# NAAC DOCUMENTS



## Quality Indicator Frame Work

# Criterion – 1
# CURRICULAR ASPECTS

Submitted by

# IQAC
## Internal Quality Assurance Cell

## Sri Bharathi Engineering College for Women

# I BHARATHI ENGINEERING COLLEGE FOR WOMEN

**(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)**

**Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India**

| Criterion 1 | Curricular Aspects | 100 |
|---|---|---|

## 1.1 Curricular Planning and Implementation (20)

**1.1.1 The Institution ensures effective curriculum planning and delivery through a well-planned and documented process including Academic calendar and conduct of continuous internal Assessment**

## Table of contents

| S.No | Description |
|---|---|
| 1 | Preface of the Course File |
| 2 | Review of Course File |
| 3 | Work Load |
| 4 | Course Plan |
| 5 | Content Beyond Syllabus |
| 6 | Assignment Question Paper |
| 7 | Assignment -Rubrics Based Evaluation |
| 8 | Tutorial Question Paper |
| 9 | Tutorial -Rubrics Based Evaluation |
| 10 | Academic Audit Form |
| 11 | Student Feedback on Faculty |
| 12 | Internal Assessment Schedule |
| 13 | Cycle Test Question Paper |
| 14 | Cycle Test Answer Key |
| 15 | Cycle Test Sample Answer Sheet |
| 16 | Cycle Test Co Based Mark Entry |
| 17 | Root Cause Analysis |
| 18 | Retest Schedule |
| 19 | Retest Sample Question Paper |
| 20 | Retest Attendance Sheet |
| 21 | Retest Co Based Mark Entry |
| 22 | Internal Mark Sheet- Anna University Portal |
| 23 | Co Po Attainment |

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

**(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)**
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## PREFACE OF THE COURSE FILE

Batch                              : **2017-2021**

Academic Year                      : **2018-2019 / ODD**

Program                            : **ELECTRICAL AND ELECTRONICS ENGINEERING**

Year & Semester                    : **2$^{nd}$ Year / 3$^{rd}$ Semester**

Course Code                        : **EE 8391**           NBA Course Code: **C203**

Name of the Course                 : Electromagnetic Theory

Faculty in-charge                  : Mr. A.ABDUL  BASEETH  AP/EEE


Signature of the Faculty Incharge

HoD / EEE

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and affiliated to Anna University, Chennai)

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### REVIEW OF COURSE FILE

(to be pasted on the inner side of the file-backside).(#-State Yes/No.)

| S.N | Details / Date: | R-I-* | R-II-*& | R-III-*& | R-IV-*&$ | R-V-*&$@ |
|---|---|---|---|---|---|---|
| 1. | Preface of the course file | Yes | | | | |
| 2. | Vision, Mission, PEOs, POs, PSOs, Blooms taxonomy | Yes | | | | |
| 3. | Subject handlers of yesteryears | Yes | | | | |
| 4. | Timetable/Workload of the staff – Distribution of teaching load – Roles and Responsibilities | Yes | | | | |
| 5. | Syllabus signed by staff & HoD | Yes | | | | |
| 6. | Lecture Schedule signed by staff & HoD | Yes | | | | |
| 7. | Course Committee meeting circular and minutes | NA | | | | |
| 8. | Identification of Curricular gap and Content Beyond the syllabus | Yes | | | | |
| 9. | Self-study topics | Yes | | | | |
| 10. | Previous AU Question papers | Yes | | | | |
| 11. | Unit wise Q&A and Objective type questions | Yes | | | | |
| 12. | Unit wise course material | Yes | | | | |
| 13. | Assignment question paper with sample answer sheets and mark entry | | Yes | | | |
| 14. | Tutorial question paper with key and mark entry | | Yes | | | |
| 15. | Class test/IA test Q Paper with Key, sample answer papers and mark entry | | Yes | | | |
| 16. | IA Test- result analysis-CAP-evidence-root cause analysis. | | Yes | | | |
| 17. | Retest –Q paper-Attendance-marks | | | Yes | | |
| 18. | AU Web portal entry sheet | | | Yes | | |
| 19. | Very poor performance in first two tests-action taken.-communication to parents-evidence | | | Yes | | |
| 20. | Absence for two tests-action taken-communication to parents-evidence. | | | — | | |
| 21. | Indiscipline of student reported, if any | | | — | | |
| 22. | Special class/coaching class/remedial class/attendance-CAP | | | Yes | | |
| 23. | Conduct of Seminar, Quizzes - proof | | | Yes | | |
| 24. | Content beyond the syllabus - proof | | | Yes | | |
| 25. | Student feedback on faculty | | | | Yes | |
| 26. | Course end survey | | | | Yes | |
| 27. | Internal Assessment sheet | | | | Yes | |
| 28. | AU question paper with students feedback | | | | Yes | |
| 29. | Discrepancy of the question paper and correspondence, if any | | | | Yes | |
| 30. | AU result analysis-Details of arrear students. | | | | | Yes |
| 31. | AU grade sheet | | | | | Yes |
| 32. | CO – PO & PSO attainment sheet | | | | | Yes |
| | Signature of Course handling faculty | A. Barthi | A. Barthi | A. Barthi | A. Barthi | A. Barthi |
| | Signature of HoD | | | | | |

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

## Kaikkurichi, Pudukottai – 622 303.

## DEPARTMENT OF EEE
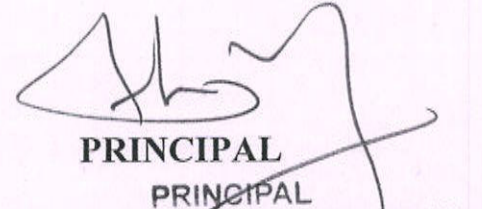
## INDIVIDUAL STAFF WORKLOAD (2018-2019) ODD SEMESTER

| S. NO. | NAME OF THE STAFF | SUBJECTS HANDLED | YEAR & DEPT | HOURS ALLOCATED | TOTAL HOURS |
|---|---|---|---|---|---|
| 1. | Mrs.A.PRIMROSE | EE6504 –Electrical Machines-II | III EEE | 5 | 10 |
| | | MG6851- Principle of Management | IV EEE | 5 | |
| 2. | Mrs. SUSILADEVI.S | IC6501- Control Systems | III EEE | 5 | 14 |
| | | EE6701-High Voltage Engineering | IV EEE | 6 | |
| | | EE6711 –Power System Simulation Laboratory | IV EEE | 3 | |
| 3. | Mr. A.ABDUL BASEETH | EE6004- Flexible AC Transmission Systems | IV EEE | 6 | 15 |
| | | EE8391-Electromagnetic Theory | II EEE | 6 | |
| | | EE6512-Electrical Machines Laboratory –II | III EEE | 3 | |
| 4. | Mr. SATHYARAJ.J | EE6501- Power System Analysis | III EEE | 5 | 13 |
| | | EE6703-Special Electrical Machines | IV EEE | 5 | |
| | | EE8311-Electrical Machines-I Laboratory | II EEE | 3 | |
| 5. | Ms.K.A.MUTHULAKSHMI | EC8353-Electron Devices and Circuits | II EEE | 5 | 10 |
| | | EE8351- Digital Logic Circuits | II EEE | 5 | |
| 6. | Mrs.R.AKILANDESWARI | ME6701-Power Plant Engineering | III EEE | 5 | 13 |
| | | EE6702- Protection and Switchgear | IV EEE | 5 | |
| | | EE6511- Control and Instrumentation Laboratory | III EEE | 3 | |
| 7. | Ms.S.DEVAKI | EE8301-Electrical Machines-I | II EEE | 6 | 14 |
| | | EC8391-Control Systems Engineering | I CIVIL | 5 | |
| | | EE6511- Control and Instrumentation Laboratory | III EEE | 3 | |

Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

| | | EE6503- Power Electonics | III EEE | 5 | |
|---|---|---|---|---|---|
| 8. | Ms.M.ABIRAMI | EE6711 –Power System Simulation Laboratory | IV EEE | 3 | 10 |
| | | EE6712- Comprehension | IV EEE | 2 | |
| 9. | Mrs.PL.KAVITHA | EE6008- Microcontroller Based System Design | IVEEE | 5 | 10 |
| | | ME8792- Power Plant Engineering | II EEE | 5 | |

**HOD**

**PRINCIPAL**

## COURSE PLAN

| | |
|---|---|
| **Subject code: EE8391** | **Branch/Year/Sem: B.E EEE/II/III** |
| **Subject Name: Electromagnetic Theory** | **Batch: 2017-2021** |
| **Staff Name: Mr. A.ABDUL BASEETH** | **Academic year: 2018-2019** |

### COURSE OBJECTIVE

- To describe the basic mathematical concepts related to electromagnetic vector fields.
- To describe the basic concepts about electrostatic fields, electrical potential, energy density and their applications.
- To acquire the knowledge in magneto static fields, magnetic flux density, vector potential and its applications.
- To describe the different methods of emf generation and Maxwell's equations
- To describe the basic concepts electromagnetic waves and characterizing parameters.
- To describe and compute electromagnetic fields and apply them for design and analysis of electrical equipment and systems.

### TEXT BOOK:

T1.Mathew N. O. Sadiku, 'Principles of Electromagnetics', 6th Edition, Oxford University Press Inc. Asian edition, 2015.

T2.William H. Hayt and John A. Buck, 'Engineering Electromagnetics', McGraw Hill Special Indian edition, 2014.

T3.Kraus and Fleish, 'Electromagnetics with Applications', McGraw Hill International Editions, Fifth Edition, 2010.

### REFERENCES:

R1.V.V.Sarwate, 'Electromagnetic fields and waves', First Edition, Newage Publishers, 1993.

R2.J.P.Tewari, 'Engineering Electromagnetics - Theory, Problems and Applications', Second Edition, Khanna Publishers.

R3.Joseph. A.Edminister, 'Schaum's Outline of Electromagnetics, Third Edition (Schaum's Outline Series), McGraw Hill, 2010.

R4.S.P.Ghosh, Lipika Datta, 'Electromagnetic Field Theory', First Edition, McGraw Hill Education(India) Private Limited, 2012.

R5.K A Gangadhar, 'Electromagnetic Field Theory', Khanna Publishers; Eighth Reprint : 2015

### WEB RESOURCES

W1: https://en.wikipedia.org/wiki/List_of_textbooks_in_electromagnetism
W2: https://science.nasa.gov/ems/02_anatomy

### TEACHING METHODOLOGIES:

- ➢ BB     - BLACK BOARD
- ➢ PPT     - POWER POINT PRESENTATION

Dr. **S.THILAGAVATHI** M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

| | L | T | P | C |
|---|---|---|---|---|
| **EE8391 ELECTROMAGNETIC THEORY** | 2 | 1 | 0 | 3 |

## UNIT I ELECTROSTATICS – I                                               12
Sources and effects of electromagnetic fields – Coordinate Systems – Vector fields –Gradient, Divergence, Curl – theorems and applications – Coulomb's Law – Electric field intensity – Field due to discrete and continuous charges – Gauss's law and applications.

## UNIT II ELECTROSTATICS – II                                              12
Electric potential – Electric field and equip Potential plots, Uniform and Non-Uniform field, Utilization factorElectric field in free space, conductors, dielectrics - Dielectric polarization – Dielectric strength - Electric field in multiple dielectrics – Boundary conditions, Poisson's and Laplace's equations, Capacitance, Energy density, Applications.

## UNIT III MAGNETOSTATICS                                                  12
Lorentz force, magnetic field intensity (H) – Biot–Savart's Law – Ampere's Circuit Law – H due to straight conductors, circular loop, infinite sheet of current, Magnetic flux density (B) – B in free space, conductor, magnetic materials – Magnetization, Magnetic field in multiple media – Boundary conditions, scalar and vector potential, Poisson's Equation, Magnetic force, Torque, Inductance, Energy density, Applications.

## UNIT IV ELECTRODYNAMIC FIELDS                                            12
Magnetic Circuits – Faraday's law – Transformer and motional EMF – Displacement current – Maxwell's equations (differential and integral form) – Relation between field theory and circuit theory – Applications.

## UNIT V ELECTROMAGNETIC WAVES                                             12
Electromagnetic wave generation and equations – Wave parameters; velocity, intrinsic impedance, propagation constant – Waves in free space, lossy and lossless dielectrics, conductors- skin depth - Poynting vector – Plane wave reflection and refraction – Standing Wave – Applications.

                                                              TOTAL : 60 PERIODS

**Faculty Incharge**

HoD/EEE

HOD EEE
SRI BHARATHI ENGINEERIN
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

| Topic No | Topic Name | Books For reference | Page No | Teaching Methodology | No of periods required | Cumulative periods |
|---|---|---|---|---|---|---|
| **UNIT I ELECTROSTATICS – I** | | | | | | (13) |
| 1 | Sources and effects of electromagnetic fields | R3 | T1(3-19) | BB | 1 | 1 |
| 2 | Coordinate Systems | R3 | T1(29-46) | BB | 1 | 2 |
| 3 | Vector fields | R3 | T1(65-70) | BB | 1 | 3 |
| 4 | Gradient & Curl | R3 | T1(71-78) | BB | 1 | 4 |
| 5 | Divergence theorems and applications | R3 | T1(79-105) | BB | 1 | 5 |
| 6 | Coulomb's Law | R3 | T1(106-111) | BB | 1 | 6 |
| 7 | Electric field intensity | R3 | T1(113-124) | BB | 1 | 7 |
| 8 | Field due to discrete and continuous charges | R3 | T1(124-126 ) | BB | 1 | 8 |
| 9 | Gauss's law and applications | R3 | T1(126-129) | BB | 1 | 9 |
| 10 | Sources and effects of electromagnetic fields | R3 | T1(129-134) | BB | 1 | 10 |
| 11 | Overview of electrostatics-1 | R3 | T1 | BB | 1 | 11 |
| 12 | Seminar topic on theorems | R3 | T1 | BB | 1 | 12 |
| 13 | Tutorial | R3 | T1 | BB | 1 | 13 |

**LEARNING OUTCOME:**
**At the end of unit , the students will be able to**
- Know the fundamentals of  electromagnetic fields.
- Understand the concept of Theorems.
- Define the electric and magnetic fields.

| Topic No | Topic Name | Books For reference | Page No | Teaching Methodology | No of periods required | Cumulative periods |
|---|---|---|---|---|---|---|
| **UNIT II ELECTROSTATICS - II** | | | | | | (13) |
| 14 | Electric potential Capacitance | R4 | T1(135-140) | BB | 2 | 15 |
| 15 | Electric field and equip Potential plots | R4 | T1(141-144) | BB | 2 | 17 |
| 16 | Uniform and Non-Uniform field, Utilization factor | R4 | T1(168-169) | BB | 2 | 19 |
| 17 | Electric field in free space, conductors, dielectrics polarization | R4 | T1(170-175) | BB | 1 | 20 |
| 18 | Dielectric polarization & Dielectric strength | R4 | T1(179-182) | BB | 1 | 21 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19 | Electric field in multiple dielectrics Boundary conditions | R4 | T1(190-210) | BB | 2 | 23 |
| 20 | Poisson's and Laplace's equations Energy density, Applications | R4 | T1(233-246) | BB | 2 | 25 |
| 21 | Tutorial | R4 | T1 | BB | 1 | 26 |

**LEARNING OUTCOME:**

**At the end of unit, the students will be able to**
- Understand the concept of polarization.
- Explain the types of dielectrics.

## UNIT – III MAGNETOSTATICS (13)

| | | | | | | |
|---|---|---|---|---|---|---|
| 22 | Lorentz force, magnetic field intensity (H) | R3 | T1(274-276) | BB | 2 | 28 |
| 23 | Biot–Savart's Law & Amperes Circuit Law | R3 | T1(277-282) | BB | 2 | 30 |
| 24 | H due to straight conductors & circular loop | R3 | T1(285-288) | BB | 1 | 31 |
| 25 | Infinite sheet of current, Magnetic flux density (B) | R3 | T1(293-294) | BB | 2 | 33 |
| 26 | B in free space, conductor, magnetic materials | R3 | T1(296-298) | BB | 1 | 34 |
| 27 | Magnetization, Magnetic field in multiple media | R3 | T1(319-322) | BB | 1 | 35 |
| 28 | Boundary conditions, scalar and vector potential, Poisson's Equation, | R3 | T1(331-344) | BB | 2 | 37 |
| 29 | Magnetic force, Torque, Inductance, Energy density, Applications. | R3 | T1(381-382) | BB | 1 | 38 |
| 30 | Tutorial | R3 | T1 | BB | 1 | 39 |

**LEARNING OUTCOME:**

**At the end of unit , the students will be able to**
- Understand the magnetic field strength
- Gain knowledge about types of magneto statics.
- Define magnetic field related equations.

## UNIT IV ELECTRODYNAMIC FIELDS (13)

| | | | | | | |
|---|---|---|---|---|---|---|
| 31 | Magnetic Circuits — Faradays law | R2 | T1(361-368) | BB | 2 | 41 |
| 32 | Transformer and motional EMF | R2 | T1(386-387) | BB | 2 | 43 |
| 33 | Displacement current | R2 | T1(388-391) | BB | 2 | 45 |

| 34 | Maxwell's equations (differential and integral form) | R2 | T1(397-399) | BB | 2 | 47 |
|----|------|------|------|------|------|------|
| 35 | Relation between field theory and circuit theory | R2 | T1(400-402) | BB | 2 | 49 |
| 36 | Applications and overviews of electro dynamic fields | R2 | T1(400-404) | BB | 2 | 51 |
| 37 | Tutorial | R2 | T1 | BB | 1 | 52 |

**LEARNING OUTCOME:**

**At the end of unit , the students will be able to**
- Understand the concept of electro dynamic fields.
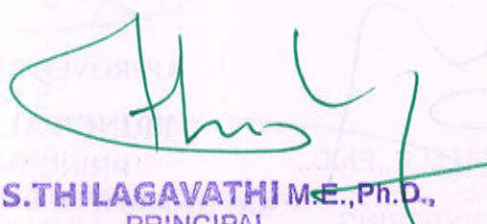- Known about Maxwell's equations.

## UNIT V ELECTROMAGNETIC WAVES (14)

| 38 | Electromagnetic wave generation and equations | R3 | T1(430-432) | BB | 2 | 54 |
|----|------|------|------|------|------|------|
| 39 | Wave parameters | R3 | T1(436-437) | BB | 2 | 56 |
| 40 | Velocity and intrinsic impedance | R3 | T1(436-445) | BB | 2 | 58 |
| 41 | Propagation constant | R3 | T1(454-458) | BB | 2 | 60 |
| 42 | Waves in free space | R3 | T1(459-460) | BB | 2 | 62 |
| 43 | Lossy and lossless dielectrics, conductors | R3 | T1(459-462) | BB | 2 | 64 |
| 44 | Faraday cages and Micro waves(CBS) | W | - | PPT | 1 | 65 |
| 45 | Tutorial | R3 | T1 | BB | 1 | 66 |

**LEARNING OUTCOME:**

**At the end of unit , the students will be able to**
- Understand the Electromagnetic wave generation.
- Know about Propagation constant.

Dr. **S.THILAGAVATHI** M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

## COURSE OUTCOME

### At the end of the course, the student should be able to:

- C203.1: Comprehend the basic mathematical concepts related to electromagnetic vector fields.
- C203.2: Discuss the basic concepts about electrostatic fields, electrical potential, energy density and their applications.
- C203.3: Explain the magneto static fields, magnetic flux density, vector potential and its applications.
- C203.4: Describe the different methods of emf generation and Maxwell's equations.
- C203.5: Demonstrate the basic concepts of electromagnetic waves and characterizing parameter.
- C203.6: Illustrate and compute Electromagnetic fields and apply them for design and analysis of electrical equipment and systems.

## CONTENT BEYOND THE SYLLABUS

Faraday cages and Micro waves.

## ASSESSMENT DETAILS

| ASSESMENT NUMBER | I | II | III |
|---|---|---|---|
| UNIT | 1$^{st}$ & 2nd(half)units | 2$^{nd}$(half) units & 3 units | units 4 & 5$^{th}$ units |

| ASSIGNMENT DETAILS | I | II | III |
|---|---|---|---|
| DATE OF SUBMISSION | 26.07.2018 | 3.9.2018 | 24.9.2018 |

| ASSIGNMENT NUMBER | UNIT | DESCRIPTIVE QUESTIONS/TOPIC (Minimum of 8 Pages) |
|---|---|---|
| 1 | I & II | 1.The three fields are given by A= 4ax+az, B= 4ax-2ay+4az, C= 4ax+6ay+2az. Find the vector and scalar multiple product.<br>2.Given the two points A(x=2,y=3,z=-1) and B(r=4, θ=25°,Φ=120°).Solve the spherical coordinates of A and Cartesian coordinates of B. |
| 2 | III & IV(half) | 1.State and derive poisson's equation and laplace equation.<br>2.State and prove boundary conditions by the application of Maxwell's equations. |
| 3 | IV(half) & V | 1.Obtain the standing wave equation when electromagnetic wave incident normally on a perfect conductor.<br>2.State Maxwell's equations and obtain them in integral and differential form. |

**PREPARED BY**

Mr. A.ABDUL BASEETH , AP/EEE

**VERIFIED BY**

HOD/EEE

HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

APPROVED BY 27/02/18

PRINCIPAL

PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

**(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)**
**Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India**

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## Identification of Curricular Gap & Content Beyond Syllabus(CBS)

Name of the Faculty: Mr. A.ABDUL BASEETH    Course Code & Name: EE8391 & Electromagnetic Theory

Degree & Program: B.E. / EEE            Semester: III            Academic Year: 2018 -2019 / ODD

### I. Mapping of Course Outcomes with POs & PSOs.( before CBS)

#### Table.1 Mapping of COs, C, PSOs with POs - before CBS.

| Course | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| C203.1 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.2 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.3 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.4 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.5 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.6 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |

### II. Identification of content beyond syllabus.

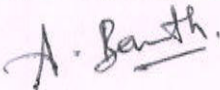#### Table.2 Identification of content beyond syllabus

| Details of Content Beyond Syllabus(CBS) added | POs strengthened/ vacant filled | CO/Unit |
|-----------------------------------------------|----------------------------------|---------|
| Faraday cages and Micro waves | PO6(1) & PO9(1) / Vacant filled | C203.6 / filled |

### III. Mapping of Course Outcomes with POs & PSOs. (After CBS)

#### Table.3 Mapping of COs, C, PSOs with POs- after CBS.

| Course | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| C203.1 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.2 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.3 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.4 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.5 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.6 | 3 | 2 | 2 | 1 | 1 | *2 | 1 | - | *2 | 1 | - | 1 | 3 | 1 | - |
| C203 | 3 | 2 | 2 | 1 | 1 | *2 | 1 | - | *2 | 1 | - | 1 | 3 | 1 | - |

**Signature of the Faculty**

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

HoD/EEE
HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

**(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)**

**Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India**

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## Assignment Question Paper

| Assignment – 01 | | | Date of Issue: | 23.07.2018 | Marks | 20 |
|---|---|---|---|---|---|---|
| Course code | EE8391 | Course Title | ELECTROMAGNETIC THEORY | | | |
| Year | II | Semester/Section | III / A | Date of Submission: | | 26.07.2018 |

| Q.No | Questions | CO |
|---|---|---|
| 1 | 1.The three fields are given by A= 4ax+az, B= 4ax-2ay+4az, C= 4ax+6ay+2az. Find the vector and scalar multiple product. | C203.1 |
| 2 | 2.Given the two points A(x=2,y=3,z=-1) and B(r=4, θ=25°,Φ=120°).Solve the spherical coordinates of A and Cartesian coordinates of B. | C203.1 |

A. Basth (Mr. A. ABDUL BASEETH)

**Name and Signature of the Faculty Incharge**

**HoD/EEE**

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

**(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)**

**Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India**

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### Assignment Answer Sheet

Name of the Student : PARTHIKA·S

AU Register Number: 912617105002

| Assignment – 01 | | | Date of Issue: | 23.07.2018 | Marks | 20 |
|---|---|---|---|---|---|---|
| **Course code** | EE8391 | **Course Title** | ELECTROMAGNETIC THEORY | | | |
| **Year** | II | **Semester/Section** | III / A | **Date of Submission:** | 26.07.2018 | |

| Q.No | Questions | CO |
|---|---|---|
| 1 | 1.The three fields are given by A= 4ax+az, B= 4ax-2ay+4az, C= 4ax+6ay+2az. Find the vector and scalar multiple product. | C203.1 |
| 2 | 2.Given the two points A(x=2,y=3,z=-1) and B(r=4, θ=25°,Φ=120°).Solve the spherical coordinates of A and Cartesian coordinates of B. | C203.1 |

### Mark Allocation

| Rubrics | Marks Allocated | Marks obtained |
|---|---|---|
| Content Quality | 10 | 8 |
| Presentation Quality | 5 | 4 |
| Timely submission | 5 | 5 |
| Total marks | 20 | 17 |

A. Barth.

(MR. A. ABDUL BASEETH)

**Name and Signature of the Faculty Incharge**

**HoD/EEE**

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## Tutorial Answer Sheet

**Name of the Student :** NAZEERA BANU. I

**AU Register Number:** 912617105001

| Tutorial – 03 | | | Date of Issue: | 06.08.2018 | Marks | 30 |
|---|---|---|---|---|---|---|
| Course code | EE8391 | Course Title | ELECTROMAGNETIC THEORY | | | |
| Year | II | Semester | III | Date of Submission: | 10.08.2018 | |

| Q.No | Questions | CO |
|---|---|---|
| 1 | Find the energy stored in the solenoid having 50cm long and 5cm in diameter and is wound with 2000 turns of wire, carrying a current of 10A. | C203.3 |
| 2 | A cast steel (relative permeability 1000) ring of 0.2m mean diameter and 3 sq.cm in cross-section has a winding of 200 turns. Find the current required to produce a flux of 375 micro webers. | C203.3 |
| 3 | Evaluate the loop inductance per km of a single phase transmission circuit comprising two parallel conductor spaced 1m apart and with diameters 0.5 cm and 0.8 cm respectively. | C203.3 |

## Mark Allocation

| Rubrics | Marks Allocated | Marks obtained |
|---|---|---|
| Problem solving approach | 20 | 18 |
| Correctness of Answer | 5 | 05 |
| Timely submission | 5 | 04 |
| Total marks | 30 | 27 |

(MT. A. ABDUL BASEETH)

**Name and Signature of the Faculty Incharge**

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

HoD/EEE
HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

**(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)**

**Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India**

## DEPARTMENT OF ELECTRICAL AND ELECRONICS ENGINEERING

## Tutorial Question Paper

| Tutorial – 03 | | | Date of Issue: | 06.08.2018 | **Marks** | 30 |
|---|---|---|---|---|---|---|
| **Course code** | EE8391 | **Course Title** | ELECTROMAGNETIC THEORY | | | |
| **Year** | II | **Semester** | III | **Date of Submission:** | 10.08.2018 | |

| Q. No | Questions | CO |
|---|---|---|
| 1 | Find the energy stored in the solenoid having 50cm long and 5cm in diameter and is wound with 2000 turns of wire,carrying a current of 10A. | C203.3 |
| 2 | A cast steel (relative permeability 1000) ring of 0.2m mean diameter and 3 sq.cm in cross-section has a winding of 200 turns. Find the current required to produce a flux of 375 micro webers. | C203.3 |
| 3 | Evaluate the loop inductance per km of a single phase transmission circuit comprising two parallel conductor spaced 1m apart and with diameters 0.5 cm and 0.8 cm respectively. | C203.3 |

(Mr. A . ABDUL BASEETH)

**Name and Signature of the Faculty Incharge**

HoD/EEE

HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)

Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

## IQAC Academic Audit Form

### ACADEMIC YEAR: 2018-2019 ODD SEMESTER

| Name of Department : | EEE | Year / Sem : | II/III | No. of Students Registered : | 09 |
|---|---|---|---|---|---|

Details of Examination : CT-1 / CT-2 / CT-3 / Model Test

| S.No. | Course Code | List of Reg.No Verified | Course Log Book Verified (Y / N) | Course File Verified (Y / N) | No of students passed | No of Absentees | No of Failures | Pass % | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 1 | MA8353 | 912617105007 | Y | Y | 4 | 2 | 3 | 57.14% | — |
| 2 | EE8351 | 912617105005 | Y | Y | 6 | 2 | 1 | 85.71% | — |
| 3 | EE8391 | 912617105006 | Y | Y | 5 | — | 4 | 55.5% | — |
| 4 | EE8301 | 912617105302 | Y | Y | 5 | 2 | 2 | 71.42% | — |
| 5 | ME8792 | 912617105001 | Y | Y | 6 | 2 | 1 | 85.71% | — |
| 6 | EC8353 | 912617105301 | Y | Y | 4 | 1 | 4 | 50% | — |

### Verified by

External Member Name and Signature: P·Dn [P·Dennis Hora, AP/CIVIL]

Internal Member Name and Signature: J·Sathyaraj – J·Sue

Overall Remarks:

Concentrate more on results for the subjects MA8353 & EE8391

HoD/ EEE
HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

IQAC Coordinator 03/09/18

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurichi - 622 303, Pudukkottai Dt.

Principal
PRINCIPAL
SRI BHARATHI ENGINEERII
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai, India)

Kaikkurichi, Pudukkottai – 622 303

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENINEERING

### STUDENT FEEDBACK ON FACULTY

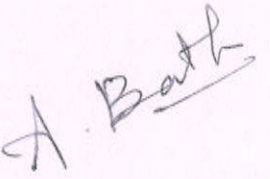| S.NO. | DESCRIPTION | SCORED OUT OF 4 | SCORED OUT OF 100 |
|---|---|---|---|
| 1. | The Syllabus coverage as prescribed by University. | 3.89 | 97.25 |
| 2. | Technical knowledge of the teacher. | 3.78 | 94.5 |
| 3. | Teacher's communication skill. | 3.89 | 97.25 |
| 4. | Regularity in taking classes. | 3.56 | 89 |
| 5. | Helping the Students in conducting the experiment through set of instructions and Demonstrations. | 3.67 | 91.75 |
| 6. | Tendency of inviting opinion and questions on subject matter from students. | 3.56 | 89 |
| 7. | Knowledge of the Teacher in latest development of field. | 3.67 | 91.75 |
| 8. | Perfectness of Valuation. | 3.67 | 91.75 |
| | **OVERALL SCORE** | 3.71 | 92.78 |

Dr. S.THILAGAVATHI M.E.,Ph.D.,
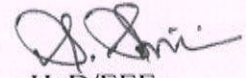PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# REPORT SHEET

| S .NO | REG.NO | NAME | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 912617105001 | NAZEERA BANU.I | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 4 |
| 2. | 912617105002 | PARTHIKA.S | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 |
| 3. | 912617105003 | PRIYA.T | 4 | 4 | 3 | 3 | 4 | 4 | 4 | 3 |
| 4. | 912617105004 | SAJINA.K | 4 | 3 | 4 | 4 | 3 | 4 | 3 | 4 |
| 5. | 912617105005 | SELSIYA.R | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 |
| 6. | 912617105006 | THENMOZHI.J | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 3 |
| 7. | 912617105007 | VANITHA.E | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 4 |
| 8. | 912617105301 | PRASANNA P | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 3 |
| 9. | 912617105302 | SIYAMALADEVI S | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 4 |
| | | **AVERAGE** | 3.89 | 3.78 | 3.89 | 3.56 | 3.67 | 3.56 | 3.67 | 3.67 |
| | | **PERCENTAGE** | 97.25 | 94.5 | 97.25 | 89 | 91.75 | 89 | 91.75 | 91.75 |

| EXCELLENT | VERY GOOD | GOOD | AVERAGE | POOR |
|---|---|---|---|---|
| 4 | 3 | 2 | 1 | 0 |

Signature of the faculty

HoD/EEE
HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
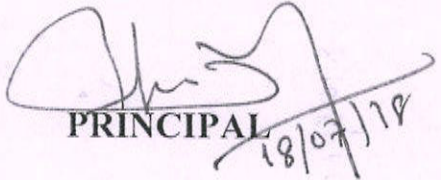## KAIKKURICHI, PUDUKKOTTAI – 622 303.

**Circular**                    Date: 18-07-2018

The first cycle test will be conducted on 28.07.2018, 30.07.2018 31.07.2018 & 01.08.2018 for the III, V & VII semester (II, III & IV year) students.

The following instructions are to be followed by the faculty members.

- Total marks for which the question paper to be set will be for 50 marks.

- It is the responsibility of the question paper setter to take the Xerox copies of the required number of question papers with the help of Mr. Pandi. S & Ms. Anusha. G and it should be handed over to the Exam Coordinator Mr. J. Sathyaraj A.P/ EEE on or before 26.07.2018.

- The Exam Coordinators (exam cell) are requested to make necessary arrangements (hall arrangements, invigilation duty etc.,) for conducting the test.

- Faculty members are requested to handover the valued answer scripts to the students on or before 02.08.2018 and the class in-charges are requested to send the consolidated mark sheet along with the attendance percentage to the parents on or before 03-08-2018.

PRINCIPAL
18/07/18

Cc:
- All faculty
- Exam cell
- Office file

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
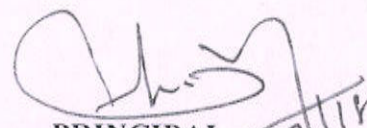COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
## KAIKKURICHI, PUDUKKOTTAI – 622 303.

## Circular

Date: 18-07-2018

The first cycle test will be conducted on 28.07.2018, 30.07.2018 31.07.2017 & 01.08.2018 for the III semester (II year) B.E/ B.Tech students for 50 marks as per the time table given below. Students are directed to prepare well and score good marks.

| Date | 10.00 am -11.30 am | 2.30 pm -4.00 pm |
|---|---|---|
| 28.07.2018 | **CE8302** Fluid Mechanics (Civil)<br>**EE8351** Digital Logic Circuits (EEE)<br>**EC8391** Control Systems Engineering (ECE)<br>**COACHING ( CSE & IT)** | **CE8392** Engineering Geology(Civil)<br>**CS8392** Object Oriented Programming (CSE&IT)<br>**ME8792** Power Plant Engineering (EEE)<br>**EC8351** Electronic Circuits- I(ECE) |
| 30.07.2018 | **CE8351** Surveying (Civil)<br>**CS8391** Data Structures (CSE & IT)<br>**EC8353** Electronic Devices and Circuits (EEE)<br>**EC8392** Digital Electronics (ECE) | **CE8391** Construction Materials (CIVIL)<br>**EC8395** Communication Engineering (CSE)<br>**EC8394** Analog and Digital Communication (IT)<br>**EE8301** Electrical Machines - I (EEE)<br>**EC8393** Fundamentals of Data Structures In C (ECE) |
| 31.07.2018 | **COACHING** | **MA8353** Transforms and Partial Differential Equations (Civil, EEE)<br>**MA8351** Discrete Mathematics (CSE & IT)<br>**MA8352** Linear Algebra and Partial Differential Equations (ECE) |
| 01.08.2018 | **COACHING** | **CE8301** Strength of Materials I (Civil)<br>**CS8351** Digital Principles and System Design (CSE & IT)<br>**EE8391** Electromagnetic Theory (EEE)<br>**EC8352** Signals and Systems (ECE) |

PRINCIPAL

Cc:
- All II year B.E / B.Tech Classes
- All faculty
- Exam cell
- Notice Board
- Office file

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)
**Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India**

| Cycle Test - I | | | Date/Session | 01.08.2018/AN | Marks | | 50 |
|---|---|---|---|---|---|---|---|
| **Course code** | EE8391 | **Course Title** | ELECTROMAGNETIC THEORY | | | | |
| **Regulation** | 2017 | **Duration** | 90 minutes | **Academic Year** | | 2018-2019 | |
| **Year** | II | **Semester** | III | **Department** | | EEE | |

## COURSE OUTCOMES

| | |
|---|---|
| **CO1:** | Comprehend the basic mathematical concepts related to electromagnetic vector fields. |
| **CO2:** | Discuss the basic concepts about electrostatic fields, electrical potential, energy density and their applications. |
| **CO3:** | Explain the magneto static fields, magnetic flux density, vectorpotential and its applications. |
| **CO4:** | Describe the different methods of emf generation and Maxwell's equations. |
| **CO5:** | Demonstrate the basic concepts of electromagnetic waves and characterizing parameter. |
| **CO6:** | Illustrate and compute Electromagnetic fields and apply them for design andanalysis of electrical equipment and systems. |

| Q.No. | Question | CO | BTS |
|---|---|---|---|
| | **PART A** | | |
| | **(Answer all the Questions 7 x 2 = 14 Marks)** | | |
| 1 | Define Stokes Theorem. | C203.1 | K1 |
| 2 | State Divergence Theorem. | C203.1 | K1 |
| 3 | Identify the unit vector and its magnitude corresponding in the given vector A=5ax+ ay+ 3az | C203.1 | K1 |
| 4 | What is co-ordinate system and its types? | C203.1 | K2 |
| 5 | State coulomb's law. | C203.2 | K1 |
| 6 | State Gauss law. | C203.2 | K1 |
| 7 | Define Electric Field intensity. | C203.2 | K1 |
| | **PART B** | | |
| | **(Answer all the Questions 2 x 13 = 26 Marks)** | | |
| 8a | Summarize about the curl of a vector field in cylindrical and spherical coordinates. | C203.1 | K1 |
| | OR | | |
| 8b | State and prove divergence theorem for a given differential volume element. | C203.1 | K1 |
| 9a | Given the two points A(x=2,y=3,z=-1) and B(r=4, θ=25°,Φ=120°).Solve the spherical coordinates of A and Cartesian coordinates of B. | C203.1 | K2 |
| | OR | | |
| 9b | The three fields are given by A= 4ax+az, B= 4ax-2ay+4az, C= 4ax+6ay+2az. Find the vector and scalar multiple product. | C203.1 | K2 |
| | **PART C** | | |
| | **(Answer all the Questions 1 x 10 = 10 Marks)** | | |
| 10a | Explain the importance of poison's and Laplace's equation in electromagnetic with necessary equations. | C203.2 | K2 |
| | OR | | |
| 10b | Explain about any two applications of Gauss law and prove it. | C203.2 | K2 |

**Course Faculty**

(Name /Sign / Date)

(Mr. A. ABDUL BASEETH)

Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

**HoD**

(Name /Sign / Date)

(Mrs. S. SUSILADEVI)
HOD EEE
SRI BHARATHI ENGINEERIN
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

SRI BHARATH ENGINEERING COLLEGE FOR WOMEN

Cycle Test - 1

Course code :: EE8391
Course Title :: Electromagnetic Theory
Department : EEE (2017 R)

Date:: 01/8/18 - AN
marks: 50
Year/sem : II | III

## Answer Key

PART - A

1) Define Stokes Theorem::

The line integral of a vector around a closed path is equal to the surface integral of the normal component of it's curl over any closed surface

$$\oint H \cdot dl = \oiint_s \nabla \times H \, ds$$

2) State Divergence Theorem::

The volume integral of the divergence of a vector field over a volume is equal to the surface integral of the normal component of this vector over the surface bounding the volume.

$$\oiiint_V \nabla \cdot A \, dr = \oiint_s A \cdot ds$$

3) Identify the unit vector & Magnitude

$$A = 5a_x + a_y + 3a_z$$

$$U_A = \frac{\vec{A}}{|A|}$$

$$\Rightarrow \frac{5a_x + a_y + 3a_z}{\sqrt{25+1+9}} = \frac{5a_x + a_y + 3a_z}{\sqrt{35}}$$

Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

4) What is co-ordinate system & it's types:-

Arrangement of reference lines or curves used to identify the location of points in space.

Types.
1. cartesian co-ordinate system
2. Cylindrical    "    "
3. Spherical    "    "

5) State coulomb's Law.

The force between two very small objects separated by a distance which is large compared to their size is proportional to the charge on each and inversely proportional to the square of the distance between them

$$F = \frac{Q_1 Q_2}{4\pi \varepsilon r^2} \bar{a}_{12}$$

6. Gauss Law.

The electric flux passing through any closed Surface is equal to the total charge enclosed by that Surface.    $x = Q$.

7. Define Electric Field intensity.

Electric field intensity is defined as the electric force per unit positive charge. It is denoted by E

$$E = \frac{F}{Q} \quad N/c \text{ (or) } V/m.$$

$$E = \frac{Q}{4\pi \varepsilon r^2}$$

8 (a)  curl of a Vector field in cylindrical and spherical coordinates.

cylindrical :-

$$\nabla \times \vec{A} = \frac{1}{\rho} \begin{vmatrix} \vec{a_\rho} & \rho \vec{a_\phi} & \vec{a_z} \\ \partial/\partial\rho & \partial/\partial\phi & \partial/\partial z \\ A_\rho & \rho A_\phi & A_z \end{vmatrix}$$
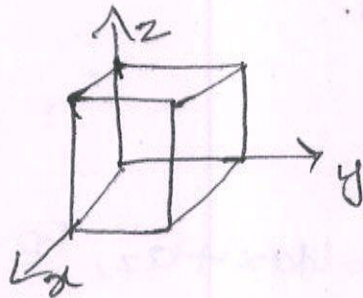
spherical system :-

$$\nabla \times \vec{A} = \frac{1}{r^2 \sin\theta} \begin{vmatrix} \vec{a_r} & r\vec{a_\theta} & r\sin\theta \vec{a_\phi} \\ \partial/\partial r & \partial/\partial\theta & \partial/\partial\phi \\ A_r & rA_\theta & r\sin\theta A_\phi \end{vmatrix}$$

(or)

8(b)  divergence Theorem :-

$$\oiint \vec{F} \hat{n} \, ds = \oiiint (\nabla \cdot \vec{F}) \, dv$$



$$\vec{F} = F_x \vec{a_x} + F_y \vec{a_y} + F_z \vec{a_z} \longrightarrow ①$$

$$\nabla = \partial/\partial x \, \vec{a_x} + \frac{\partial}{\partial y} \vec{a_y} + \partial/\partial z \, \vec{a_z} \longrightarrow ②$$

$$\nabla \cdot \vec{F} = \frac{\partial F_x}{\partial x} + \frac{\partial F_y}{\partial y} + \frac{\partial F_z}{\partial z} \longrightarrow ③$$

Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

$$\iiint (\nabla \cdot \vec{F}) \, dv = \iint F_{sx} \cdot ds_x + \iint F_{sy} \cdot ds_y + \iint F_{sz} \cdot ds_z$$

$$\boxed{\iiint (\nabla \cdot \vec{F}) \, dv = \iint \vec{F} \hat{n} \, ds .}$$

9(a)   A$(x=2, y=3, z=-1)$

B$(r=4, \theta=25^\circ, \phi=120^\circ)$

$$x = r \sin\theta \cos\phi$$
$$y = r \sin\theta \sin\phi$$
$$z = r \cos\theta$$

$$x = 4 \sin(25^\circ) \cos(120^\circ)$$
$$\Rightarrow -0.21$$

$$y = 4 \cdot \sin(25^\circ) \sin(120^\circ)$$
$$\Rightarrow 1.464$$

$$z = 4 \cos(25^\circ).$$
$$= 3.63 \; //$$

9(b).   Three fields A $= 4a_x + a_z$, B $= 4a_x - 2a_y + 4a_z$

C $= 4a_x + 6a_y + 2a_z$. find the vector and scalar
Multiple product.

<u>Soln :-</u>
(i) Scalar triple product.

$$\vec{A} \cdot (\vec{B} \times \vec{C}) = \begin{vmatrix} A_x & A_y & A_z \\ B_x & B_y & B_z \\ C_x & C_y & C_z \end{vmatrix}$$

$$= \begin{vmatrix} 4 & 0 & 1 \\ 4 & -2 & 4 \\ 4 & 6 & 2 \end{vmatrix}$$

$$= 4(-4-24)-0(8-16)+1(24+8)$$

$$\Rightarrow 4(-28)-0(-8)+1(32)$$

$$\Rightarrow -112+0+32$$

$$\Rightarrow -80/.$$

(ii) Vector triple product:

$$\vec{A}\times(\vec{B}\times\vec{C}) = \vec{B}(\vec{A}\cdot\vec{C}) - \vec{C}(\vec{A}\cdot\vec{B}).$$

$$\vec{A}\cdot\vec{C} = (4a_x+a_z)\cdot(4a_x+6a_y+2a_z)$$

$$\Rightarrow 16+0+2 = 18$$

$$\vec{A}\cdot\vec{B} = (4a_x+a_z)\cdot(4a_x-2a_y+4a_z)$$

$$\Rightarrow 16-0+4 = 12$$

$$\vec{B}(\vec{A}\cdot\vec{C}) = (4a_x-2a_y+4a_z)(18)$$

$$= 72\cdot\vec{a_x}-36\vec{a_y}+72\vec{a_z}$$

$$\vec{C}(\vec{A}\cdot\vec{B}) = (4\vec{a_x}+6\vec{a_y}+2\vec{a_z})(12)$$

$$\Rightarrow 48\vec{a_x}+72\vec{a_y}+24\vec{a_z}$$

$$\Rightarrow (72\vec{a_x}-36\vec{a_y}+72\vec{a_z}) - (48\vec{a_x}+72\vec{a_y}+24\vec{a_z})$$

$$\Rightarrow 24\vec{a_x}-36\vec{a_y}+48\vec{a_z}$$

$$\vec{A}\times(\vec{B}\times\vec{C}) \Rightarrow 12(2\vec{a_x}-3\vec{a_y}+4\vec{a_z})$$

4.

# PART - C

**10.b) Gauss Law & Applications.**

(i) It's used to determine enclosed charge if the value of $D$ (or) $E$ are known.

(ii) It's used to determine electric field (or) flux $\psi$ from the concept of enclosed charge and surface.

$$\iint \vec{D} \cdot \hat{n} \, ds = Q = \psi \longrightarrow \text{①}$$

$$D = \varepsilon E \longrightarrow \text{②}$$

$$E = \frac{Q}{4\pi \varepsilon r^2} \longrightarrow \text{③}$$

$$D = \frac{Q}{4\pi r^2} \longrightarrow \text{④}$$

$$= Q$$

Hence proved.

$$D = Dr \, \vec{ar} + D\theta \, \vec{a\theta} + D\phi \, \vec{a\phi} \longrightarrow \text{⑤}$$

$$ds = r^2 \sin\theta \, d\theta \, d\phi \, \vec{ar} \longrightarrow \text{⑥}$$

---

**10.(a) Laplace and Poissons equation.**

$$\iint \vec{D} \cdot \hat{n} \, ds = Q \longrightarrow \text{①}$$

from Volume charge density

$$\rho_v = \frac{Q}{V}$$

$$Q = \rho_v \cdot V$$

$$= \iiint \rho_v \cdot dv \longrightarrow \text{②}$$

$$\text{①} = \text{②} \qquad \iint \vec{D} \hat{n} \, ds = \iiint \rho_v \cdot dv \longrightarrow \text{③}$$

By applying divergence theorem,

$$\iint \vec{D} \hat{n} \, ds = \iiint \nabla \cdot D \, dv \rightarrow \text{④}$$

$\text{③=④}$

$$\iiint \rho_v \, dv = \iint \nabla \cdot D \, dv \rightarrow \text{⑤}$$

$$\nabla \cdot D = \rho_v$$

$$\nabla \cdot (\mathcal{E} E) = \rho_v$$

$$\nabla \cdot E = \rho_v / \mathcal{E}$$

$$E = -\nabla V$$

$$\nabla \cdot (-\nabla V) = \rho_v / \mathcal{E}$$

$$-\nabla^2 V = \rho_v / \mathcal{E}, \qquad \nabla^2 V = -\frac{\rho_v}{\mathcal{E}} \ (\text{poissons eqn})$$

Assume $\rho_v = 0$

$$\nabla^2 V = 0 / \mathcal{E}$$

$$\boxed{\nabla^2 V = 0} \quad [\text{Laplace Eqn}]$$

×

A. Barth

FACULTY INCHARGE

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

Cycle Test Answer Book

| Name | SELSIYA·R | | | Year/ Semester | II / III |
|---|---|---|---|---|---|
| Reg No. | 912617105005 | Date/Session | 01/08/18 /AN | Department | EEE |
| Course code | EE8391 | Course Title | Electromagnetic Theory | | |
| Cycle Test | | CT 1 ✓ | CT 2 ☐ | CT 3 ☐ | Model ☐ |
| Name and Signature of the Invigilator with date | | | Shri 01/08/18 (RAMESH RAJA.S) | | |

Instruction to the Student: Put tick mark to the question attended in the column against question.

| Part A | | | Part B / Part C | | | | | Total Marks |
|---|---|---|---|---|---|---|---|---|
| Q. No. | ✓ | Marks | Q. NO. | ✓ | a Marks | ✓ | b Marks | |
| 1 | ✓ | 2 | 11 | ✓ | 12 | | | 12 |
| 2 | ✓ | 2 | 12 | | | ✓ | 12 | 12 |
| 3 | ✓ | 2 | 13 | ✓ | 10 | | | 10 |
| 4 | ✓ | 0 | 14 | | | | | |
| 5 | ✓ | 2 | 15 | | | | | |
| 6 | ✓ | 1 | 16 | | | | | |
| 7 | ✓ | 1 | | Grand Total | | | 34 | |
| 8 | | | | | | | | |
| 9 | | | | A. Basith 2/8/18 (Mr. ABDUL BASEETH·A | | | | |
| 10 | | | 88 | | | | | |
| Total | | 10 | Grand Total | | Name and Signature of the Examiner with date | | | |

| To be filled by the examiner | | | | | | | |
|---|---|---|---|---|---|---|---|
| Course Outcomes | 1 | 2 | 3 | 4 | 5 | 6 | Total |
| Marks allotted | 34 | 16 | | | | | 50 |
| Marks Obtained | 30 | 14 | | | | | 44 |

IQAC Audit - Remarks

P.SUBHA

Name and Signature 18
of the IQAC member

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

## KAIKKURICHI, PUDUKKOTTAI – 622 303

### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
### ACADEMIC YEAR 2018 – 2019 (ODD SEMESTER)
### STUDENTS MARK STATEMENT- CO BASED
### CYCLE TEST-I
### SUBJECT CODE &TITLE:  EE8391 & ELECTROMAGNETIC THEORY

**YEAR/SEM: II/III**                                   **MONTH & YEAR: AUG & 2018**

| S.NO | REG NO | STUDENT NAME | C203.1 (34) | C203.2 (16) | TOTAL (50) | TOTAL (100) |
|------|--------|--------------|-------------|-------------|------------|-------------|
| 1. | 912617105001 | NAZEERA BANU.I | 30 | 16 | 46 | 92 |
| 2. | 912617105002 | PARTHIKA.S | 30 | 15 | 45 | 90 |
| 3. | 912617105003 | PRIYA.T | 10 | 05 | 15 | 30 |
| 4. | 912617105004 | SAJINA.K | 04 | 10 | 14 | 28 |
| 5. | 912617105005 | SELSIYA.R | 30 | 14 | 44 | 88 |
| 6. | 912617105006 | THENMOZHI.J | 30.5 | 16 | 46.5 | 93 |
| 7. | 912617105007 | VANITHA.E | 08 | 10 | 18 | 36 |
| 8. | 912617105301 | PRASANNA P | 10 | 05 | 15 | 30 |
| 9. | 912617105302 | SIYAMALADEVI S | 31 | 12.5 | 43.5 | 87 |

## MARKS RANGE:

| <20 | 20-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 |
|-----|-------|-------|-------|-------|-------|-------|-------|--------|
| — | 3 | 1 | — | — | — | — | 3 | 2 |

| | |
|---|---|
| Total No.of Candidates  Present | 9 |
| Total  No.of   Candidates Absent | NIL |
| Total  No.of   Students Pass | 5 |
| Total  No. of  Students Fail | 4 |
| Percentage of  Pass | 55.5% |

Faculty Incharge

Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

HoD/EEE
HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

PRINCIPAL
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
## (Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)
## Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India
## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## ROOT CAUSE ANALYSIS

Name of the Faculty : Mr. A. ABDUL BASEETH  Course Code & Name: EE8391 & ELECTROMAGN -Tl THEORY

Degree & Program : B.E & EEE  
Cycle Test : I /II/III  
Target : 100 %

Semester : III  
Exam/Month & Year : AUG & 2018  
Achieved : 55.55%

| S.NO | REG NO | NAME OF THE STUDENT | CAUSES FOR FAILURE | CORRECTIVE ACTION TAKEN |
|------|--------|---------------------|--------------------|--------------------------|
| 1. | 912617105003 | PRIYA.T | Due to careless Mistakes | Advised to writing practice in home. |
| 2. | 912617105004 | SAJINA.K | Due to health Issue | Advised to take care of health and study well. |
| 3. | 912617105007 | VANITHA.E | Confused in concepts | Try to practice More in home. |
| 4. | 912617105301 | PRASANNA.P | Due to careless Mistakes | Concentrate More on studies. |
| 5. | | | | |
| 6. | | | | |

Signature of the Faculty Member

Dr. S.THILAGAVATHI M.E., Ph.D.,  
PRINCIPAL  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
Kaikkurchi - 622 303, Pudukkottai Dt.

Signature of the HoD/EEE  
HOD EEE  
SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
KAIKKURICHI,  
PUDUKKOTTAI - 622 303.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

## KAIKKURICHI, PUDUKKOTTAI – 622 303.

**Circular**                                          Date: 03.08.2018

Retest for first cycle test will be conducted from **06.08.2018 to 11.08.2018** for the III, V and VII semester (II, III & IV year) students.
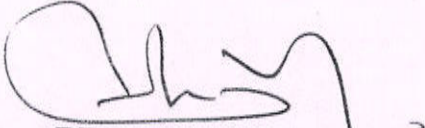
The following instructions are to be followed by the faculty members.

The following instructions are to be followed by the faculty members.

- Total marks for which the question paper to be set will be for 50 marks.
  **(PART A 5X2=10, PART B 2X13=26 & PART C 1X14=14)**
- It is the responsibility of the **question paper** setter to take the Xerox copies of the required number of question papers.
- Concerned Faculty members are requested to conduct the examination as per the scheduled and handover the valued answer scripts to the students on or before **13.08.2018.**

**PRINCIPAL**
03/08/18

Cc:
- All faculty
- Exam cell
- Office file

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

## KAIKKURICHI, PUDUKKOTTAI – 622 303.

### Circular

Date: 03.08.2018

Retest for first cycle test will be conducted from **06.08.2018 to 11.08.2018** for the III semester (II year) B.E students for **50 marks** as per the time table given below. Students are directed to prepare well and score good marks.

| Date | 04.00 pm -05.30 pm |
|---|---|
| 06.08.2018 | MA8353-Transforms and Partial Differential Equations (CIVIL/EEE)<br>EC8393-Fundamentals of Data Structures in C (ECE)<br>EC8395-Communication Engineering(CSE)<br>EC8394-Analog and Digital Communication(IT) |
| 07.08.2018 | CE8391-Construction Materials (CIVIL)<br>EC8351-Electronic Circuits I (ECE)<br>ME8792-Power Plant Engineering (EEE) |
| 08.08.2018 | CE8301-Steength of Materials-I (CIVIL)<br>CS8351-Digital Principles and System Design (CSE/IT)<br>EC8352- Signals and Systems (ECE)<br>EC8353-Electron Devices and Circuits(EEE) |
| 09.08.2018 | CE8351-Surveying(CIVIL)<br>CS8391-Data Structures-(CSE/IT)<br>EC8391-Control System Engineering (ECE)<br>EE8301-Electrical Machines-I(EEE) |
| 10.08.2018 | CE8392-Engineering Geology (CIVIL)<br>CS8392-Object Oriented Programming(CSE/IT)<br>EC8392-Digital Electronics (ECE)<br>EE8391-Electromagnetic Theory(EEE) |
| 11.08.2018 | CE8302-Fluids Mechanics(CIVIL)<br>MA8351-Discrete Mathematics (CSE/IT)<br>MA8352- Linear Algebra and Partial Differential Equations (ECE)<br>EE8351-Digital Logic Circuits(EEE) |

PRINCIPAL

03/08/18

Cc:
- All II year B.E Classes
- All faculty
- Exam cell
- Notice Board
- Office file

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
### (Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)
### Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

| Cycle Test – I (Retest) | | Date/Session | 10.08.2018/AN | Marks | 50 |
|---|---|---|---|---|---|
| Course code | EE8391 | Course Title | ELECTROMAGNETIC THEORY | | |
| Regulation | 2017 | Duration | 90 minutes | Academic Year | 2018-2019 |
| Year | II | Semester | III | Department | EEE |

## COURSE OUTCOMES

| | |
|---|---|
| CO1: | Comprehend the basic mathematical concepts related to electromagnetic vector fields. |
| CO2: | Discuss the basic concepts about electrostatic fields, electrical potential, energy density and their applications. |
| CO3: | Explain the magneto static fields, magnetic flux density, vectorpotential and its applications. |
| CO4: | Describe the different methods of emf generation and Maxwell's equations. |
| CO5: | Demonstrate the basic concepts of electromagnetic waves and characterizing parameter. |
| CO6: | Illustrate and compute Electromagnetic fields and apply them for design andanalysis of electrical equipment and systems. |

| Q.No. | Question | CO | BTS |
|---|---|---|---|
| | **PART A** | | |
| | **(Answer all the Questions 5 x 2 = 10 Marks)** | | |
| 1 | Mention any two sources of electromagnetic fields. | C203.1 | K1 |
| 2 | Define curl of a vector. | C203.1 | K1 |
| 3 | Define potential. | C203.1 | K1 |
| 4 | What is the use of Gauss's Law? | C203.1 | K2 |
| 5 | Write down the magnetic boundary conditions. | C203.2 | K2 |
| | **PART B** | | |
| | **(Answer all the Questions 2 x 13 = 26 Marks)** | | |
| 6a | Using Gauss's law calculate the E due to infinitely large uniformly charged plate. | C203.1 | K1 |
| | OR | | |
| 6b | What are the different co-ordinate system used to represent field vectors? Discuss about them in brief. | C203.1 | K1 |
| 7a | State and prove Gauss's Law. | C203.1 | K1 |
| | OR | | |
| 7b | Derive the electric boundary conditions. | C203.1 | K2 |
| | **PART C** | | |
| | **(Answer all the Questions 1 x 14 = 14 Marks)** | | |
| 8a | Derive an expression for capacitance between two parallel wires. | C203.2 | K2 |
| | OR | | |
| 8b | Discuss Electric field in free space, dielectric and in conductors. | C203.2 | K2 |

A. Barth 9/8/18

**Course Faculty**

(Name /Sign / Date)

(Mr. A. ABDUL BASEETH)

HoD 9/8/18

**HoD**

(Name /Sign / Date)

(Mrs. S. SUSILADEVI
HOD EEE
SRI BHARATHI ENGINEERIN
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

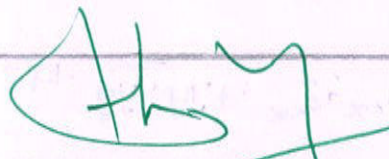EE 8891 – Electromagnetic Theory.
Cycle test – 1 (Retest)
Answer key

1. Scalar quantity (eg :- voltage , current)
   Vector quantity (eg :- velocity, force).

2. Curl of vector is defined as the cross product (or) vector
   Product of a vector A and $\nabla$ operator.

3. Potential at any point as defined as the work done
   is Moving a unit positive charge from infinity to an
   electric field. $V = \dfrac{Q}{4\pi \varepsilon_r}$

4. Gauss law is the electric flux passing through any
   closed surface is equal to the total charge
   enclosed by the surface.

5. a) The normal components of flux density B is
   continous across the boundary.

   b) The tangential component of field intensity H
   is continous across boundary.

Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

**8a** Infinite line charge :-

$$Q = \oint D_s \cdot ds$$

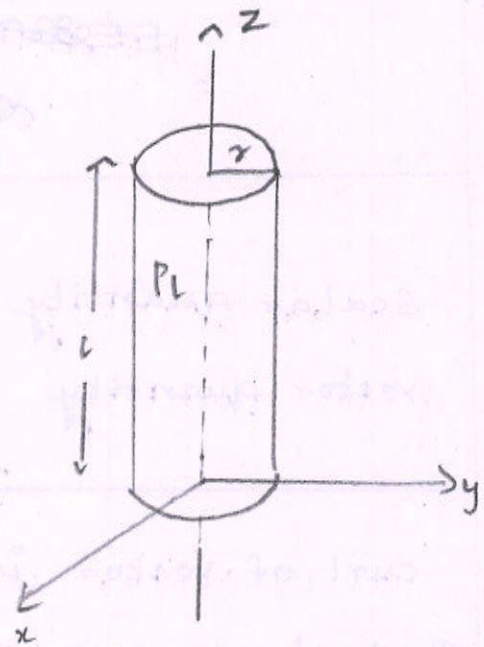$$E = \frac{P_1}{2\pi\varepsilon r} + \frac{P_1}{2\pi\varepsilon(d-r)}$$

$$v = \int E \cdot dr.$$

$$v = \frac{P_1}{\pi\varepsilon} \ln\left(\frac{d-a}{a}\right).$$

$$c = \frac{P_1}{v} = \frac{\pi\varepsilon}{\ln\left(\frac{d-a}{a}\right)} \quad F/m.$$

$$d \gg a \quad c = \frac{\pi\varepsilon}{\ln d/a} \quad F/m.$$

$$c = \frac{\pi\varepsilon_0}{\ln\left(d/a\right)} \quad F/m.$$

---

**8b** co-ordinate system :-

co-ordinate system is a system which is used to represent a point in space.

(i) Rectangular or cartesian co-ordinate (x, y.

(ii) cylindrical coordinate system $(P, \phi, z)$

(iii) spherical co-ordinate $(r, \theta, \phi)$ system.

i) $\bar{r} = x\,\bar{a}_x + y\,\bar{a}_y + z\,\bar{a}_z$

$\bar{a}_x, \bar{a}_y \, \bar{a}_z$ are unit vector.

volume $dv = dx\,dy\,dz$.

ii) The $dl = \sqrt{(dp^2)+(pd\phi)^2+(dz)^2}$

$$ds = p\,dp\,d\phi$$

$$dv = p\,dp\,d\phi\,dz.$$

(iii) differential length $\cdot$ $dl = \sqrt{dr^2+(r\,d\theta)^2+(r\sin\theta\,d\phi)^2}$

$$ds = dr\cdot r\,d\phi = r\,dr\,d\theta.$$

$$= dr\cdot r\sin\theta\,d\theta.$$

$$= r^2\sin\theta\,d\theta\,d\phi.$$

The differential volume $dv = dr\cdot r\,d\theta\cdot r\sin\theta\,d\phi$

$$dv = r^2\sin\theta\,d\theta\,d\phi\,dr.$$

9a. Gauss's law :- The electric flux passing through any clos
Surface is equal to total charge enclosed by the surface.

$$d\chi = D_s\,\text{normal}\,ds.$$

$$d\chi = D_s\cdot ds.$$

$$\chi = \int d\chi = \oint D_s\cdot ds$$

$$\chi = Q$$

Volume density.
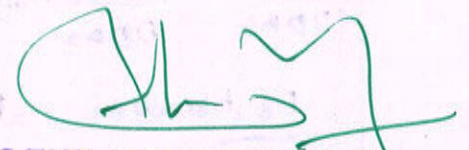
$$\chi = \int P_v\cdot dv = Q.$$

The electricity field intensity $Q$, $E = \dfrac{Q}{4\pi\varepsilon r^2}$

$$D = \varepsilon E$$

$$D = \dfrac{Q}{4\pi r^2}.$$

$$\therefore \chi = Q$$

The divergence of electric flux density is equal to

9b. Boundary condition :-

condition 1 :

9A
$$E_{t_1} = E_{t_2}$$

condition 2 :
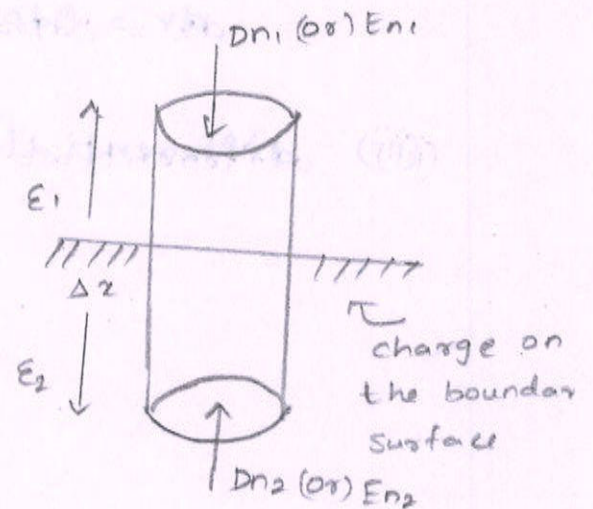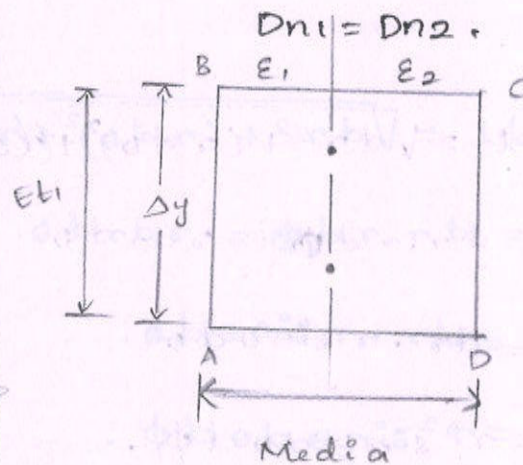
$$D_{n_1} = D_{n_2}.$$



Media

Let us consider $E_{t_1}, E_{t_2} \Rightarrow$ tangential component of Electric field intensity at Media ① & ②.

$D_{n_1} = D_{n_2} \Rightarrow$ Normal component of Electric field densit at media ① & ②.    $V = \int E \, dl = 0.$

from Gauss law,    $\iint \bar{D} \cdot \hat{n} \, ds = \iint \rho_v \, dv.$

$$\iint D_{n_1} \, ds - \iint D_{n_2} \, ds = \iint \rho_v \, dv \longrightarrow ④.$$

$$D_{n_1} = D_{n_2}$$

$$\frac{E_{t_1}}{D_{n_2}} = \frac{E_{t_2}}{D_{n_2}} \longrightarrow ⑤$$

$$\frac{E_1 \tan \theta_1}{D_1} = \frac{E_2}{D_2} \tan \theta_2$$

$$\frac{\tan \theta_1}{\tan \theta_2} = \frac{E_2 \times \varepsilon_0 \, \varepsilon_{r_1} \, E_1}{E_1 \times E_0 \, \varepsilon_{rr} \, E_2}$$

$$\frac{\tan \theta_1}{\tan \theta_2} = \frac{\varepsilon_{r_1}}{\varepsilon_{r_2}}.$$

10a. capacitance of parallel conductor (Transmission line):-
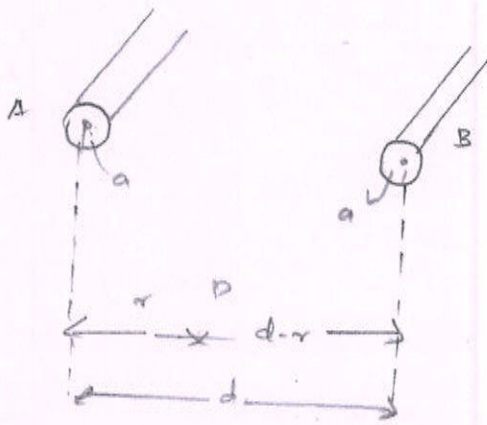
The potential difference b/w conduc:



$$V = -\int E \cdot dr$$

$$= \frac{-P_1}{2\pi\varepsilon} \int_{d-a}^{a} \left( \frac{1}{r} + \frac{1}{d-r} \right) dr$$

$$= \frac{-P_1}{\pi\varepsilon} \ln\left( \frac{d-a}{a} \right)$$

The capacitance per length b/w two parallel conducto

$$c = \frac{P_i}{V} = \frac{\pi\varepsilon}{\ln\left( \frac{d-a}{a} \right)} F/m$$

If $d \gg a$, $c = \frac{\pi\varepsilon}{\ln d/a}$ $F/m$.

$$c = \frac{\pi\varepsilon_0}{\ln\left( d/a \right)} F/m$$

A. Sauth.

Faculty Incharge

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)
## KAIKURICHI, PUDUKKOTTAI -622 303
## ACADEMIC YEAR 2018-2019--- ODD SEMESTER
## ATTENDANCE SHEET FOR RETEST

### RETEST FOR CYCLE TEST-I

PROGRAM          : B.E / EEE
YEAR/SEM       : II/III
SUBJECT CODE & TITLE : EE8391 & Electromagnetic Theory
DATE              : 10.08.2018

| SI .NO | REG.NO | NAME | SIGNATURE |
|--------|--------|------|-----------|
| 1 | 912617105003 | PRIYA.T | T. Priya. |
| 2 | 912617105004 | SAJINA.K | Sajina.K. |
| 3 | 912617105007 | VANITHA.E | Vanitha E |
| 4 | 912617105301 | PRASANNA P | Prasanna.P |

**SIGNATURE OF THE FACULTY**

**HoD/EEE**
HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and affiliated to Anna University, Chennai)

Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

Cycle Test (Retest) Answer Book

| Name | PRASANNA P | | | Year/ Semester/Section | II / III |
|---|---|---|---|---|---|
| Reg. No | 912617105301 | Date/Session | 10/8/18 / AN | Department | EEE |
| Course code | EE8391 | Course Title | Electromagnetic Theory | | |
| Cycle Test (Retest) | | CT 1 ✓ | CT 2 ☐ | CT 3 ☐ | Model ☐ |
| Name and Signature of the Invigilator with date | | A. Basith 10/8/18 (Mr. A. ABDUL BASEETH) | | | |

Instruction to the Student: Put tick mark to the question attended in the column against question.

| Part A | | | Part B / Part C | | | | | Total Marks |
|---|---|---|---|---|---|---|---|---|
| Q. No. | ✓ | Marks | Q. NO. | ✓ | a Marks | ✓ | b Marks | |
| 1 | ✓ | 2 | 11 | ✓ | 10 | | | 10 |
| 2 | ✓ | 2 | 12 | ✓ | 12 | | | 12 |
| 3 | ✓ | 2 | 13 | ✓ | 10 | | | 10 |
| 4 | ✓ | 2 | 14 | | | | | |
| 5 | ✓ | 2 | 15 | | | | | |
| 6 | | | 16 | | | | | |
| 7 | | | | | Grand Total | | | 32 |
| 8 | | | | | | | | |
| 9 | | | | 84 | A. Basith 11/8/18 (Mr. A. ABDUL BASEETH) | | | |
| 10 | | | | | | | | |
| Total | | 10 | Grand Total | | Name and Signature of the Examiner with date | | | |

## To be filled by the examiner

| Course Outcomes | CO1 | CO2 | CO3 | CO4 | CO5 | CO6 | Total |
|---|---|---|---|---|---|---|---|
| Marks allotted | 34 | 16 | | | | | 50 |
| Marks Obtained | 30 | 12 | | | | | 42 |

**IQAC Audit - Remarks**

P. SUBHA

Name and Signature of the IQAC member

Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

## KAIKKURICHI, PUDUKKOTTAI – 622 303

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## ACADEMIC YEAR 2018 – 2019 (ODD SEMESTER)

## STUDENTS MARK STATEMENT- CO BASED

### CYCLE TEST-I (Retest)

SUBJECT CODE &TITLE:  EE8391 & ELECTROMAGNETIC THEORY

YEAR/SEM: II/III                                          MONTH & YEAR: AUG & 2018

| S.NO | REG NO | STUDENT NAME | C203.1 (34) | C203.2 (16) | TOTAL (50) | TOTAL (100) |
|------|--------|--------------|-------------|-------------|------------|-------------|
| 1. | 912617105003 | PRIYA.T | 25 | 15.5 | 40.5 | 81 |
| 2. | 912617105004 | SAJINA.K | 26 | 14 | 40 | 80 |
| 3. | 912617105007 | VANITHA.E | 26 | 14.5 | 40.5 | 81 |
| 4. | 912617105301 | PRASANNA P | 30 | 12 | 42 | 84 |
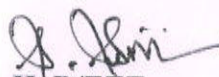
## MARKS RANGE:

| <20 | 20-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 |
|-----|-------|-------|-------|-------|-------|-------|-------|--------|
| - | - | - | - | - | - | - | 4 | - |

| | |
|---|---|
| Total No.of Candidates Present | 4 |
| Total No.of Candidates Absent | NIL |
| Total No.of Students Pass | 4 |
| Total No. of Students Fail | NIL |
| Percentage of Pass | 100% |

Faculty Incharge                    HoD/EEE                    PRINCIPAL

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)

Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### ACADEMIC YEAR 2018 – 2019 (ODD SEMESTER)

### FINAL INTERNAL MARK STATEMENT(Out of 20)

SUBJECT CODE &TITLE: EE8391 & ELECTROMAGNETIC THEORY

YEAR/SEM: II/III

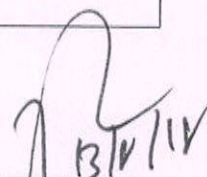| S.NO | REG NO | STUDENT NAME | TOTAL (20) |
|------|--------|--------------|------------|
| 1. | 912617105001 | NAZEERA BANU.I | 18 |
| 2. | 912617105002 | PARTHIKA.S | 18 |
| 3. | 912617105003 | PRIYA.T | 17 |
| 4. | 912617105004 | SAJINA.K | 17 |
| 5. | 912617105005 | SELSIYA.R | 18 |
| 6. | 912617105006 | THENMOZHI.J | 18 |
| 7. | 912617105007 | VANITHA.E | 16 |
| 8. | 912617105301 | PRASANNA P | 18 |
| 9. | 912617105302 | SIYAMALADEVI S | 18 |

Faculty Incharge

HoD/EEE
HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

PRINCIPAL
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT

Dr S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurichi - 622 303, Pudukkottai Dt.
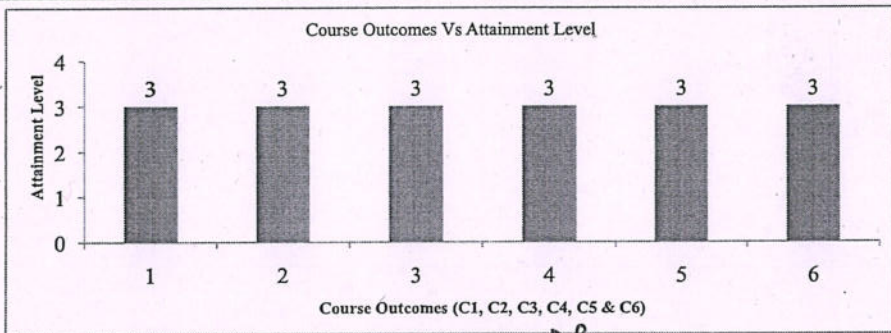
# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
## (Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)

Department of Electrical and Electronics Engineering

Internal Assessment -Attainment of Course Outcomes (Through Direct Assessment)

| ACADEMIC YEAR - 2018 - 2019 | | BATCH | | 2017 - 2021 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| COURSE CODE/TITLE | EE8391 / ELECTROMAGNETIC THEORY | COURSE OUTCOME | 1 | 2 | 3 | 4 | 5 | 6 | |
| YEAR/SEM | II/III | TARGET(%) | 65 | 65 | 65 | 65 | 65 | 65 | |
| COURSE COORDINATOR | Mr. A.ABDUL BASEETH | TOTAL STRENGTH | 9 | | | | | | |

| ATTAINMENT LEVEL | Level | Range |
|---|---|---|
| | 1 | UP TO 60% of the students scored more than target |
| | 2 | 61 – 79% of the students scored more than target |
| | 3 | 80% & ABOVE of the students scored more than target |

| S.NO | REG NO | NAME OF THE STUDENT | IAT 1 - MARKS ALLOTED | | | | | | IAT 2 - MARKS ALLOTED | | | | | | IAT 3 - MARKS ALLOTED | | | | | | Assignment / Mini Project /Tutorial / Seminar | | | | | | TOTAL COURSE OUTCOME | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C1 | C2 | C3 | C4 | C5 | C6 | C1 | C2 | C3 | C4 | C5 | C6 | C1 | C2 | C3 | C4 | C5 | C6 | C1 | C2 | C3 | C4 | C5 | C6 | C1 | C2 | C3 | C4 | C5 | C6 |
| | | | 60 | 40 | | | | | | | 40 | 60 | | | | | | | 60 | 40 | | 10 | 10 | | | 10 | 60 | 50 | 50 | 60 | 60 | 50 |
| 1 | 912617105001 | NAZEERA BANU.I | 55 | 37 | | | | | | | 36 | 54 | | | | | | | 55 | 36 | | 7 | 8 | | | 8 | 55 | 44 | 44 | 54 | 55 | 44 |
| 2 | 912617105002 | PARTHIKA.S | 54 | 36 | | | | | | | 36 | 53 | | | | | | | 55 | 37 | | 8 | 8 | | | 8 | 54 | 44 | 44 | 53 | 55 | 45 |
| 3 | 912617105003 | PRIYA.T | 49 | 32 | | | | | | | 34 | 52 | | | | | | | 52 | 34 | | 8 | 8 | | | 8 | 49 | 40 | 42 | 52 | 52 | 42 |
| 4 | 912617105004 | SAJINA.K | 48 | 32 | | | | | | | 35 | 52 | | | | | | | 51 | 34 | | 7 | 8 | | | 7 | 48 | 39 | 43 | 52 | 51 | 41 |
| 5 | 912617105005 | SELSIYA.R | 48 | 32 | | | | | | | 35 | 52 | | | | | | | 51 | 34 | | 9 | 7 | | | 8 | 48 | 41 | 42 | 52 | 51 | 42 |
| 6 | 912617105006 | THENMOZHI.J | 53 | 35 | | | | | | | 35 | 53 | | | | | | | 56 | 37 | | 9 | 9 | | | 9 | 53 | 44 | 44 | 53 | 56 | 46 |
| 7 | 912617105007 | VANITHA.E | 49 | 32 | | | | | | | 33 | 50 | | | | | | | 50 | 33 | | 9 | 8 | | | 9 | 49 | 41 | 41 | 50 | 50 | 42 |
| 8 | 912617105301 | PRASANNA P | 50 | 34 | | | | | | | 36 | 55 | | | | | | | 55 | 37 | | 9 | 8 | | | | 50.4 | 43 | 45 | 55 | 55 | 37 |
| 9 | 912617105302 | SIYAMALADEVI S | 52 | 35 | | | | | | | 37 | 56 | | | | | | | 56 | 37 | | 10 | 8 | | | 9 | 52 | 45 | 45 | 56 | 56 | 46 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CO's Target Value | 39.0 | 32.5 | 32.5 | 39.0 | 39.0 | 32.5 |
| No. of Students scored above CO's Target Value | 9 | 9 | 9 | 9 | 9 | 9 |
| Percentage of Students scored above Target | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| CO Attainment | 3 | 3 | 3 | 3 | 3 | 3 |
| CO attainment Values to plot the Graph | 3 | 3 | 3 | 3 | 3 | 3 |

**Course Outcomes Vs Attainment Level**



Attainment Level vs Course Outcomes (C1, C2, C3, C4, C5 & C6): bars at level 3 for outcomes 1–6.

Faculty Incharge

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

HOD/EEE

HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)

## DEPARTMENT OF EEE

## COURSE OUTCOME ATTAINMENT - UNIVERSITY EXAMINATION

### ACADEMIC YEAR : 2018 - 2019 (ODD SEM)

YEAR/SEM : II/III                                    Batch: 2017-2021

SUBJECT : EE8391 - ELECTROMAGNETIC THEORY

CO Attainment Level: 1 - (UPTO 60% )    2- (61%-79%)    3-(80% and Above)

TOTAL STRENGTH :                9

| S.NO | Register No | NAME | Univ. Grade |
|------|-------------|------|-------------|
| 1 | 912617105001 | NAZEERA BANU.I | A |
| 2 | 912617105002 | PARTHIKA.S | B+ |
| 3 | 912617105003 | PRIYA.T | UA |
| 4 | 912617105004 | SAJINA.K | B |
| 5 | 912617105005 | SELSIYA.R | B+ |
| 6 | 912617105006 | THENMOZHI.J | B+ |
| 7 | 912617105007 | VANITHA.E | B+ |
| 8 | 912617105301 | PRASANNA P | B |
| 9 | 912617105302 | SIYAMALADEVI S | B+ |

| | | |
|---|---|---|
| No. of O Grade | 0 | 0 |
| No. of A+ Grade | 0 | 0 |
| No. of A Grade | 1 | 1 |
| No. of B+ Grade | 5 | 5 |
| No. of B Grade | 2 | 2 |
| No. of U Grade | 0 | 0 |
| No. of UA Grade | 1 | 1 |
| Target for course outcome Attainment | 60 | 9 |
| No of students above the target | 8 | |
| CO-Attainment University      (%) | 88.89 | |

Faculty Incharge

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

HOD/EEE

HOD EEE
,RI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.

**Overall Attainment Sheet – COs - POs & PSOs attainment calculation**

| CO | CO-Attainment Internal (CO-INT) (Avg. Attainment of All section) (%) | CO-Attainment University (CO-UNI) (Avg. Attainment of All section) (%) | Direct CO Attainment (0.20xCO-INT + 0.80xCO-UNI) (%) | CO Attainment Level |
|---|---|---|---|---|
| C203.1 | 100.0 | 88.89 | 91.1 | 3 |
| C203.2 | 100.0 | 88.89 | 91.1 | 3 |
| C203.3 | 100.0 | 88.89 | 91.1 | 3 |
| C203.4 | 100.0 | 88.89 | 91.1 | 3 |
| C203.5 | 100.0 | 88.89 | 91.1 | 3 |
| C203.6 | 100.0 | 88.89 | 91.1 | 3 |

**Expected CO-PO Level**

| Course | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C203.1 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.2 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.3 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.4 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.5 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.6 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |

**PO Attainment Level**

| Course | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C203.1 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.2 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.3 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.4 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.5 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203.6 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| C203 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |

**Attainment of POs and PSOs:**

| Course Code | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C203 | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |
| Attainment | 3 | 2 | 2 | 1 | 1 | - | 1 | - | - | 1 | - | 1 | 3 | 1 | - |

| | |
|---|---|
| Comments by Program Coordinator | 1.  2. |
| Remarks by HoD | |

Name and Signature
of the Faculty Member

(Mr. A ABDUL BASEETH)

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

HoD/EEE
HOD EEE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI,
PUDUKKOTTAI - 622 303.