

Mechanical Engineering Department

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| Academic Year – 2019-20 | Class: BE |
| Semester – I | Date : 16 /10/2019 |
| CO: CO5 | PO: PO1,PO5, PO9, PO12 |

Innovative Teaching Methods

Title of Innovation method/activity: Innovative Teaching Learning Method (Testmoz) (Virtual Lab Experiment Simulation and Quiz using Testmoz)

Link shared to the students:

1. Name of Faculty: Dr. S.P. Mogal
2. Subject: Dynamics of Machinery
3. Objective of Method:
 - I. Perform experiment on base excitation
 - II. Observe the effect of damping in Forced Vibration of SDOF system due to base excitation
 - III. Observe the graph of Transmissibility versus frequency ratio by varying parameters
 - IV. Observe the graph of phase angle versus frequency ratio by varying parameters
 - V. To enthuse students to conduct experiments by arousing their curiosity.

4. Topic Covered through Activity:
 Virtual experiment on Base Excitation

5. Description of method with Benefits (8 – 10 lines):
 Virtual experiment (not included in practical syllabus) will be performed for different parameters and objective test will be conducted by using testmoz software.

Benefits of method:

- It helps students to think individually about a virtual experiment and answer to questions.
- It teaches students to learn experiment virtually through simulation and self-evaluation by quiz.
- It helps focus attention and engage students in comprehending the reading material.
- It helps students to better understanding of base excitation system by simulation.

The method:

Monitor and support students as they work through the following in this method:

- Explain the procedure to conduct experiment virtually.
- To study theory and experimental procedure by using virtual lab and perform virtual experiment by using different parameters to understand the response of base excitation system.
- Evaluation of students is done by conducting quiz using testmoz software.

Roles and Responsibilities

- **Teacher**
 - Develop the awareness among the students about the virtual experiment.
 - Selection of different parameter to perform the experiment virtually.
 - Provide the study material on working, analysis and performance evaluation of base excitation system and appropriate guidelines at every stage.
 - Remain available during the completion of task.
 - Prepare assessment methodology.
- **Student**
 - Go through all the material provided on virtual lab website.
 - Once topic assigned, understand it and solve independently. After this each student will perform the virtual experiment and submit the quiz.

6. Assessment Tools

| Q. No. | Portfolio | Marks |
|--------|---|-------|
| 1 | At resonance, for underdamped system increasing the value of damping would lead to ? | 1 |
| 2 | A system with 10kg mass 10N/m stiffness and 2.5Ns/m damping is being operated at 1rad/s if $X_{st}=1\text{cm}$ what is the value of X_0 ? | 1 |
| 3 | Phase difference between input and response at resonance is 90^0 | 1 |
| 4 | Amplification factor of a system was found to be 2 at resonance. What would be its damping ratio? | 1 |
| 5 | What is the phase difference between input and response for a system with 10kg mass 10N/m stiffness and 15Ns/m damping being operated at 0.5 rad/s | 1 |
| 6 | What is the effect of damping on phase angle at resonance frequency? | 1 |
| 7 | At which frequency ratio, phase angle increases as damping factor increases? | 1 |
| 8 | When frequency ratio (ω/ω_n) is greater than unity, phase angle decreases as _____ | 1 |
| 9 | Calculate damped natural frequency, if a spring mass damper system is subjected to periodic disturbing force of 30 N. Damping coefficient is equal to 0.76 times of critical | 1 |
| 10 | Calculate critical speed of a vehicle which moves on a road having sinusoidal profile of wavelength 2.5 m. The mass of the vehicle is 300 kg and natural frequency of its spring suspension system is 8 rad/sec | 1 |

7. Evaluation sheet of attendee

| Sr.No. | Roll No. | Name | Score out of 10 |
|--------|----------|--------------------------|-----------------|
| 1 | 128 | Akshay wagh | 10 |
| 2 | 85 | Sanjana Nikam | 10 |
| 3 | 139 | Akanksha valmik sangle | 10 |
| 4 | 103 | Akshada Atmaram Randhe | 10 |
| 5 | 74 | Anuja Sopan Lande | 9 |
| 6 | 93 | Darshanesh Patil | 8 |
| 7 | 98 | Gaurang patil | 10 |
| 8 | 116 | Gaurav Bhagwat Shinde | 10 |
| 9 | 125 | Janmesh Thakare | 3 |
| 10 | 104 | Kamlesh Ramesh Ranshinge | 4 |
| 11 | 75 | Mahajan Shubham Rajendra | 10 |
| 12 | 122 | Manish chudaman Sonawane | 8 |

| | | | |
|----|-----|--------------------------------|----|
| 13 | 96 | Manoj Gokul Patil | 9 |
| 14 | 80 | Mayur vinod more | 9 |
| 15 | 77 | Misar Akash Eknath | 8 |
| 16 | 129 | Mukul jagdish wandre | 10 |
| 17 | 84 | Nikam hrushikesh | 5 |
| 18 | 87 | Nikumbh Rushikesh | 4 |
| 19 | 99 | Omkar Sanjay Pawar | 10 |
| 20 | 127 | Padmakshi M Thakur | 9 |
| 21 | 82 | Parth Nakrani | 9 |
| 22 | 67 | Parthkumar subhashbhai makwana | 10 |
| 23 | 91 | Patalpure Ganesh Madhukar | 5 |
| 24 | 100 | Pawar shreya kashinath | 10 |
| 25 | 150 | Prajakta kokane | 8 |
| 26 | 88 | Pranjal Nirbhavane | 10 |
| 27 | 71 | Pushparaj kumar | 5 |
| 28 | 102 | Renu Potkule | 9 |
| 29 | 106 | Roshan B kedar | 8 |
| 30 | 123 | Roshan Rajaram Sonawane | 8 |
| 31 | 101 | Rushikesh Dashrath Paymode | 9 |
| 32 | 87 | Rushikesh Nikumbh | 5 |
| 33 | 137 | Rutuja Sanjay Jadhav | 10 |
| 34 | 70 | Sanket Uttam Korde | 10 |
| 35 | 110 | Santosh gond | 5 |
| 36 | 113 | Sawal vaibhav balasaheb | 9 |
| 37 | 114 | Shelar Vinod Nandulal | 4 |
| 38 | 118 | Shitansh Parakh | 10 |
| 39 | 119 | Shivade Vishal Chhagan | 5 |
| 40 | 69 | Shubham Kokate | 10 |
| 41 | 120 | Sonar Suyog Sanjay | 4 |
| 42 | 121 | Sonawane Akash Vilas | 9 |
| 43 | 97 | Tejas Patil | 10 |
| 4 | 130 | Vivek Balkrushna Yeole | 6 |
| 44 | 115 | Vrushabh Shimpi | 8 |
| 45 | 78 | Yogesh Mishra | 10 |

Student responses: Uploaded as a separate excel sheet

8. Activity Picture

Virtual Labs
An NHRD Govt of India Initiative

MACHINE DYNAMICS - MECHANICAL VIBRATION LAB

Home > Machine Dynamics & Mechanical Vibration Lab > Base Excitation

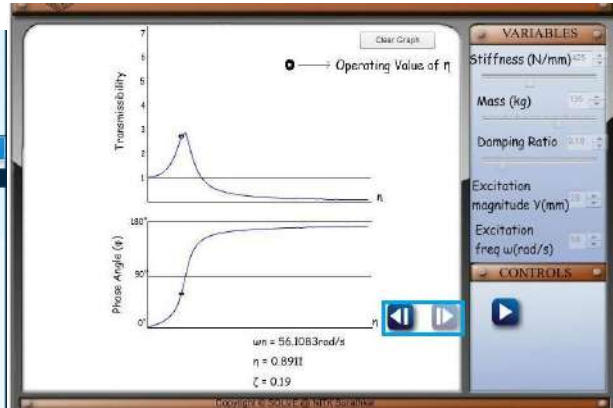
Base Excitation

THEORY | **PROCEDURE** | SELF EVALUATION | SIMULATOR | ASSIGNMENT | QUIZ | VIDEOS | REFERENCES | FEEDBACK

Procedure

AIM:
To observe the effect of damping in Forced Vibration of SDOF system due to base excitation.

PROCEDURE:
1. Set a value of Stiffness and Mass for the system. Set a small value of damping ratio (less than half of 0.707). Notice



Output: x

Input: $Y \sin(\omega t)$

$\omega_n = 56.1083 \text{ rad/s}$
 $\eta = 0.8911$
 $\zeta = 0.19$

WELCOME TO NDMVPS KETCCE X Sent Mail - kushare.dryashes X DOM Test for innovative teach X DOM Test BE B Division X DOM Test BE B Division X

https://testmoz.com/2275671/admin/reports

DOM Test BE B Division Results

Need help? Filter by name / partition by tag / group by name Search Export to CSV: Point Grid | Response Grid | Copy to Clipboard View Audit Log

| Average Score | Average Time | Responses | Score Histogram | | | | | | | | | | | |
|--|--------------------|-----------------------|-----------------------|---------|---|---|---|---|---|---|---|---|---|----|
| 80% | 0:10:03 | 47 | | | | | | | | | | | | |
| 30% to 100% | 0:00:15 to 2:43:42 | | | | | | | | | | | | | |
| Names | Scores | Started On | Finished On | Time | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| <input checked="" type="checkbox"/> 123.Ashay.joshi | 100% (10/10) | 2019-10-16 10:27 a.m. | 2019-10-16 10:41 a.m. | 0:09:17 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <input checked="" type="checkbox"/> 14.Sanjana.Bharam | 100% (10/10) | 2019-10-16 10:38 a.m. | 2019-10-16 10:40 a.m. | 0:02:27 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <input checked="" type="checkbox"/> Akanksha.vaidik.vante | 100% (10/10) | 2019-10-15 2:41 p.m. | 2019-10-15 2:42 p.m. | 0:01:01 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <input checked="" type="checkbox"/> Anshada.Prakash.Bhandari | 100% (10/10) | 2019-10-15 2:33 p.m. | 2019-10-15 2:34 p.m. | 0:01:10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <input checked="" type="checkbox"/> Anuj.Singh.Landhara | 50% (5/10) | 2019-10-10 6:58 p.m. | 2019-10-10 6:41 p.m. | 0:02:13 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <input checked="" type="checkbox"/> Anurag.K.Patil | 80% (8/10) | 2019-10-11 9:36 a.m. | 2019-10-11 10:16 a.m. | 0:40:12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <input checked="" type="checkbox"/> Anurag.Patil | 100% (10/10) | 2019-10-17 10:51 a.m. | 2019-10-17 10:52 a.m. | 0:01:11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <input checked="" type="checkbox"/> Anurag.Shinde | 100% (10/10) | 2019-10-15 2:38 p.m. | 2019-10-15 2:39 p.m. | 0:00:27 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <input checked="" type="checkbox"/> ANURAG THAKARE | 30% (3/10) | 2019-10-16 10:11 a.m. | 2019-10-16 10:15 a.m. | 0:04:04 | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| <input checked="" type="checkbox"/> Anurag.Thakare | 30% (3/10) | 2019-10-16 11:39 a.m. | 2019-10-16 11:41 a.m. | 0:02:07 | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| <input checked="" type="checkbox"/> Anurag.Patil | 40% (4/10) | 2019-10-16 9:53 a.m. | 2019-10-16 9:54 a.m. | 0:00:30 | ✗ | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| <input checked="" type="checkbox"/> Mahesh.Sushant.Bansode | 100% (10/10) | 2019-10-10 3:23 p.m. | 2019-10-10 3:26 p.m. | 0:02:16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <input checked="" type="checkbox"/> Manish.Chaitan.Bansode | 80% (8/10) | 2019-10-11 9:54 p.m. | 2019-10-11 9:20 p.m. | 0:06:03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ |
| <input checked="" type="checkbox"/> Manoj.Gokul.Patil | 20% (2/10) | 2019-10-15 2:31 p.m. | 2019-10-15 2:32 p.m. | 0:00:53 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ |
| <input checked="" type="checkbox"/> Manoj.Kumar.Mishra (80) | 80% (8/10) | 2019-10-11 5:52 p.m. | 2019-10-11 5:43 p.m. | 0:09:57 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ |
| <input checked="" type="checkbox"/> Manoj.Kumar.Mishra (7) | 80% (8/10) | 2019-10-10 1:09 p.m. | 2019-10-10 1:46 p.m. | 0:27:06 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ |
| <input checked="" type="checkbox"/> Manoj.Kumar.Mishra (120) | 100% (10/10) | 2019-10-13 4:17 p.m. | 2019-10-13 4:20 p.m. | 0:02:55 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <input checked="" type="checkbox"/> Manoj.Kumar.Mishra (10) | 50% (5/10) | 2019-10-10 5:08 p.m. | 2019-10-10 8:22 p.m. | 2:43:42 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ |
| <input checked="" type="checkbox"/> Manoj.Kumar.Mishra | 40% (4/10) | 2019-10-17 7:37 a.m. | 2019-10-17 7:38 a.m. | 0:00:17 | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ |

With selected (47) Email 100

Activate Windows
Go to PC settings to activate Windows.

| Name | Score | Started On | Finished On | Time | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--------------------------------------|--------------|-----------------------|-----------------------|---------|---|---|---|---|---|---|---|---|---|----|
| Shruti Prabhakar | 50% (4/10) | 2019-10-10 5:38 p.m. | 2019-10-10 8:22 p.m. | 2:43:02 | X | X | ✓ | ✓ | X | ✓ | X | ✓ | ✓ | ✓ |
| Milindin Bhalchandra | 40% (4/10) | 2019-10-17 7:37 a.m. | 2019-10-17 7:38 a.m. | 0:00:17 | X | X | X | X | X | X | X | X | X | X |
| Chaitan Sachin Patil | 100% (10/10) | 2019-10-15 2:32 p.m. | 2019-10-15 2:35 p.m. | 0:00:07 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sudhakar K.D. Thakur | 90% (9/10) | 2019-10-15 3:18 p.m. | 2019-10-15 3:19 p.m. | 0:00:07 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rashika Patil | 30% (3/10) | 2019-10-11 8:30 a.m. | 2019-10-11 8:30 a.m. | 0:00:00 | ✓ | ✓ | ✓ | X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rashikumar Subhadattal mabheara (C) | 100% (10/10) | 2019-10-11 5:42 p.m. | 2019-10-11 5:45 p.m. | 0:02:26 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adarsh Ganesh Meshwale | 50% (5/10) | 2019-10-10 10:17 p.m. | 2019-10-10 10:22 p.m. | 0:05:00 | ✓ | X | X | X | X | X | X | X | X | X |
| Devin Shreyas Kadamath | 100% (10/10) | 2019-10-10 11:41 a.m. | 2019-10-10 11:42 a.m. | 0:00:09 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Pranav Vaidya | 80% (8/10) | 2019-10-15 3:14 p.m. | 2019-10-15 3:17 p.m. | 0:03:10 | X | ✓ | ✓ | ✓ | ✓ | ✓ | X | ✓ | ✓ | ✓ |
| Rashika Meshwale | 100% (10/10) | 2019-10-15 2:37 p.m. | 2019-10-15 2:37 p.m. | 0:00:02 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rushikesh Kumar | 50% (5/10) | 2019-10-11 9:13 p.m. | 2019-10-11 9:19 p.m. | 0:06:14 | X | X | X | X | X | X | X | X | X | X |
| Pranav Prabhu | 90% (9/10) | 2019-10-10 11:43 a.m. | 2019-10-10 11:43 a.m. | 0:00:01 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rishabh B. Bhat | 80% (8/10) | 2019-10-10 11:34 a.m. | 2019-10-10 11:28 a.m. | 0:03:29 | ✓ | X | ✓ | ✓ | ✓ | ✓ | X | ✓ | ✓ | ✓ |
| Rishabh Rajaram Sankaranarayanan (T) | 80% (8/10) | 2019-10-11 9:14 p.m. | 2019-10-11 9:25 p.m. | 0:11:32 | X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | X |
| Rushikesh Dashrath Patilmode | 90% (9/10) | 2019-10-15 2:43 p.m. | 2019-10-15 2:45 p.m. | 0:02:39 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | X |
| Rushikesh Nikumbh | 50% (5/10) | 2019-10-10 8:15 p.m. | 2019-10-10 8:15 p.m. | 0:00:00 | X | X | X | X | X | X | X | X | X | X |
| Rashika Sachin Jambhavi | 100% (10/10) | 2019-10-15 2:34 p.m. | 2019-10-15 2:36 p.m. | 0:01:50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| SAHIL UTTAM KONDHE (D) | 100% (10/10) | 2019-10-10 2:40 p.m. | 2019-10-10 4:38 p.m. | 1:57:27 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Rashika Wode | 50% (5/10) | 2019-10-16 9:25 a.m. | 2019-10-16 9:27 a.m. | 0:02:28 | ✓ | X | X | X | X | X | X | X | X | X |
| Rashika Vaidya Sankarshah | 90% (9/10) | 2019-10-14 10:00 a.m. | 2019-10-14 10:01 a.m. | 0:01:03 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | X |
| Shruti Vinod Sankarshah (T) | 40% (4/10) | 2019-10-11 9:20 p.m. | 2019-10-11 9:21 p.m. | 0:01:02 | X | X | X | X | X | X | X | X | X | X |
| Shikharit Patil | 100% (10/10) | 2019-10-15 2:32 p.m. | 2019-10-15 2:33 p.m. | 0:01:16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Shikharit Vinay Prasadpan | 50% (5/10) | 2019-10-15 8:58 p.m. | 2019-10-15 8:58 p.m. | 0:00:15 | ✓ | ✓ | X | X | X | X | X | X | X | X |
| Shubham Srikant | 100% (10/10) | 2019-10-11 5:40 p.m. | 2019-10-11 5:41 p.m. | 0:00:01 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sonar Sonar Senary (T) | 40% (4/10) | 2019-10-17 3:04 p.m. | 2019-10-17 3:04 p.m. | 0:00:00 | ✓ | X | X | X | X | X | X | X | X | X |
| SUDHAKAR ANAND VIKAL (T) | 90% (9/10) | 2019-10-10 8:37 p.m. | 2019-10-10 8:33 p.m. | 0:03:34 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

9. For review and critique contact: e-mail address of faculty and HOD
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