>5 Marks</b>
<b>3.</b>	<b>Minor Tests (Two tests having equal weightage)</b>  <b>Minor Test I : 06 – 09 March, 2018</b>  <b>Minor Test II : 17 -20 April, 2018</b>	<b>15 Marks</b>
<b>4.</b>	<b>Major test (University Examination)</b>	<b>75 Marks</b>

**Attendance Record – Candidate should attend at least 75% attendance of the total classes held of the subject**

**Chamber consultation hour: Any vacant period.**

**Note:**

- In the semester examination, the examiner will set 08 questions in all selecting two from each unit (1 & 2 from unit I, 3 & 4 from unit II, 5 & 6 from unit III and 7 & 8 from unit IV). The students will be required to attempt only 5 questions selecting at least one question from each unit. All questions will carry equal marks.**
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**HINDU COLLEGE OF ENGINEERING,  
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**LECTURE PLAN**

**SEMESTER/CLASS**

4<sup>th</sup>/B.Tech

**SESSION**

**JAN. - JUNE 2018**

**SUBJECT:** ELECTRICAL MEASUREMENTS & MEASURING INSTRUMENTS

**SUBJECT CODE :** EE-204-B

**SESSIONAL MARKS: 25**

**THEORY MARKS: 75**

**DURATION OF EXAMS: 3 HOURS**

**NAME OF TEACHER :** MR. NAVEEN KUMAR

**DEPARTMENT :** ELECTRICAL ENGG

**OBJECTIVES OF CONCERNED SUBJECT:**

This subject aims at providing knowledge of electrical measurement basic concepts & motivates students to measure electrical quantities in circuits.

**OUTCOME OF CONCERNED SUBJECT: .**

1. Distinguish between dc and ac measuring instruments.
2. Measurement of electrical quantity mathematically.
3. Obtain basic knowledge of Measuring Instruments.

Lecture No.	Lecture Dates	TOPICS	TEXT/REFERENCE BOOKS
1	09/01/2018	UNIT- I Fundamentals Of Electrical & Electronics Measurements: Standards, True Value, Errors (Gross, Systematic, Random)	A. K. Sawhney; Khanna Publication
2	10/01/2018	Static Characteristic Of Instruments (Accuracy, Precision, Sensitivity, Resolution & Threshold)	A. K. Sawhney; Khanna Publication
3	12/01/2018	Classification Of Instruments(Absolute & Secondary Instruments; Indicating, Recording & Integrating Instruments; Based Upon Principle Of Operation)	A. K. Sawhney; Khanna Publication
4	16/01/2018	Generalized Instrument (Block Diagram, Description Of Blocks), Three Forces In Electromechanical Indicating Instrument	A. K. Sawhney; Khanna Publication
5	17/01/2018	Comparison Between Gravity & Spring Controls; Comparison Of Damping Methods & Their Suitability	A. K. Sawhney; Khanna Publication
6	19/01/2018	Bearing Supports	A. K. Sawhney; Khanna Publication
7	24/01/2018	Pivot-Less Supports (Simple & Taut-Band), Scale Information.	A. K. Sawhney; Khanna Publication
8	25/01/2018	UNIT- II MEASURING INSTRUMENTS: Instrument Cases (Covers).Construction, Operating Principle, Torque Equation	A. K. Sawhney; Khanna Publication
9	31/01/2018	Shape Of Scale, Use As Ammeter Or As Voltmeter (Extension Of Range)	A. K. Sawhney; Khanna Publication
10	01/02/2018	Use On AC/ DC Or Both, Advantages & Disadvantages, Errors (Both On AC/ DC) Of PMMC Types	A. K. Sawhney; Khanna Publication

11	02/02/2018	Electrodynamic Type	A. K. Sawhney; Khanna Publication
		Moving Iron Type (Attraction, Repulsion & Combined Types)	A. K. Sawhney; Khanna Publication
12	07/02/2018	Induction Type.	A. K. Sawhney; Khanna Publication
13	08/02/2018	UNIT- III WATTMETERS & ENERGY METERS: Construction, Operating Principle, Torque Equation	A. K. Sawhney; Khanna Publication
14	13/02/2018	Shape Of Scale, Errors Of Electrodynamic Instruments	A. K. Sawhney; Khanna Publication
15	14/02/2018	Kelvin's Double Bridge Method	A. K. Sawhney; Khanna Publication
16	15/02/2018	Construction, Operating Principle, Torque Equation, Shape Of Scale	A. K. Sawhney; Khanna Publication
17	20/02/2018	Errors Of Electrodynamic Instruments Advantages & Disadvantages Of Induction Type Wattmeters	A. K. Sawhney; Khanna Publication
18	27/02/2018	Single Phase Induction Type Energy Meter	A. K. Sawhney; Khanna Publication
19	02/03/2018	Compensation & Creep In Energy Meter.	A. K. Sawhney; Khanna Publication
20	13/03/2018	POWER FACTOR & FREQUENCY METERS: Construction, Operation, Principle, Torque Equation, Advantages & Disadvantages Of Single Phase Power Factor Meters	A. K. Sawhney; Khanna Publication
21	14/03/2018	(Electrodynamic & Moving Iron Types) & Frequency Meters (Electrical Resonance Type, Ferrodynamic & Electrodynamic Types).	A. K. Sawhney; Khanna Publication
22	15/03/2018	LOW & HIGH RESISTANCE MEASUREMENTS: Limitations Of Wheatstone Bridge	A. K. Sawhney; Khanna Publication
23	20/03/2018	Difficulties In High Resistance Measurements	A. K. Sawhney; Khanna Publication
24	21/03/2018	Measurement Of High Resistance By Direct Deflection	A. K. Sawhney; Khanna Publication
25	27/03/2018	Loss Of Charge Method, Megohm Bridge.	A. K. Sawhney; Khanna Publication
26	28/03/2018	A.C. BRIDGES: General Balance Equation, Ckt. Diagram	A. K. Sawhney; Khanna Publication
27	03/04/2018	Phasor Diagram Advantages, Disadvantages	A. K. Sawhney; Khanna Publication
28	04/04/2018	Applications Of Maxwell's, Inductance-Capacitance Bridge	A. K. Sawhney; Khanna Publication
29	05/04/2018	Hays Bridge	A. K. Sawhney; Khanna Publication
30	06/04/2018	Owens Bridge	A. K. Sawhney; Khanna Publication
31	10/04/2018	Schering Bridge	A. K. Sawhney; Khanna Publication
32	24/04/2018	Shielding & Earthing	A. K. Sawhney; Khanna Publication
33	25/04/2018	Wagner's Device	A. K. Sawhney; Khanna Publication
34	26/04/2018	Revision Class	A. K. Sawhney; Khanna Publication
35	27/04/2017	Revision Class	A. K. Sawhney; Khanna Publication

**TEXT/REFERENCE BOOKS:**

- A. A Course in Elect. & Electronic Measurement & Instrumentation by A. K. Sawhney; Khanna Pub.
- B. Electronic & Elect. Measurment & Instrumention by J.B.Gupta; Kataria & Sons.
- C. Electronic Instrumentation & Measurment Technique, W.D. Cooper & A.D. Helfrick.

**Home Assignments:** 4 –5 assignments are given during the semester.

**Evaluation Procedure**

1.	Surprise Quiz/ Tutorial Test	5 Marks
2.	Assignment / Project / Performance in the Class	5 Marks
3.	Minor Tests (Two tests having equal weightage)  Minor Test I : 06 – 09 March, 2018  Minor Test II : 17 -20 April, 2018	15 Marks
4.	Major test (University Examination)	75 Marks

**Attendance Record** – Candidate should attend at least 75% attendance of the total classes held of the subject

**Chamber consultation hour:** Any vacant period.

**Note:**

- 1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit (1 & 2 from unit I, 3 & 4 from unit II, 5 & 6 from unit III and 7 & 8 from unit IV). The students will be required to attempt only 5 questions selecting at least one question from each unit. All questions will carry equal marks.
- 2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.



## LECTURE PLAN

SEMESTER/CLASS

ELECTRICAL -4TH

SESSION

JAN. - JUNE 2018

SUBJECT: ELECTROMAGNETIC THEORY

SUBJECT CODE : EE-208-B

SESSIONAL MARKS: 25

THEORY MARKS: 75

DURATION OF EXAMS: 3 HOURS

NAME OF TEACHER : MS. SHILPI

DEPARTMENT : EE

**OBJECTIVES OF CONCERNED SUBJECT:** To provide the study about the electric fields and magnetic fields. And Role of Electrostatics & Magnetostatics in Electrical Engineering.

**OUTCOME OF CONCERNED SUBJECT:** Formulate and solve electromagnetic problems with the help of electrodynamic potentials and superpotentials. Deriving and evaluating formulae for the electromagnetic fields from very general charge and current distributions.

Lecture No.	Lecture Dates	TOPICS	TEXT/REFERENCE BOOKS
		<b>UNIT:(1) – STATIC &amp; STEADY FIELDS</b>	
1	8/1/18	Coulomb's Law, Gauss's Law, potential function	K.D Prasad
2	9/1/18	Field due to a continuous distribution of charge,	R Gowri
3	10/1/18	Equi-potential surfaces	R Gowri
4	12/1/18	Gauss's Theorem, Poison's equation, Laplace's equation,	K.D Prasad
5	15/1/18	Method of electrical images	K.D Prasad
6	16/1/18	Capacitance, electro-static energy, boundary conditions	K.D Prasad, R Gowri
7	17/1/18	Electro-static uniqueness theorem, far field of a charge distribution	K.D Prasad, R Gowri
8	19/1/18	Dirac-Delta representation for a point charge and an infinitesimal dipole.	K.D Prasad
9	23/1/18	Faraday's law of Induction	<b>Jordan &amp; Balmain</b>
10	24/1/18	Ampere's Work law in the differential vector form, Ampere's law for a current element	<b>Jordan &amp; Balmain</b>
11	29/1/18	Magnetic field due to volume distribution of current and the Dirac-delta function.,	<b>Jordan &amp; Balmain</b>
12	30/1/18	Ampere's Force Law	K.D Prasad
13	31/1/18	Revision	
14	2/2/18	Surprise Test	

		<b>UNIT : (2) – TIME VARYING FIELDS</b>	
15	5/2/18	Magnetic vector potential, vector potential (Alternative derivation),	<b>Jordan &amp; Balmain</b>
16	6/2/18	Far field of a current distribution,	<b>Jordan &amp; Balmain</b>
17	7/2/18	Equation of continuity, Equation of continuity for time varying fields	K.D Prasad
18	9/2/18	Inconsistency of Ampere's law	K.D Prasad
19	12/2/18	Maxwell's field equations and their interpretation,	K.D Prasad
20	13/2/18	Solution for free space condition	K.D Prasad
21	16/2/18	Electromagnetic waves in a homogeneous medium	K.D Prasad
22	19/2/18	Propagation of uniform plane-wave, relation between E & H in a uniform plane-wave, wave equations for	K.D Prasad
23	20/2/18	Conducting medium, Maxwell's equations using phasor notation,	K.D Prasad
24	21/2/18	Wave propagation in a conducting medium, conductors, dielectrics,	K.D Prasad
25	26/2/18	Wave propagation in good conductor and good dielectric,	K.D Prasad
26	27/2/18	Depth of penetration,	R Gowri
27	28/2/18	Surprise Test	
		<b>Unit-3 POLARIZATION, REFLECTION AND REFRACTION OF E M WAVES:</b>	
28	5/3/18	<b>Polarization,( linear, circular and elliptical),</b>	R Gowri
29	12/3/18	Reflection and refraction of plane waves at the surface of a perfect conductor (both normal incidence as well as oblique incidence)	K.D Prasad
30	13/3/18	For perfect dielectric (both normal incidence as well as oblique incidence)	K.D Prasad
31	14/3/18	Brewster's angle and Total Marks internal reflection,	R Gowri, Jordan & Balmain
32	16/3/18	Reflection at the surfaces of a conductive medium, surface impedance.	K.D Prasad
33	19/3/18	Surprise Test	
		<b>UNIT: (4) TRASMISSION LINE THEORY</b>	
34	20/3/18	Transmission-line analogy,	K.D Prasad
35	26/3/18	Poynting theorem, Interpretation of $E \times H$ ,	K.D Prasad
36	27/3/18	power loss in a plane conductor	K.D Prasad
37	28/3/18	Transmission line as a distributed circuit transmission line equation,	K.D Prasad
38	2/4/18	Travelling & standing waves, characteristic impedance	K.D Prasad
39	3/4/18	Input impedance of terminated line, reflection coefficient,	K.D Prasad
40	9/4/18	VSWR,	K.D Prasad

41	10/4/18	Smith's chart and its applications.	K.D Prasad
42	11/4/18	Revision	
43	13/4/18	Surprise Test	
44	16/4/18	Surprise test	

**TEXT/REFERENCE BOOKS:**

- A. Electromagnetics Fields And Waves, K.D Prasad, Satya Prakashan, New Delhi**
- B. Electro-magnetic Waves and Radiating System: Jordan & Balmain, PHI.**
- C. Electromagnetics Fields and Waves, R.GOWRI, KATARIA SONS.**

**Home Assignments: 4 –5 assignments are given during the semester.**

**Evaluation Procedure**

<b>1.</b>	<b>Surprise Quiz/ Tutorial Test</b>	<b>5 Marks</b>
<b>2.</b>	<b>Assignment / Project / Performance in the Class</b>	<b>5 Marks</b>
<b>3.</b>	<b>Minor Tests (Two tests having equal weightage)</b>  <b>Minor Test I : 06 – 09 March, 2018</b>  <b>Minor Test II : 17 -20 April, 2018</b>	<b>15 Marks</b>
<b>4.</b>	<b>Major test (University Examination)</b>	<b>75 Marks</b>

**Attendance Record – Candidate should attend at least 75% attendance of the total classes held of the subject**

**Chamber consultation hour: Any vacant period.**

**Note:**

- In the semester examination, the examiner will set 08 questions in all selecting two from each unit (1 & 2 from unit I, 3 & 4 from unit II, 5 & 6 from unit III and 7 & 8 from unit IV). The students will be required to attempt only 5 questions selecting at least one question from each unit. All questions will carry equal marks.**
- The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.**