MARATHA VIDYA PRASARAK SAMAJ'S



Karmaveer Adv. Baburao Ganpatrao Thakare 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/98 AISHE Code - C-41622

Electronics & Telecommunication Engineering

| Academic Year – 2022-2023 | Class: Third Year |
|---------------------------|-------------------|
| Semester – I | Date: 7/11/2022 |
| CO: 6 | PO: 1,2,3,5,9,10 |

Innovative Teaching Methods- Experimental Learning

Title of Innovation method/activity: Antenna Designing using 4nec2 Simulation

Software

1. Name of Faculty: Dr. Ulhas Patil

2. Subject: Electromagnetic Field Theory

3. Objective of Method:

- 1. Students are able to design and implement dipole and Yagi-Uda antenna for different frequency.
- 2. Observe the radiation pattern, check the response SWR Vs K, Impedance and phase Vs operating frequency and comment on smith chart

4. Topic Covered through Activity:

Dipole and Yagi- Uda Antenna design using simulation software 4nec2

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

Simulation example is given to show the radiation pattern of the designed antenna. In this example, Dipole and yagi-uda antenna is designed and simulate for different frequencies.

Linear wire antennas and Yagi-Uda array antennas are very popular in the field of telecommunication and are widely used now-a-days. In many RF applications it is required to get the desired antenna parameters for better communication. We can easily design any linear wire antennas or Yagi-Uda antenna using "4NEC2" software and simulate various parameters using it . 4NEC2 is one of the most popular antenna design and simulation software. The term NEC stands for "Numerical Electromagnetic Code". It is a very simple and widely used software for designing and analysing now a days.

Roles and Responsibilities

Teacher

- Provide the Introduction to all the topic.
- Aware the student about the length, Breadth, Depth of Topic
- Provide the Study Material and appropriate guide lines at every stage
- Remain available all the time during all stages of process.
- Prepare assessment methodology.

Student

- Go through all the material provided on particular topic
- Once topic assigned understand and gain expertise on topic through collaboration.
- Actively participate individually and contribute by means of discussion, hand-out
- Share the expertise topic when joins a new group.

6. Assessment Tools & Rubrics:

- Experimental Result (20%)
 - Individual experimental result would be checked by teacher as per result
- Quiz (40 %)
 - Individual performance would be checked through the quiz.
- One Page Report / Hand out (40 %)
 - Individual performance would be checked by teacher according to the rubrics.
- Overall Individual Performance
- Final Marks Obtained = (0.2*Expt. Result + 0.4 *Quiz Marks + 0.4 * Report Marks)
- Rubrics for Assessment of One Page Report / Hand out
 - Topic Content (60 %)
 - Report (40 %)

| Criteria | 3- High | 2- Moderate | 1- Slight |
|----------------------|----------------------------|--------------|-------------------|
| Topic Content | Highly Relevant | Moderately | Slightly Relevent |
| | | Relevant | |
| References | Highly Relevant | Moderately | No / Wrong |
| | | Relevant | References |
| Presentation and | Neat , Clean & | Neat & clean | Poorly Written |
| Writing Skill | riting Skill Grammatically | | |
| | Correct | | |

7. Evaluation Sheet

| Sn | Name of Student (Individual) | Experimental | Quiz | Report | Final |
|----|-------------------------------|--------------|------|--------|-------|
| | | Result using | (10) | (10) | Marks |
| | | 4nec2 (5) | | | |
| 1 | Aditya Murai | 5 | 4 | 10 | 19 |
| 2 | Ahire Abhishek Panditrao | 5 | 5 | 10 | 20 |
| 3 | Ahire Minakshi Ramdas | 4 | 6 | 10 | 20 |
| 4 | Amrutkar Om Prakash | 4 | 4 | 10 | 18 |
| 5 | Bawdhankar Yugant Rakesh | 3 | 5 | 10 | 18 |
| 6 | Bhamare Riya Sachin | 5 | 6 | 10 | 21 |
| 7 | Bhamare Sumit Jagdish | 5 | 3 | 10 | 18 |
| 8 | Khule Sahil Dinkar | 3 | 4 | 10 | 17 |
| 9 | Bhosale Viraj Mahendra | 5 | 5 | 10 | 20 |
| 10 | Chaudhari Om Madan | 5 | 9 | 10 | 24 |
| 11 | Chaudhari Sneha Manoj | 5 | 9 | 10 | 24 |
| 12 | Dashpute Anuja Sandeep | 5 | 3 | 10 | 18 |
| 13 | Deore Nilesh Dattu | 5 | 4 | 10 | 19 |
| 14 | Divate Siddhesh Rajendra | 5 | 4 | 10 | 19 |
| 15 | Duse Nupur Vijay | 5 | 7 | 10 | 22 |
| 16 | Gahivade Mayuri Pramod | 5 | 2 | 10 | 17 |
| 17 | Gangurde Namrata Shantaram | | Le | ft | |
| 18 | Gangurde Tejas Dilip | 5 | 7 | 10 | 22 |
| 19 | Gharte Sakshi Dnyaneshwar | 5 | 9 | 10 | 24 |
| 20 | Gojare Jyoti Navnath | 4 | 7 | 10 | 21 |
| 21 | Gosavi Shraddha Dattatray | 5 | 6 | 10 | 21 |
| 22 | Jadhav Jay Uttam | 5 | 4 | 10 | 19 |
| 23 | Jagtap Ritesh Mahendra | 4 | 7 | 10 | 21 |
| 24 | Jahdav Monika Jayesh | 5 | 4 | 10 | 19 |
| 25 | Jawale Bhagyesh Pradip | 4 | 1 | 10 | 15 |
| 26 | Kachole Omkar Swapnil | 5 | 1 | 10 | 16 |
| 27 | Kad Roshan Bhausaheb | 3 | 2 | 10 | 15 |
| 28 | Kapadi Kunal Pandit | 3 | 5 | 10 | 18 |
| 29 | Kasar Sharvari Bhagyesh | 3 | 4 | 10 | 17 |

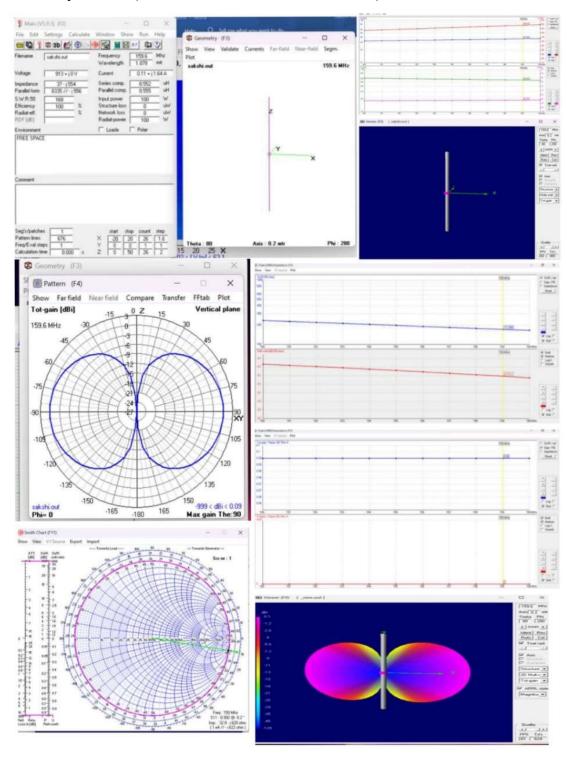
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| 55 Ogdrif Valsmark Bridgehold 56 Wadje Vedant Ramesh 5 6 10 21 57 Zinjurde Pratik Nanasaheb 5 5 10 20 58 Chaudhari Rachita Durgadas 5 6 10 21 59 Sonwane Vaishnavi Devendra 5 6 10 21 60 Dhondge Pooja Bhausaheb 5 2 10 17 | 54 | Tejas Anil Bhosale | 5 | 6 | 10 | 21 |
| 50 Wadje Vodan Ramesh 5 21 57 Zinjurde Pratik Nanasaheb 5 5 10 20 58 Chaudhari Rachita Durgadas 5 6 10 21 59 Sonwane Vaishnavi Devendra 5 6 10 21 60 Dhondge Pooja Bhausaheb 5 2 10 17 | 55 | Ugale Vaishnavi Bhausaheb | 5 | 7 | 10 | 22 |
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| 59 Sonwane Vaishnavi Devendra 5 6 10 21 60 Dhondge Pooja Bhausaheb 5 2 10 17 | 57 | Zinjurde Pratik Nanasaheb | 5 | 5 | 10 | 20 |
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| 61 Thete Pooja Gokul 5 4 10 19 | 60 | Dhondge Pooja Bhausaheb | 5 | 2 | 10 | 17 |
| | 61 | Thete Pooja Gokul | 5 | 4 | 10 | 19 |

| 62 | Bhamare Tanvi Manoj | 5 | 5 | 10 | 20 |
|----|-----------------------------|---|---|----|----|
| 63 | Goyekar Pravin Bhagwan | 5 | 4 | 10 | 19 |
| 64 | Thete Tejshree Ajit | 5 | 9 | 10 | 24 |
| 65 | Vidhate Sanjana Shashikant | 5 | 4 | 10 | 19 |
| 66 | Sonawane Snehal Balasaheb | 5 | 5 | 10 | 20 |
| 67 | Pagar Tanuja Sharad | 5 | 3 | 10 | 18 |
| 68 | Chavan Arun Prakash | 5 | 3 | 10 | 18 |
| 69 | Kapadnis Prerana Bhausaheb | 5 | 8 | 10 | 23 |
| 70 | Ahire Sarika Bandu | 5 | 6 | 10 | 21 |
| 71 | Nikam Rutuja Subhash | 5 | 6 | 10 | 21 |
| 72 | Sonawane Aditya Kanhaiyalal | 5 | 4 | 10 | 19 |
| 73 | Deshmukh Raj Sudhir | 5 | 3 | 10 | 18 |
| 74 | Dhabale Rushikesh Rajendra | 4 | 5 | 10 | 19 |
| 75 | Shinde Udayan Sachin | 5 | 6 | 10 | 21 |
| 76 | Shinde Mansi Madhukar | 5 | 4 | 10 | 19 |

8. Impact Analysis

| SN | 3- High | 2- Moderate | 2- Slight |
|---|---------|-------------|-----------|
| Do you find Methodology Helpful | 81.33% | 18.66 | - |
| Does this helps for building a good team | 76% | 24% | - |
| Does the content covered are relevant | 80% | 20% | - |
| Would you like to participate in activity again | 76 | - | - |

9. Activity Picture (Radiation Pattern and Smith chart)



10. For review and critique contact: e-mail address of faculty and HOD patil.ulhas@kbtcoe.org hod@kbtcoe.org

