



MARATHA VIDYA PRASARAK SAMAJ'S
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College of Engineering, Nashik

Permanently Affiliated to Savitribai Phule Pune University Vide Letter No. CA/1542 & Approved by AICTE New Delhi - Vide Letter No. 740-89-32 (E) ET/58 AISHE Code - C41822



Electronics & Telecommunication Engineering

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|-------------------------|---|
| Academic Year – 2023-24 | Class: TE |
| Semester – II | Date: 15/02/24 to 01/03/24 |
| CO: CO1, CO2, CO3, CO4 | PO: PO1, PO2, PO3, PO5, PO9, PO10, PO12 |

Innovative Teaching Methods

Title of Innovation method/activity: Experimental Learning

1. Name of Faculty: Dr. S. M. Jagtap
2. Subject: Power Devices & Circuits
3. Objective of Method: As per the task ahead -
 - I. Design and develop the circuit in Proteus.
 - II. Examine the results of designed electronic circuit and simulation software

4. Topic Covered through Activity:

1. MOSFET characteristics
2. DC to AC Inverter
3. UJT Triggering circuit For SCR
4. Single Phase Semi-converter with R Load
5. 3 phase full wave converter
6. Buck Converter DC-DC Converter

5. Description of method with Benefits (8 – 10 lines):

From the given task, students think on the various ways of design of electronic circuits to obtain the results. Among their formed group of 3members, they discuss on various parameters to be acquire as per shown in the task. As the output of designed circuit is shown as a variable, the students have to use controlled electronic devices as the basics of the same they studied. For the controlling as well as for protection of controlled devices, the students have to think on minimum and maximum gate drive requirement and also on isolation circuits. As an individual or group, the student also learns that how to select and adjust the parameters of source which is available in the simulation tool. After their design on paper, they use simulation tool to check the results and to prepare a report on the same work they done.

The method:

1. The assigned task is completed by a team only.
2. All teams are continuously under the observation of teachers as an engineering ethics to check which various Medias the students are using for the paper work design and simulation.

3. Also, all teams are continuously under the observation by teachers for the following portfolios-
 - Design of complete circuit on paper
 - Simulation of designed circuit
 - Simulated Result, and report writing
4. All teams are asked to submit the scan copies of paper work design, report and simulation results to the Google classroom.
5. Teacher examined thoroughly the data received on Google classroom

Roles and Responsibilities

Teacher

Provide the design and development task as per the basics studied by the student.

Develop the awareness among the students about the applications of power devices.

Provide the study material and appropriate guide lines at every stage

Remain available during the completion of task.

Prepare assessment methodology.

Student

Go through all the material provided on various electronic devices

Once topic assigned, understand and discuss individually within the group.

Actively participate in group and contribute by means of discussion

Group

Form the group of members as per the guidelines by teachers.

Understand and discuss to finalize the best solution for the assigned task.

Assign the work within the group to achieve the task within stipulated time period.

6. Assessment Tools & Rubrics:

| | | | | |
|------------------------|---|---|--|--|
| Simulation (20) | Design Circuit (5) Components Selection (5) Simulation in Tool (5) Simulated Result Verification (5) Total - 20 | Design Circuit (5) Components Selection (5) Simulation in Tool (5) Simulated Result Not Verify as per hardware (0) Total - 15 | Design Circuit (5) Components Selection (5) Error during in Simulation and Simulated Result Not Verify as per hardware (0) Total - 10 | Design Circuit (5) Wrong Components Selection (0) Error during in Simulation and Simulated Result Not Verify as per hardware (0) Total - 05 |
| Report (10) | Design Details Working in details Waveform representation Simulated results Total 10 marks | Working in details Waveform representation Simulated results Total 7 | Waveform representation Simulated results Total - 5 | Simulated results Total -3 |
| Quiz (20) | Solve all Questions Correctly total 20 Marks | Marks get deduct for wrong answers | | |

7. Evaluation Sheet

| RN | Name Of Students | Topic | Simulation (20) | Report (10) | Quiz (20) | Total Assessment (50) |
|----|---------------------|--|-----------------|-------------|-----------|-----------------------|
| 1 | Bhoomi S Ahire | Half Wave Converter | 15 | 6 | 20 | 41 |
| 2 | Ruchita Nitin Bedse | Thyristor Triggering Circuit | 15 | 7 | 13 | 35 |
| 3 | Tanisha Bhalekar | SCR Characteristics (Phase Control) | 15 | 6 | 10 | 31 |
| 4 | Devansh Bodkhe | UJT Triggering Circuit For SCR | 15 | 5 | 6 | 26 |
| 5 | Pranjali Chaudhari | Thyristor Triggering Circuit | 15 | 7 | 20 | 42 |
| 7 | Harish R Deore | UJT Triggering Circuit For SCR | 18 | 7 | 14 | 39 |
| 8 | Atharva Dhanait | Igbt Characteristics | 18 | 7 | 20 | 45 |
| 9 | Dhiraj S Bachhav | UJT Triggering Circuit For SCR | 18 | 7 | 5 | 30 |
| 10 | Tushar Dhondage | Igbt Characteristics | 17 | 7 | 11 | 35 |
| 11 | Omkar Dhongade | UJT Triggering Circuit For SCR | 18 | 8 | 13 | 39 |
| 12 | Dhananjay Gaikwad | SCR Characteristics (Phase Control) | 17 | 7 | 15 | 39 |
| 13 | Yash Gangurde | Half Wave Converter | 13 | 6 | 12 | 31 |
| 14 | Vishakha Joshi | SCR Characteristics (Phase Control) | 15 | 7 | 12 | 34 |
| 15 | Tanmay Karsale | IGBT Characteristics | 17 | | 10 | 27 |
| 16 | Sarvadnya Kawade | DC To AC Inverter | 18 | 8 | 15 | 41 |
| 17 | Mandar R Lohare | Single Phase Full Wave Controlled Rectifier With R And RL Load | 12 | 7 | 10 | 29 |
| 18 | Disha More | MOSFET Characteristics | 18 | 7 | 10 | 35 |
| 19 | Sejal More | MOSFET Characteristics | 17 | 8 | 7 | 32 |
| 20 | Jagdish S Mutadak | Single Phase Full Wave Controlled Rectifier With R And RL Load | 12 | 6 | 7 | 25 |
| 21 | Darshana Narkhede | DC To AC Inverter | 18 | 8 | 15 | 41 |
| 22 | Bhardwaj Patil | SCR Characteristics (Phase Control) | 17 | 7 | 20 | 44 |
| 24 | Sanjali Sangale | Halfwave Rectifier | 13 | 6 | 0 | 19 |
| 26 | Ishwari Shinde | Halfwave Rectifier | 12 | 6 | 4 | 22 |
| 27 | Tejashri Shinde | Thyristor Triggering Circuit | 15 | 6 | 10 | 31 |
| 28 | Siddhesh Patil | Single Phase Half Wave Controlled Rectifier R Load | 10 | 6 | 10 | 26 |
| 30 | Rucha Tatar | Half Wave Converter | 12 | 6 | 10 | 28 |
| 31 | Omkar Tondare | Single Phase Half Wave Controlled Rectifier R Load | 13 | 7 | 12 | 32 |
| 32 | Vaishnavi Wagh | Halfwave Rectifier | 12 | 7 | 12 | 31 |
| 36 | Om Bankar | Single Phase Half Wave Controlled Rectifier R Load | 15 | 7 | 5 | 27 |
| 37 | Gaurav Chavan | Single Phase Semi Converter With R Load | 17 | 6 | 15 | 38 |
| 37 | Sumeet Chavan | Single Phase Half Wave Controlled Rectifier R Load | 15 | 7 | 17 | 39 |
| 39 | Sai Vilas Desale | 3 Phase Inverter 180° Mode | 19 | 9 | 13 | 41 |
| 40 | Om Kale | 3 Phase Inverter 180° Mode | 19 | 7 | 12 | 38 |
| 41 | Jayesh Kavekar | Single Phase Semi Converter With R Load | 17 | 8 | 12 | 37 |
| 43 | Sarthak Pagare | Buck Converter Dc-Dc Converter | 18 | 9 | 15 | 42 |

| | | | | | | |
|----|--------------------|--|----|---|----|----|
| 44 | Tejas Patil | Single Phase Semi converter With R Load | 15 | 6 | 16 | 37 |
| 46 | Pranav Shelke | Single Phase Semi converter With R Load | 17 | 6 | 5 | 28 |
| 48 | Vidya Vishwas Aher | 3 Phase Full Wave Converter | 18 | 6 | 11 | 35 |
| 49 | Bhagwat Renuka | Full Controlled Bridge Rectifier With R Load | 16 | 8 | 10 | 34 |
| 50 | Suraj Bhosle | IGBT Characteristics | 16 | 6 | 6 | 28 |
| 51 | Anushka Dambir | DC To AC Inverter | 18 | 8 | 10 | 36 |
| 52 | Harshada Deole | Full Control Bridge Rectifier With RL Load | | 7 | 11 | 18 |
| 53 | Rutuja Dhage | 3 Phase Full Wave Converter | 18 | 6 | 12 | 36 |
| 54 | Dhondge Pratiksha | Full Controlled Bridge Rectifier With R Load | 16 | 8 | 15 | 39 |
| 55 | Shashank Gangurde | 3 Phase Inverter 180° Mode | 19 | 7 | 12 | 38 |
| 56 | Rutuja Kakad | Full Control Bridge Rectifier With RL Load | | 7 | 13 | 20 |
| 58 | Sakshi Karad | 3 Phase Full Wave Converter | 18 | 6 | 12 | 36 |
| 59 | Minakshi Kasav | Full Control Bridge Rectifier With RL Load | | 8 | 10 | 18 |
| 60 | Kavade Yogita | Resistance Triggering Circuit | 16 | 7 | 8 | 31 |
| 62 | Nilesh Mahajan | AC To DC Converter | | 6 | 12 | 18 |
| 63 | Nikhil Marathe | Buck Converter Dc-Dc Converter | 19 | 9 | 15 | 43 |
| 64 | Nimbalkar Apurva | Resistance Triggering Circuit | 16 | 7 | 15 | 38 |
| 65 | Manoj Pawar | Buck Converter Dc-Dc Converter | 19 | 9 | 12 | 40 |
| 66 | Shaikh Shifa | Resistance Triggering Circuit | 16 | 8 | 20 | 44 |
| 67 | Leena Sonawane | Full Control Bridge Rectifier With RL Load | 16 | 6 | 10 | 32 |
| 68 | Puja Suryawanshi | AC To DC Converter | 15 | 6 | 10 | 31 |
| 69 | Shrushti Tejale | AC To DC Converter | 14 | 6 | 10 | 30 |
| 70 | Thete Gayatri | Full Controlled Bridge Rectifier With R Load | 15 | 8 | 14 | 37 |
| 71 | Gaurav Wadge | 3 Phase Inverter 180° Mode | 19 | 8 | 10 | 37 |

8. Impact Analysis

| SN | 3- High/Excellent | 2 - Moderate/Average | 1- Slight/Poor |
|---|-------------------|----------------------|----------------|
| 1. Did you understand and cover the objective of the activity? | 82% | 18% | - |
| 2. Do you find that methodology is helpful to cover the content beyond syllabus? | 93% | 07% | - |
| 3. Does this helps you for building a good team? | 83.46% | 16.53% | - |
| 4. Does the content covered are relevant and will be helpful as a life-long learning? | 75.00% | 25% | - |
| 5. Can you want to conduct such activity again? | 97.95% | 2.04% | - |

3. Activity Picture



10. For review and critique contact: e-mail address of faculty and HOD
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Mr. B J Pawar
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Dr. Birari. V.M
HoD