



# Swami Keshvanand Institute of Technology, Management & Gramothan

Approved by AICTE, Ministry of HRD, Government of India  
Recognized by UGC under Section 2(f) of the UGC Act, 1956  
Affiliated to Rajasthan Technical University, Kota

## Virtual Lab Details

🏠: RAMNAGARIA (JAGATPURA), JAIPUR-302017 (RAJASTHAN), INDIA  
☎: +91-141-3500300, 2752165, 2759609 | 📠 : 0141-2759555  
✉: info@skit.ac.in | 🌐: www.skit.ac.in



**Swami Keshvanand Institute of Technology, Management & Gramothan,  
Jaipur**

**NOTICE**

**SKIT/VLABS/2021/01**

**Date: 27.07.2021**

All the students of B.Tech. 1<sup>st</sup> year II semester (session 2020-21) are hereby notified that a **one day online workshop on Virtual Labs** will be organized by our institute in association with **IIT Delhi** and **MHRD**, under the National Mission on Education through ICT on **Thursday, 29th July 2019** during **1:00 - 2:30 p.m.** It is mandatory for all the students of II semester to attend this workshop.

The objectives of this workshop are:

- To understand the concept of Virtual Labs developed by all participating institutes for remote experimentation.
- To gain hands-on experience on Virtual Labs related to Electronics and Communication Engineering, Computer Science and Engineering, Electrical Engineering, Information Technology, Civil Engineering, Mechanical Engineering Students.

**General Remarks**

1. **No registration fee** will be charged.
2. Pre-registration is mandatory for this workshop.
3. Registration link : <https://forms.gle/mazXkKnSpEkpRaeY7>
4. Certificate of participation will be given to the participants.
5. Workshop link will be shared separately.
6. Last date of registration is **28th July 2021** by **3:00 pm**.

Ajay Kumar Dhanopia  
Nodal Coordinator-Virtual Labs

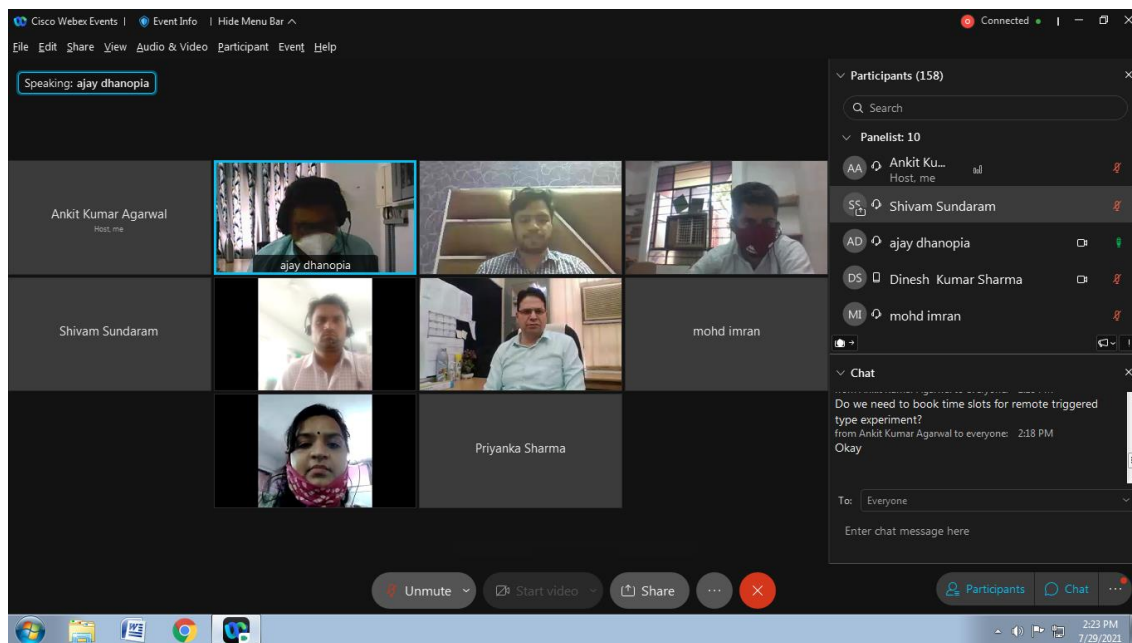
Copy to:

Director, Director (Academics), Registrar, Principal, All the HoDs, Incharge-B.Tech. I year, ERP cell for circulating among the students of B.Tech. II semester

# One Day College Level Hands-on Online Workshop on Virtual Labs

(29th July, 2021)

A one day College-Level Hands-on Online Workshop on Virtual Labs organized on 29<sup>th</sup> July, 2021 at SKIT for the students of B.Tech. 1<sup>st</sup> year II semester (session 2020-21) from (ECE, ME, CE, CSE & EE) by Virtual Labs team, IIT Delhi and supported by Ministry of Education Govt. of India. Virtual Labs experts for this workshop were Mr. Prateek Sharma (Sr. Field Engineer WRL-IIT Delhi) and Mr. Shivam Sundaram (Field Engineer WRL-IIT Delhi). Total of 223 participants attended this workshop. Workshop was started by welcome speech by Dr.Dheeraj Joshi-Head of ME Deptt. SKIT, Jaipur. He said few words regarding the importance and utility of Virtual Labs in current pandemic situations. First session was held by presentation followed by demonstration of stream wise laboratories experiments. Hand on session was covered in post lunch session on Virtual Labs of exploring different laboratories experiments. Workshop was ended by distributing certificates to the participants. Mr. Ajay Kumar Dhanopia-Nodal Coordinator, Virtual Labs, SKIT Jaipur delivered a vote of thanks.



**Ajay Kumar Dhanopia**

**Nodal Coordinator-Virtual Labs**

**Associate Professor-Dept. of ME**

**SKIT, Jaipur**

# एसकेआईटी में एक दिवसीय लैब वर्कशॉप का आयोजन

## P3 Police Public Politics

जयपुर ! स्वामी केशवानंद इंस्टीट्यूट आफ टेक्नोलॉजी मैनेजमेंट एंड ग्रामोत्थान (एस.के.आई.टी) रामनगरिया, जगतपुरा जयपुर में एक दिवसीय वर्चुअल लैब, आई आई टी दिल्ली के सहयोग से आयोजन हुआ। वर्कशॉप के मुख्य अतिथि आई आई टी दिल्ली के फील्ड विशेषज्ञ प्रतीक शर्मा एवं शिवम सुंदरम थे। वर्कशॉप के दौरान बताया गया कि कोरोना की इस महामारी के दौरान वर्चुअल लैब विशेषतः प्रैक्टिकल्स को समझकर करने में मील का पत्थर साबित हुआ वर्कशॉप का मुख्य उद्देश्य विद्यार्थियों में जिज्ञासा जगाकर प्रयोग करने को उत्साहित करना है वर्चुअल लैब्स एक संपूर्ण लर्निंग मैनेजमेंट सिस्टम प्रदान



करता है जहां छात्र अतिरिक्त वेब - संसाधन, वीडियो व्याख्यान, एनिमेटेड पर दर्शन और आत्म मूल्यांकन सहित सीखने के लिए विभिन्न उपकरणों का लाभ उठा सकते हैं। संयोजन अजय कुमार धनोपिया नोडल समन्वयक वर्चुअल लैब ने किया। वर्कशॉप के अंत में प्रोफेसर धीरज जोशी जी विभागाध्यक्ष यांत्रिक विभाग ने विशेषज्ञों एवं प्रतिभागियों का आभार व्यक्त किया।

# एसकेआईटी में एक दिवसीय लैब वर्कशॉप का आयोजन

जयपुर (का.सं.)। स्वामी केशवानंद इंस्टीट्यूट ऑफ टेक्नोलॉजी मैनेजमेंट एंड ग्रामोत्थान (एस.के.आई.टी) रामनगरिया, जगतपुरा जयपुर में एक दिवसीय वर्चुअल लैब, आईआईटी दिल्ली के सहयोग से आयोजन हुआ। मुख्य अतिथि आईआईटी दिल्ली के फील्ड विशेषज्ञ प्रतीक शर्मा एवं शिवम सुंदरम थे। वर्कशॉप के दौरान बताया गया कि कोरोना की इस महामारी के दौरान वर्चुअल लैब विशेषतः प्रैक्टिकल्स को समझकर करने में मील का पत्थर साबित हुआ। वर्कशॉप का मुख्य उद्देश्य विद्यार्थियों में जिज्ञासा जगाकर



प्रयोग करने को उत्साहित करना है। वर्चुअल लैब्स एक संपूर्ण लर्निंग मैनेजमेंट सिस्टम प्रदान करता है, जहां छात्र अतिरिक्त वेब-संसाधन, वीडियो व्याख्यान, एनिमेटेड पर दर्शन और आत्म मूल्यांकन सहित सीखने के लिए विभिन्न उपकरणों का लाभ उठा सकते हैं। संयोजन अजय कुमार धनोपिया नोडल समन्वयक वर्चुअल लैब ने किया।

## वर्चुअल लैब वर्कशॉप का आयोजन किया

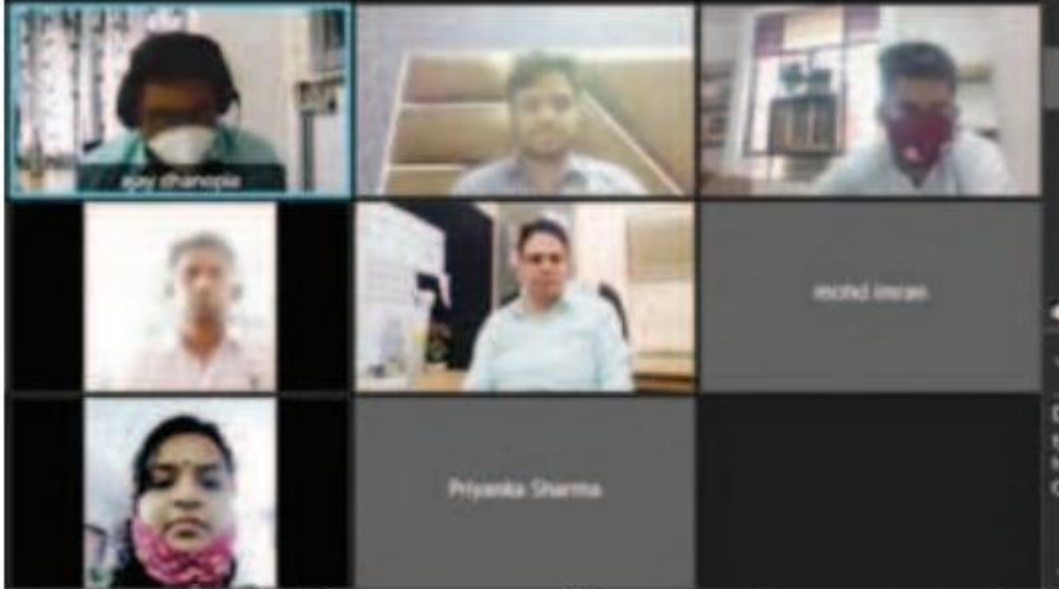
जयपुर | स्वामी केशवानंद इंस्टीट्यूट ऑफ टेक्नोलॉजी मैनेजमेंट एंड ग्रामोत्थान (एसकेआईटी) में एक दिवसीय



वर्चुअल लैब का आईआईटी दिल्ली के सहयोग से आयोजन हुआ। वर्कशॉप के मुख्य अतिथि आईआईटी

दिल्ली के फील्ड विशेषज्ञ प्रतीक शर्मा एवं शिवम सुंदरम थे। वर्चुअल लैब्स एक संपूर्ण लर्निंग मैनेजमेंट सिस्टम प्रदान करता है जहाँ छात्र अतिरिक्त वेब-संसाधन, वीडियो व्याख्यान, एनिमेटेड पर दर्शन और आत्म मूल्यांकन सहित सीखने के लिए विभिन्न उपकरणों का लाभ उठा सकते हैं। वर्कशॉप का संयोजन अजय कुमार धनोपिया नोडल समन्वयक वर्चुअल लैब ने किया। वर्कशॉप के अंत में प्रोफेसर धीरज जोशी विभागाध्यक्ष यांत्रिक विभाग ने विशेषज्ञों एवं प्रतिभागियों का आभार व्यक्त किया।

# वर्चुअल लेब पर एक दिवसीय वर्कशॉप संपन्न



## खबरों की दुनिया

जयपुर। स्वामी केशवानंद इंस्टीट्यूट आफ टेक्नोलॉजी (एसकेआईटी) में शुक्रवार को एक दिवसीय वर्चुअल लेब का आयोजन किया गया। इस आयोजन में वर्कशॉप के मुख्य अतिथि आईआईटी दिल्ली के फील्ड एक्सपर्ट प्रतीक शर्मा एवं शिवम सुंदरम थे। उन्होंने डेलीगेट्स को संबोधित करते हुए कहा कि कोरोना की इस महामारी के दौरान वर्चुअल लेब मुख्य रूप से

प्रेक्टिकल्स को समझकर करने में मील का पत्थर साबित हुई है। उन्होंने कहा कि वर्कशॉप का मुख्य उद्देश्य विद्यार्थियों में जिज्ञासा जगाकर प्रयोग करने को उत्साहित करना है, वर्चुअल लेब्स एक संपूर्ण लर्निंग मैनेजमेंट सिस्टम प्रदान करता है जहां छात्र अतिरिक्त वेब -संसाधन, वीडियो व्याख्यान, एनिमेटेड पर दर्शन और आत्म मूल्यांकन सहित सीखने के लिए विभिन्न उपकरणों का लाभ उठा सकते हैं।

# वर्चुअल लैब पर एक दिवसीय वर्कशॉप संपन्न

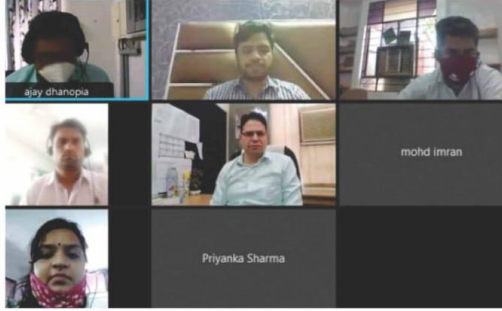
वर्कशॉप के मुख्य अतिथि आईआईटी दिल्ली के फील्ड एक्सपर्ट प्रतीक शर्मा एवं शिवम सुंदरम

## राजस्थान विकास दर्पण

जयपुर। स्वामी केशवानंद इंस्टीट्यूट आफ टेक्नोलॉजी (एसकेआईटी) में शुक्रवार को एक दिवसीय वर्चुअल लैब का आयोजन किया गया। इस आयोजन में वर्कशॉप के मुख्य अतिथि आईआईटी दिल्ली के फील्ड एक्सपर्ट प्रतीक शर्मा एवं शिवम सुंदरम थे। उन्होंने डेलीगेट्स को संबोधित करते हुए कहा कि कोरोना की इस महामारी के दौरान

वर्चुअल लैब मुख्य रूप से प्रैक्टिकल्स को समझकर करने में मील का पत्थर साबित हुई है। उन्होंने कहा कि

उत्साहित करना है, वर्चुअल लैब्स एक संपूर्ण लर्निंग मैनेजमेंट सिस्टम प्रदान करता है जहां छात्र अतिरिक्त वेब -संसाधन, वीडियो व्याख्यान, एनिमेटेड पर दर्शन और आत्म मूल्यांकन सहित सीखने के लिए विभिन्न उपकरणों का लाभ उठा सकते हैं। कार्यक्रम में वर्चुअल लैब संयोजन अजय कुमार धनोपिया ने किया। वर्कशॉप के अंत में मेकेनिकल डिपार्टमेंट हैड प्रोफेसर धीरज जोशी ने एक्सपर्ट्स एवं डेलीगेट्स का आभार जताया।



वर्कशॉप का मुख्य उद्देश्य विद्यार्थियों में जिज्ञासा जगाकर प्रयोग करने को

## वर्चुअल लैब पर एक दिवसीय वर्कशॉप संपन्न

डेली न्यूज, mix रिपोर्टर, जयपुर। स्वामी केशवानंद इंस्टीट्यूट आफ टेक्नोलॉजी में शुक्रवार को एक दिवसीय वर्चुअल लैब का आयोजन किया गया। इस आयोजन में वर्कशॉप के मुख्य अतिथि आईआईटी दिल्ली के फील्ड एक्सपर्ट प्रतीक शर्मा और शिवम सुंदरम थे। उन्होंने डेलीगेट्स को संबोधित करते हुए कहा कि कोरोना की इस महामारी के दौरान वर्चुअल लैब मुख्य रूप से प्रैक्टिकल्स को समझकर करने में मील का पत्थर साबित हुई है। उन्होंने कहा कि वर्कशॉप का मुख्य उद्देश्य विद्यार्थियों में जिज्ञासा जगाकर प्रयोग करने को उत्साहित करना है। वर्चुअल लैब्स एक संपूर्ण लर्निंग मैनेजमेंट सिस्टम प्रदान करता है जहां छात्र अतिरिक्त वेब संसाधन, वीडियो व्याख्यान, एनिमेटेड पर दर्शन और आत्म मूल्यांकन सहित सीखने के लिए विभिन्न उपकरणों का लाभ उठा सकते हैं।



**Department of Mechanical Engineering****Workshop on Virtual Labs 29.07.2021****List of Participants**

<b>S. No.</b>	<b>College I.D.</b>	<b>Participant Name</b>
1	SKIT Faculty (ME)	Ankit Kumar Agarwal
2	20ESKCS142	Mayank Lalwani
3	Expert IIT Delhi	Prateek Sharma
4	SKIT Faculty (ME)	Ajay Dhanopia
5	20ESKCS141	Mannat Goyal
6	20ESKCS148	Mohit Bansal
7	20ESKCS160	Nikita Gupta
8	20ESKCS092	Geetika Mathur
9	20ESKCS170	Piyush Agrawal
10	Expert IIT Delhi	Shivam Sundaram
11	20ESKCS146	Mohit Agarwal
12	20ESKCS872	Vishal Katariya
13	20ESKME020	Asad Ali
14	SKIT Faculty (EE)	mohd imran
15	20ESKCS161	Nikshay Khandelwal
16	20ESKCS088	Garvit Mathur
17	SKIT Faculty (ECE)	Priyanka Sharma
18	20ESKCS871	Vipul Kaushik
19	20ESKCE114	Somik Choudhary
20	20ESKCS029	Ananya Mathur
21	20ESKCS830	Shagun Agarwal
22	20ESKCS021	Akshat Sharma
23	20ESKCS075	Dharmi Kapadiya
24	20ESKCS829	Saurabh Singh Parihar
25	20ESKIT102	Ujjwal Mantri
26	SKIT Faculty (ME)	Dinesh Kumar Sharma
27	SKIT Faculty (ME)	Prof. Dheeraj Joshi (HOD,ME)
28	20ESKCS003	Aastha Jain
29	20ESKCS030	Angelina Freda Smith
30	20ESKCS136	Lakshita Natani
31	20ESKCS875	Vishal Singh Chouhan
32	20ESKEC022	Archita Gocher
33	20ESKCS038	Anshika goyal
34	20ESKCS057	Ayush Soni
35	20ESKCA013	Bhavya Sharma
36	20ESKCS002	Aakash Dadhich
37	20ESKEE154	Yash Jindal
38	20ESKCS001	Aaditya Trivedi
39	20ESKCS018	Akshat Jain
40	20ESKCS123	Khushi Garg
41	20ESKCS811	Ritika Singh
42	20ESKCE089	Prakhar Pareek
43	20ESKCS183	Pratiksha Sharma
44	20ESKCS837	Shivam Singhal
45	20ESKCS883	Yuvraj Naruka
46	20ESKCS162	Nikunj Singh Gehlot
47	20ESKCS023	Akshi Jain
48	20ESKCS002	C-02 Ayushi Agarwal
49	20ESKCS008	Aditi Agarwal
50	20ESKCS009	Aditi Pareek

S. No.	College I.D.	Participant Name
51	20ESKCS098	Harsh Soni
52	20ESKIT084	Ruchit Sharma
53	20ESKCA003	Agrawal Pranjal Pankaj
54	20ESKCS048	Ashu Agarwal
55	20ESKCS059	Badal Soni
56	20ESKCS109	Jatin Yadav
57	20ESKIT087	Sakshi Gurbani
58	20ESKEC005	Abhinav Mathur
59	20ESKCS810	Ritesh Lavti
60	20ESKCE008	Aman Jain
61	20ESKCS016	Akhilesh Chaturvedi
62	20ESKCS101	Harshit Jain
63	20ESKCS173	Piyush Jain
64	20ESKIT100	Tanisha Jain
65	20ESKCS054	Ayush Kumar
66	20ESKCS154	Naman Mittal
67	20ESKCA046	Prafull Bhargava
68	20ESKCE091	Pretesh Kakhani
69	20ESKCE097	Rahul Meena
70	20ESKME059	Mohit Pareek
71	SKIT Faculty (EE)	Abhishek Gupta
72	20ESKCS868	Vikas Singh Khinchi
73	20ESKEC006	Abhishek Sharma
74	SKIT Faculty (CE)	Nikhil Kumar Sharma
75	20ESKCS832	Shashank Purohit
76	20ESKCA025	Harshil Sodani
77	20ESKCA044	Nakshatra Garg
78	20ESKCS076	Dheeraj Kumar Garg
79	20ESKCS166	Nitya Singh
80	20ESKCS827	Sarthak Maheshwari
81	20ESKEE141	Suryansh Arya
82	20ESKIT044	Himanshi Sharma
83	20ESKCS140	Manjeet Singh
84	20ESKCA030	Jyoti Agrawal
85	20ESKCE106	Sailesh Mathur
86	20ESKCS087	Divyanshi Bhardwaj
87	20ESKCS177	Prakhar Saraswat
88	20ESKCS198	Purvi Goyal
89	20ESKEE081	Navneet Kumar
90	20ESKEE056	Krati Lakhani
91	20ESKCS093	Gulshan Sharma
92	20ESKCS184	Pratyush Chhipa
93	20ESKEE013	Akshat jinakar
94	20ESKCS869	Vinayak Bhati
95	20ESKIT049	Jayesh Sharma
96	20ESKCS195	Priyanshu Parashar
97	20ESKIT041	Harshit Gupta
98	20ESKCA015	Chhavi Sharma
99	20ESKCS824	Sanyam Jain
100	20ESKEC003	Abhay Bhardwaj
101	20ESKEE072	Monika Dudi
102	20ESKEE094	Pulkit Gupta
103	20ESKCS050	Ashwin Gupta
104	20ESKCS012	Aditya Sharma

S. No.	College I.D.	Participant Name
105	20ESKCS857	Tanya Verma
106	20ESKEE085	Nikita Choudhary
107	20ESKCA028	Harshita Paliwal
108	20ESKCA036	Krishna Rathi
109	20ESKEC060	Kashish Sharma
110	20ESKEC123	Vipasha Goyal
111	20ESKEE005	Abhishek Singh
112	20ESKCS080	Divya Dulani
113	20ESKCS853	Tanisha Mudgal
114	20ESKCS866	V Bhuvanesh
115	20ESKEE105	Riaz Ahmed
116	20ESKCS831	Shailendra Singh
117	20ESKIT059	Manan Sharma
118	20ESKCS085	Divyansh Jaitlia
119	20ESKCE119	Tarun Prakash Saini
120	20ESKEC037	Dhruv Jain
121	20ESKEC062	Khushi Garg
122	20ESKCS157	Nicky Lakhisarani
123	20ESKCS192	Priyansh Lavadia
124	20ESKCS182	Pratham Kothari
125	20ESKCS809	Rishika Bansal
126	20ESKEE121	Sarla Karwasara
127	20ESKCS077	Dhruv Mittal
128	20ESKCS199	Purvi Harpalani
129	20ESKEC058	Kashish Jagwani
130	20ESKME001	Aayushman Mishra
131	20ESKCE072	Manjeet Suman
132	20ESKEE159	Yathartha Solanki
133	20ESKCS820	Sakshi Nagpal
134	20ESKEC055	Kanak Singhal
135	20ESKEC017	Ankit Kumar
136	20ESKEE086	Parth Chahar
137	20ESKCS187	Prisha Kasat
138	20ESKEE156	Yash Saini
139	20ESKCS808	Rishang Tiwari
140	20ESKCA011	Bhanupriya Panwar
141	20ESKEE114	Ruchika Jain
142	20ESKEE067	Mayank Jangir
143	20ESKCS153	Naman Goyal
144	20ESKCS197	Pulkit Vashishth
145	20ESKCS804	Rahul Suthar
146	20ESKME033	Divyansh Sharma
147	20ESKCA043	Monay Chhattani
148	20ESKCS168	Parth Nagdev
149	20ESKEE119	Sandeep Kumar Yadav
150	20ESKEE130	Shivam Kumar
151	20ESKCE130	Vishal Bansiwal
152	20ESKCS185	Prerit Goyal
153	20ESKEC051	Jamuna Jangid
154	20ESKCA018	Dhairya Gupta
155	20ESKCA026	Harshit Khandelwal
156	20ESKCS151	Muskan Goyal
157	20ESKCA048	Rahul Goyal
158	20ESKCE021	Arvind Yadav

S. No.	College I.D.	Participant Name
159	20ESKCS118	Kartikey Sharma
160	20ESKCA038	Lavanya Talwar
161	20ESKIT078	Puneet Garg
162	20ESKCS083	Divyansh Gupta
163	20ESKEE093	Priyanshu Rawat
164	20ESKCE093	Rahul Choudhary
165	20ESKEC029	Ayush Pandey
166	20ESKME067	Pawan Bora
167	20ESKCS129	Kul Pratap Singh
168	20ESKEC002	Aanchal Yadav
169	20ESKEE132	Shreya Pandey
170	20ESKEE082	Navya Sharma
171	20ESKEE147	Vaidehi Mudgal
172	20ESKCE065	Maahi Kaur Disanj
173	20ESKCS159	Niharika Rathore
174	SKIT Faculty (CS)	Garima Gupta
175	20ESKCA001	Aayushi Sharma
176	20ESKCE052	Kartik Choudhary
177	20ESKME025	Ayush Rathor
178	20ESKCA031	Kanishk Agarwal
179	20ESKEE123	Saurabh Garg
180	20ESKEC048	Hemant Kumar Atal
181	20ESKEE120	Sanyam Lodha
182	20ESKCS196	Priyanshu Suhalka
183	20ESKEC052	Jayesh Mour
184	20ESKCA058	Sukhleen Singh
185	20ESKCA063	Tarun Jain
186	20ESKCE016	Ankit Yadav
187	20ESKCE104	Rohit Meena
188	20ESKIT018	Arun Sharma
189	20ESKCS186	Prince Kumar
190	20ESKCS839	Shreya Jindal
191	20ESKEC031	Chakshit Gunidia
192	20ESKCE096	Rahul Meena
193	20ESKCS139	Lavi Kumar Goyal
194	20ESKME061	Navneet Sagar
195	20ESKCS178	Prateek Gaur
196	20ESKCS027	Aman Bhargava
197	20ESKCS094	Hardik Jain
198	20ESKEC039	Dikshant Sharma
199	20ESKEE116	Sachin Yadav
200	20ESKCS019	Akshat Pareek
201	20ESKEE096	Pulkit Yadav
202	20ESKEE145	Utkarsh Maheshwari
203	20ESKCE071	Manjeet Bijarniya
204	20ESKCS158	Nidhi Yadav
205	20ESKCS801	Raghav Singh Manhas
206	20ESKEE103	Rajkumar Sain
207	20ESKEC036	Dhiraj Kumar
208	20ESKCE034	Dilkhush Meena
209	20ESKCS196	Priyanshu Suhalka
210	20ESKCA064	Tisha Gupta
211	20ESKCS095	Hari Kumar Addania
212	20ESKME069	Priyanshu Goyal

<b>S. No.</b>	<b>College I.D.</b>	<b>Participant Name</b>
213	SKIT Faculty (IT)	Naveen Jain
214	20ESKCA051	Rishabh Dhayal
215	20ESKCS090	Gautam Kumar Jain
216	20ESKEE111	Rituraj Sharma
217	20ESKCS113	Jitendra Singh
218	20ESKEC033	Chirayu Jain
219	20ESKEC035	Chitvan Tak
220	20ESKCS127	Kriishnanshu Bhargava
221	20ESKCS112	Jigyasa Singh
222	20ESKCS131	Kunika Khandelwal
223	20ESKCS819	Sakshi Gupta

## **A summary report on BOOTATHON event for Virtual Labs Development (4<sup>th</sup> – 10<sup>th</sup> November, 2019 at Rajkiya Engineering College, Banda, Uttar Pradesh)**

With the approval of SKIT management, we attended Virtual Lab Development “BOOTATHON” (Bootcamp+Hackathon) event from 4<sup>th</sup> – 10<sup>th</sup> November, 2019 at Rajkiya Engineering College, Banda, Uttar Pradesh in coordination with IIT Bombay, IIT Delhi and IIT Kanpur supported by TEQIP-III. Our team consists of following members:

Participating Team: Dr. Om Ji Shukla (Faculty member from ME)

Chirag Patni (B.Tech.-ME 3<sup>rd</sup> Sem)

Aman Sharma (B.Tech.-ME 3<sup>rd</sup> Sem)

Hritik Gaur (B.Tech.-ME 3<sup>rd</sup> Sem)

Mohit Agarwal (B.Tech.-CS 3<sup>rd</sup> Sem)

“BOOTATHON” was a national event and total 30 teams across India participated in this event. It was very learning experience for us in the field of developing Virtual Labs which is directly handled by MHRD India. During this event, every team had to develop experiments on Virtual Lab. The development process of an experiment consists of four steps:

1. Writing a well-defined pedagogy
2. Writing a detailed storyboard
3. Writing the lab manual
4. Developing the simulator

During this event, sessions for faculty and students were conducted separately from 8 a.m. to 8 p.m. continuously with lunch break and tea. Sessions for faculty members were mentored by experts from Virtual lab community and focused on understanding and completing above mentioned first three steps of respective experiment. Sessions for students were focused on developing the simulator for respective experiment. Our team had performed excellent in every task given by the experts in the event. They applauded our team in front of Director, REC Banda along with other dignitaries. This event is still going on in virtual mode (online) and it is extended to 15<sup>th</sup> November, 2019.

We are highly thankful to the management of SKIT Jaipur which had permitted to us to attend this BOOTATHON event. Our team has learnt a lot related to Virtual lab development process from this event.

Dr. Om Ji Shukla  
Virtual lab Coordinator,  
Department of Mechanical Engineering,  
SKIT Jaipur

## Report on BOOTATHON Event

A team of one faculty (Dr. Om Ji Shukla, Associate Prof., ME) and four students (Chirag Patni, Aman Sharma, Hritik Gaur, Mohit Agarwal) attended Virtual Lab Development "BOOTATHON" (Bootcamp+Hackathon) event from 4<sup>th</sup> – 10<sup>th</sup> November, 2019 at Rajkiya Engineering College, Banda, Uttar Pradesh in coordination with IIT Bombay, IIT Delhi and IIT Kanpur supported by TEQIP-III. "BOOTATHON" was a national event and total 30 teams across India participated in this event. During this event, every team had to develop experiments on Virtual Lab. The development process of an experiment consists of four steps: writing a well-defined pedagogy, writing a detailed storyboard, writing the lab manual, developing the simulator. The team had performed excellent in every task given by the experts in the event. The team developed one experiment in virtual lab of Strength of Material during the event.



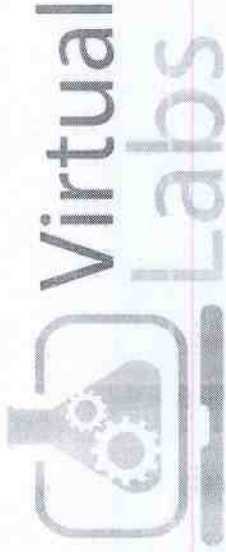


# BOOTATHON

TEQIP III

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An MHRD Govt of India Initiative

## PARTICIPATION CERTIFICATE

THIS IS TO CERTIFY THAT

### Chirag Patni

from SKIT, Jaipur participated in the 7 days BOOTATHON between Nov. 04-10, 2019 organised by Rajkiya Engineering College Banda in coordination with IIT Bombay, IIT Kanpur has developed 01 virtual lab experiment.

PROF. S.P. SHUKLA  
Director, REC Banda

DR. ASHUTOSH TIWARI  
Vlabs Coordinator, REC Banda

PROF. KANTESH BALANI  
P.I. Vlabs, IIT Kanpur

PROF. SANTOSH NORONHA  
P.I. Vlabs, IIT Bombay





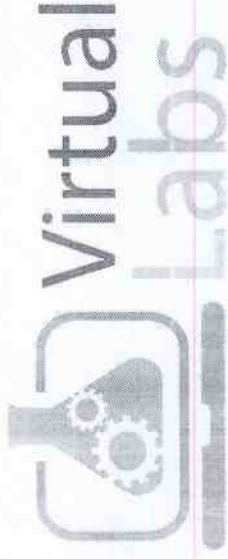
# BOOTATHON

TEQIP III



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REF:REC/BOOTATHON/20190041



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## PARTICIPATION CERTIFICATE

THIS IS TO CERTIFY THAT

### Om Ji Shukla

from SKIT, Jaipur participated in the 7 days BOOTATHON between Nov. 04-10, 2019 organised by Rajkiya Engineering College Banda in coordination with IIT Bombay, IIT Kanpur has developed 01 virtual lab experiment.

PROF. S.P. SHUKLA  
Director, REC Banda

DR. ASHUTOSH TIWARI  
Vlabs Coordinator, REC Banda

PROF. KANTESH BALANI  
P.I. Vlabs, IIT Kanpur

PROF. SANTOSH NORONHA  
P.I. Vlabs, IIT Bombay



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# BOOTATHON

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INSTITUTIONS' COORDINATION CENTRE  
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## PARTICIPATION CERTIFICATE

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### Aman Sharma

from SKIT, Jaipur participated in the 7 days BOOTATHON between Nov. 04-10, 2019 organised by Rajkiya Engineering College Banda in coordination with IIT Bombay, IIT Kanpur has developed 01 virtual lab experiment.

PROF. S.P. SHUKLA  
Director, REC Banda

DR. ASHUTOSH TIWARI  
Vlabs Coordinator, REC Banda

PROF. KANTESH BALANI  
P.I. Vlabs, IIT Kanpur

PROF. SANTOSH NORONHA  
P.I. Vlabs, IIT Bombay



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## PARTICIPATION CERTIFICATE

THIS IS TO CERTIFY THAT

### Hritik, Gour

from SKIT, Jaipur participated in the 7 days BOOTATHON between Nov. 04-10, 2019 organised by Rajkiya Engineering College Banda in coordination with IIT Bombay, IIT Kanpur has developed 01 virtual lab experiment.

PROF. S.P. SHUKLA  
Director, REC Banda

DR. ASHUTOSH TIWARI  
Vlabs Coordinator, REC Banda

PROF. KANTESH BALANI  
P.I. Vlabs, IIT Kanpur

PROF. SANTOSH NORONHA  
P.I. Vlabs, IIT Bombay



REF:REC/BOOTATHON/20190045

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## PARTICIPATION CERTIFICATE

THIS IS TO CERTIFY THAT

### Mohit Agarwal

from SKIT, Jaipur participated in the 7 days BOOTATHON between Nov. 04-10, 2019 organised by Rajkiya Engineering College Banda in coordination with IIT Bombay, IIT Kanpur has developed 01 virtual lab experiment.

PROF. S.P. SHUKLA  
Director, REC Banda

DR. ASHUTOSH TIWARI  
Vlabs Coordinator, REC Banda

PROF. KANTESH BALANI  
P.I. Vlabs, IIT Kanpur

PROF. SANTOSH NORONHA  
P.I. Vlabs, IIT Bombay

## Pedagogy(Round 1)

### 1.1 FOCUS AREA: Reinforce theoretical concept and Experimentation

The student will know the concept of clipper and clamper, recalling concepts of diode and capacitor and to observe AC wave form .They will apprehend about the working of diodes, capacitors and other electrical components. They do the experimentation on the basis of working of diode, trial, error and learn from it and analyze the results.

### 1.2 About the Experiment:

Experiment is about wave shaping circuits using diode and other components wherein students can design the circuit for different values of components and reference voltage.

### 1.3 Learning Objectives:

S.No.	Learning Objective	Cognitive Level	Action Verb
1	Identify the components required for design of clipper circuits.	Remember	Identify
2	Recall the circuit required for clipper.	Remember	Recall
3	Assemble the circuit for clipper	Apply	Assemble
4	Design a clipper circuit to get an output voltage of +4 Volts.	Evaluate	Design
5	Identify the components required for design of clamper circuit.	Remember	Identify
6	Recall the circuit required for clamper.	Remember	Recall
7	Assemble the circuit for clamper.	Apply	Assemble
8	Design a clamper circuit to get an output voltage of +4 Volts.	Evaluate	Design

## 2.Instructional Strategy

2.1 Instructional Strategy: Expository and Problem based

2.2 Assessment Method: Formative Assessment

### 2.3 Description of sections:

1. Students will identify various components as per the arrangement to design setup.
2. Polarity of battery and direction of diode is selected as per the desired output.
3. Diode has to be selected whether ideal or practical diode.
4. Components values and reference voltage are selects as per the desired wave form.

### 3. Task & Assessment Questions

Sr No.	Learning Objective to be met	Tasks to be performed by the students	Assessment questions aligned to the task
LO1	Identify the components required for design of clipping circuit.	Choose the required components from given set of components.	Identify the components required for a clipper circuit.
LO2	Recall the circuit required for clipper.	Student has to choose the correct circuit from given set of circuits.	What is the circuit of clipper ?
LO3	Assemble the circuit for clipper.	Student will connect the wires to the appropriate terminals to form the clipper circuit.	Same as the task itself.
LO4	Design a clipper circuit to get an output voltage of +4 Volts.	Student will calculate the value of reference voltage for a fixed output voltage and enter the values in the simulator.	Observe a positive clipped waveform of +4 volts output voltage on simulator.
LO5	Identify the components required for design clamping circuit.	Choose the required components from given set of components.	Identify the components required for a clamper circuit.
LO6	Recall the circuit required for clamper.	Student has to choose the correct circuit from given set of circuits.	What is the circuit of clamper ?
LO7	Assemble the circuit for clamper.	Student will connect the wires to the appropriate terminals to form the clamper circuit.	Same as the task itself.
LO8	Design a clamper circuit to get an output voltage of +4 Volts.	Student will calculate the value of reference voltage for a fixed output voltage and enter the values in the simulator.	Observe a positive clamped waveform of +4 volts output voltage on simulator.

What students will do?	What simulator will do?	Purpose of the task
Student will select either he wants to perform clipper or clamper circuit experiment.	Simulator will allow him to select.	To decide whether clipper experiment or clamper experiment is to be performed.
Student will choose the required components from given sets of components.	It will display whether the selected component is correct or not.	To identify the appropriate components required to form wave shaping circuits.

#### 4. Simulator Interactions

Student has to select the correct circuit from given sets of circuits.	It will display a set of circuits to choose the correct one.	To identify the correct circuit of clipper/clamper.
Student will connect the wires to the appropriate terminals to form the clipper/clamper circuit.	Simulator will allow to connect the components.	To form a closed circuit to get a desired waveform.
Student will enter the input parameters and click power on button.	Simulator will give different outputs for different sets of inputs.	To observe the output waveforms of different input parameters.
Student will calculate the input parameters required to get a fixed output voltage using calculator and enter those values in the circuit.	Simulator will calculate the input parameters for a fixed output voltage and display the output waveform with desired output voltage.	To design a clipper/clamper circuit for a fixed output voltage.



## Storyboard(Round 2)

### Experiment 1: Clipper and Clamper

#### 1. Story Outline:

Clippers, limiters or clipping circuits make use of non-linear properties of diode, that is the diode conducts the current in the forward direction and does not conduct in the reverse direction. These circuits are primarily wave shaping circuits. They clip or remove the undesired portion of AC input voltage.

Clamping circuits are used to change DC level (average level) of the signal which adds or subtracts DC value to the signal. In clamping, the shape of waveform remains same only offset value (DC level) will change. Positive clamping adds a positive DC level in the signal while negative clamping adds a negative DC level in the signal. The capacitor is widely used in the clamping circuit.

In this virtual lab experiment, we are first selecting whether we have to perform clipper or clamper circuit experiment, then we have to select the components required for designing a clipper or clamper circuit. We can insert different values for components (R, C), the reference voltage and the type of diode, depending on which the output waveform can be changed. The different tasks can also be performed for given values.

In the first task, we have to identify the correct components of clipper and clamper.

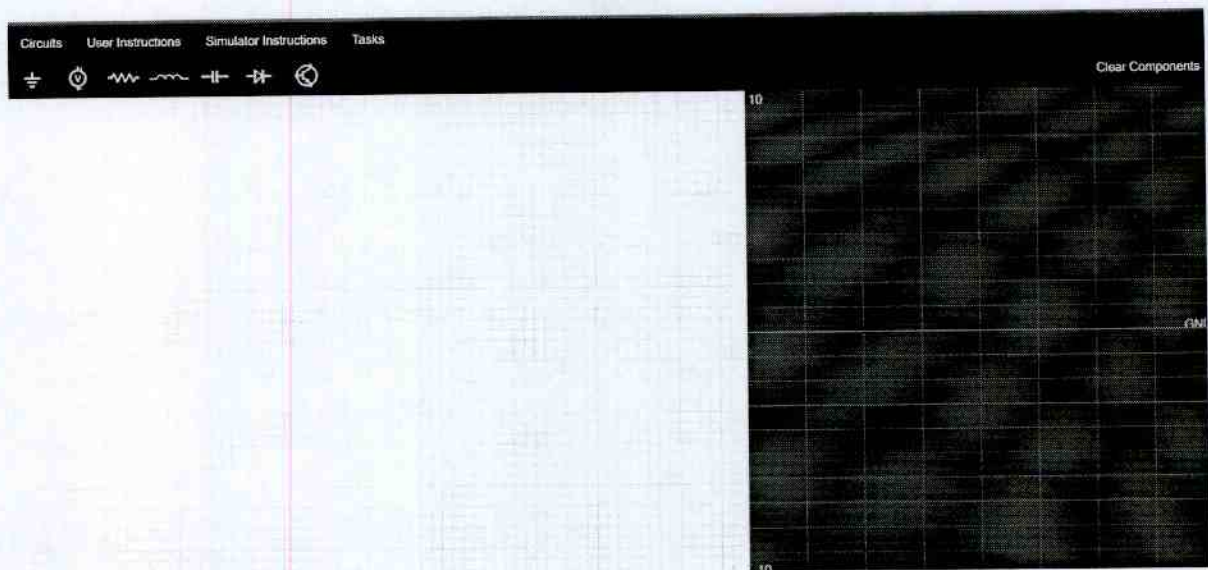
In the second task, we have to identify the correct circuit of clipper and clamper.

In the third task, we have to assemble the circuit by connecting wires at appropriate terminals.

In the fourth task, we have to design the circuit to get the desired output waveform.

#### 2. Story:

##### 2.1 Set the Visual Stage Description:



In the beginning, the simulator screen will open with workspace on left side of screen and an oscilloscope on the right side of the screen. There is a navigation bar on the top containing circuits, user instructions, simulator instructions and the tasks. The user have to click on the circuits menu to select whether he wants to perform clipper experiment or clamper experiment. Several tasks can be performed by hovering over the task menu and selecting any task from it. Components bar is just below the navigation bar which can be used by picking and placing them on the workspace.

## 2.2 Set User Objectives & Goals:

Our objective is to give basic understanding of wave shaping circuits. Another objective is to understand the appropriate connection of circuit elements in the circuit to achieve the required output waveshape.

Goals will be as such that the student will be able to calculate output voltage of clipped waveform and voltage level of clamped waveform depending on given parameters.

## 2.3 Set the Pathway Activities:

### Clipper Circuit

1. Select the clipper button from the circuit menu.
2. Select the components and connect them to draw clipper circuit.
3. Set the desired input voltage value  $V_i$  with  $V_{rms}$  and frequency values.
4. Select the resistor and set the value.
5. Set the value of reference voltage  $V$ .
6. Connect the terminals through wires.
7. Run the simulation and desired output wave will be displayed.

8. Observe the output wave and verify the result with the hand written calculations.

### Clamper Circuit

1. Select the clamper button from the circuit menu.
2. Select the components and connect them to draw clamper circuit.
3. Set the desired input voltage value.  $V_i$  with  $V_{rms}$  and frequency values.
4. Select the capacitor and set the value.
5. Set the value of reference voltage  $V_1$ .
6. Connect the terminals through wires.
7. Run the simulation and desired output wave will be displayed.
8. Observe the output wave and verify the result of the clamped wave form as per the task.

### 2.4 Set Challenges and Questions/Complexity/Variations in Questions:

We will set the formative questions during simulation which will pose challenges to the user. The challenges will help in meeting higher cognitive levels through numerical and questions related to formula. Complex questions that reveal the fundamentals of the wave shaping circuits are posed to the student in the form of tasks.

Question 1: What will be the effect on output waveform when reference voltage is higher than the peak input voltage?

Question 2: What will be the effect on output waveform when reference voltage is negative?

### 2.5 Allow pitfalls:

1. For proper functioning of voltage source, values should be entered in the following sequence: (frequency, minimum voltage, maximum voltage) by double clicking on the voltage source.
2. Connecting ground terminal to the voltage source is mandatory in order to get the output.

### 2.6 Conclusion:

We will be designing a clipper and clamper circuit. The output wave form will be clipped depending on values of  $R$  and reference voltage. Similarly, in the clamper circuit the level of output waveform will be changed as per the value of  $C$  and reference voltage. Real time preview is shown on the oscilloscope so that the user can analyse the effect of each component and can make changes to the circuit accordingly.

## 2.7 Equations/formulas:

### *For clipper*

For Si diode  $V_D=0.7V$ ,  $V_O=4V$ ,  $V_I=5V$  (as given in aim)

Where:  $V_D$ =Cut in voltage of the diode

$V_o$ =output voltage

$V_i$ =input voltage

$V$ =Battery voltage

Apply Kirchoff's voltage law to get the equation

$V_o - V_D - V = 0$  and solve it.

### *For clamper*

Input voltage: 10 Volt (peak) to (peak) or  $5 \sin 2\pi t$

Required output voltage: 2 V (peak) to -8V (peak)

Apply the KVL in Circuit:

$$V_{in} - V_c - V_1 = 0$$

The maximum voltage is  $V_m$  then equation is

$$V_m - V_c - V_1 = 0$$

Apply the KVL in output circuit

$$V_m - V_c - V_o = 0$$

Put equation (1) to equation (2)

$$V_{in} - V_m + V_1 = V_o$$

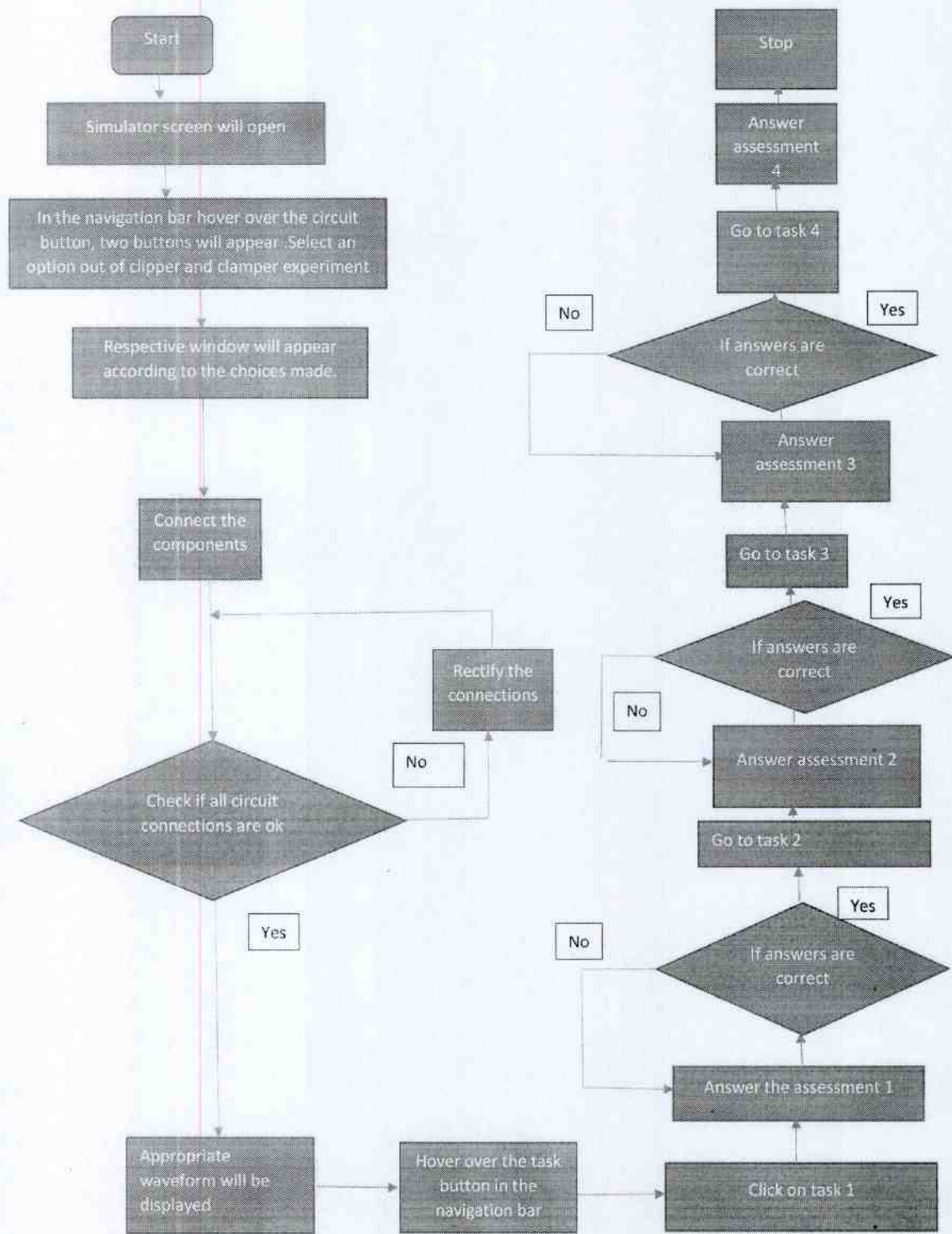
If  $V_{in} = 0$  then  $V_o = -V_m + V_1$

If  $V_{in} = V_m$  then  $V_o = V_1$

If  $V_{in} = -V_m$  then  $V_o = -2V_m + V_1$

Now calculate the required parameters accordingly.

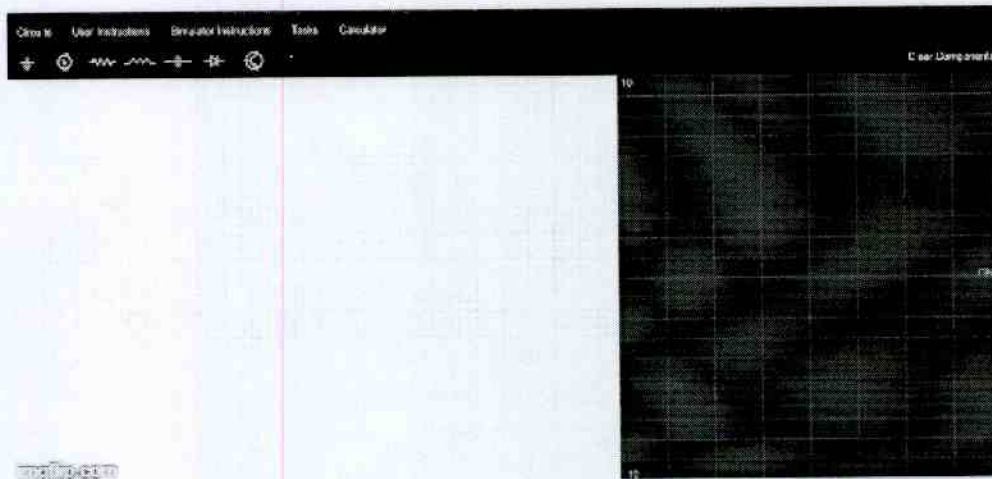
### 3. Flowchart



#### 4. Mindmap



#### 5. Storyboard






AIM

THEORY

PRE TEST

PROCEDURE

 SIMULATION

POST TEST

REFERENCES

## Clipper and Clamper

### Aim

To design the clipper and clamper circuit.

Developed by :

Harshal Nigam | SKIT M&G, Jaipur

**A summary report on “BOOTATHON” event attended at  
Rajkiya Engineering College, Banda for Virtual Labs  
Development in coordination with IIT Bombay, IIT Delhi and IIT  
Kanpur supported by TEQIP-III from 4<sup>th</sup> – 10<sup>th</sup> November, 2019**

Bootathon is a combination of Bootcamp & Hackathon. The event is organized to develop virtual Labs. They have specialized training program with a team of expert mentors and reviewers.

Our team submitted an initial proposal to develop a virtual lab on the design of “Clipper and Clamper” circuits. The proposal was accepted and our team was called to attend Bootathon event from 4<sup>th</sup> – 10<sup>th</sup> November, 2019 at Rajkiya Engineering College, Banda, after that with the approval of SKIT Management our team proceeded to attend the virtual Lab development program (Bootathon 2019)

**Participating team details:**

Team Members:

Harshal Nigam (Faculty from ECE Department)

Udyan Srivastava (B.Tech.-ECE 3rd Sem)

Ashwani Malav (B.Tech.-ECE 3rd Sem)

Aaditya Priya Gautam (B.Tech.-ECE 3rd Sem)

Vipul Gupta (B.Tech.-ECE 3rd Sem)

Lab Experiment: Design of Clipper and Clamper circuits

Discipline: Electronics and Communication Engineering

“Bootathon” was a national event and total 30 teams across India participated in this event. It was a very great experience to learn how to develop a virtual lab.

There are different rounds to clear before developing a perfect virtual lab which are as follows

**Round 1 (Pedagogy)-** In this stage learning objectives and pedagogy for experiments needs to be clearly defined.

**Round 2 (Storyboard)-** After completing the pedagogy the designing of story, mindmap, flowchart and storyboard is started.



**Round 3 (Lab Manual)**- In round 3, the developer designs the lab manual and the programmers code for the virtual lab simulator.

**Round 4 (Code Development)**- In this stage integration of different components should be done and it must be submitted for approval.

**Round 5**- This is the final stage where review and approval would be done by the virtual labs team.

The day to day activities done were as follows:

Day-1 (4 Nov 2019):

The students and faculty were separated. The students were taught coding languages to design the simulator and the faculties were given training to design Round 1 (Pedagogy) for their experiment.

Day-2 (5 Nov 2019):

The students training continued and they were given some tasks to perform regarding the simulator design. The faculties were given time to complete pedagogy for their experiment along with the assigned mentor.

Day-3 (6 Nov 2019):

The faculties were given training regarding Round 2 (Storyboard) and also to finalise Round 1 with mentor.

Day-4 (7 Nov 2019):

The faculties were given time to complete Round 2 (Storyboard) for their experiment and finalise the Rounds 1 and 2 for respective experiments.

Day-5 (8 Nov 2019):

The faculties of each team were told to sit with student team members and design the simulator according to what discussed in Rounds 1 and 2 and work on Round 3.

Day-6 (9 Nov 2019):

Due to Ayodhya issue we were told that the event is still continuing but in virtual mode (online) and the program extended to 15 November 2019.

The timings for each day was from 8 AM to 8 PM and our team worked very hard to complete all the rounds. We were appreciated by Director, REC Banda and the reviewers over there as we presented the progress of our work.

The scores for each team are being updated by the reviewers and they are continuously monitoring our work and guiding us to update the same.

We are highly thankful to the management of SKIT Jaipur for permitting to us to attend this BOOTATHON event. We have learnt a lot related to Virtual lab development process from this event.

Mr. Harshal Nigam

Assistant Professor

ECE Department

SKIT M & G Jaipur