



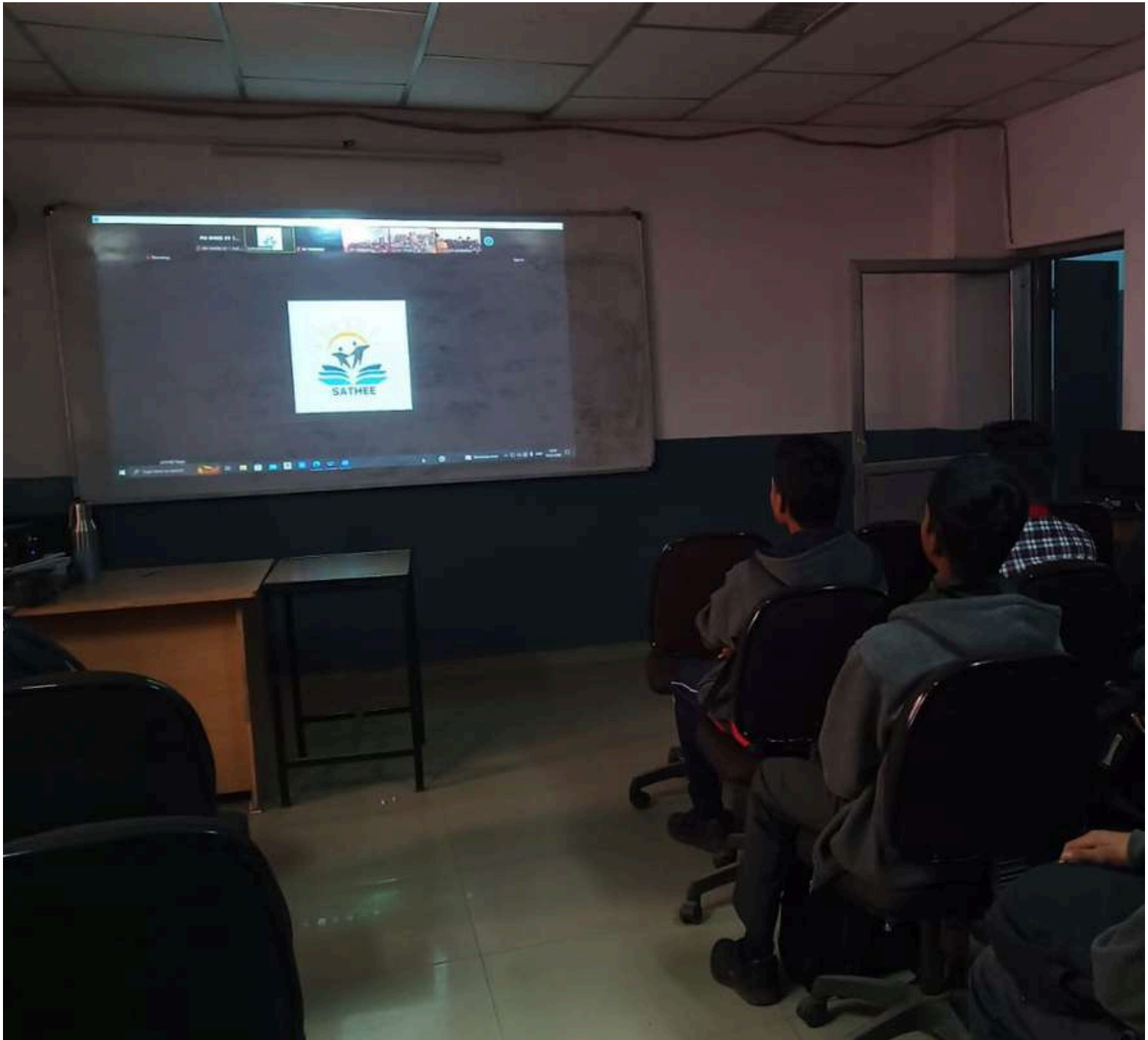
State - Madhay Pradesh

School Name : PM SHRI K.V Gwalior (Madhya Pradesh)

Teachers Name	Participated Students
<ul style="list-style-type: none">SH Akilesh (vice Principal)SH Umesh	46



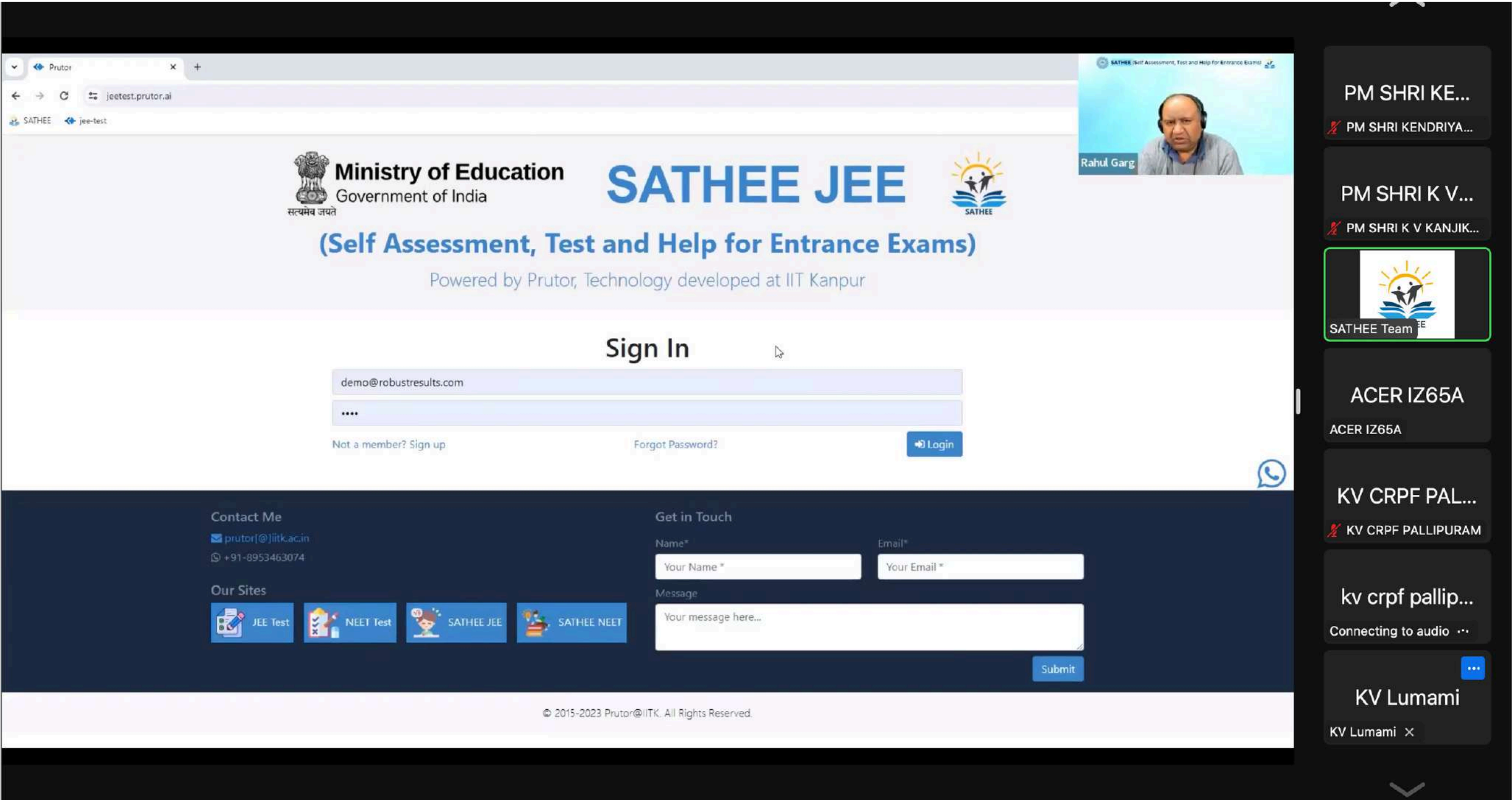
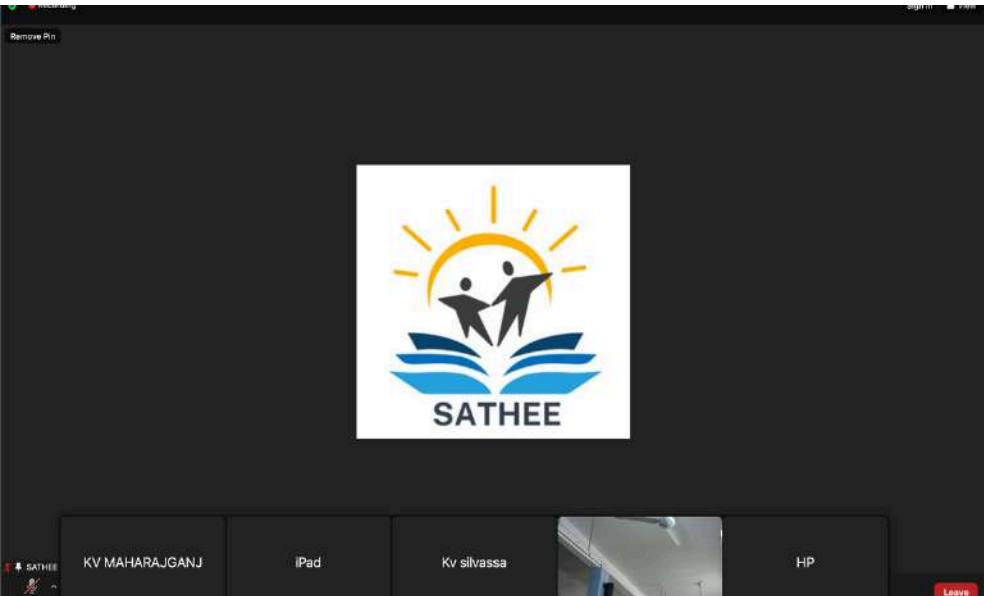
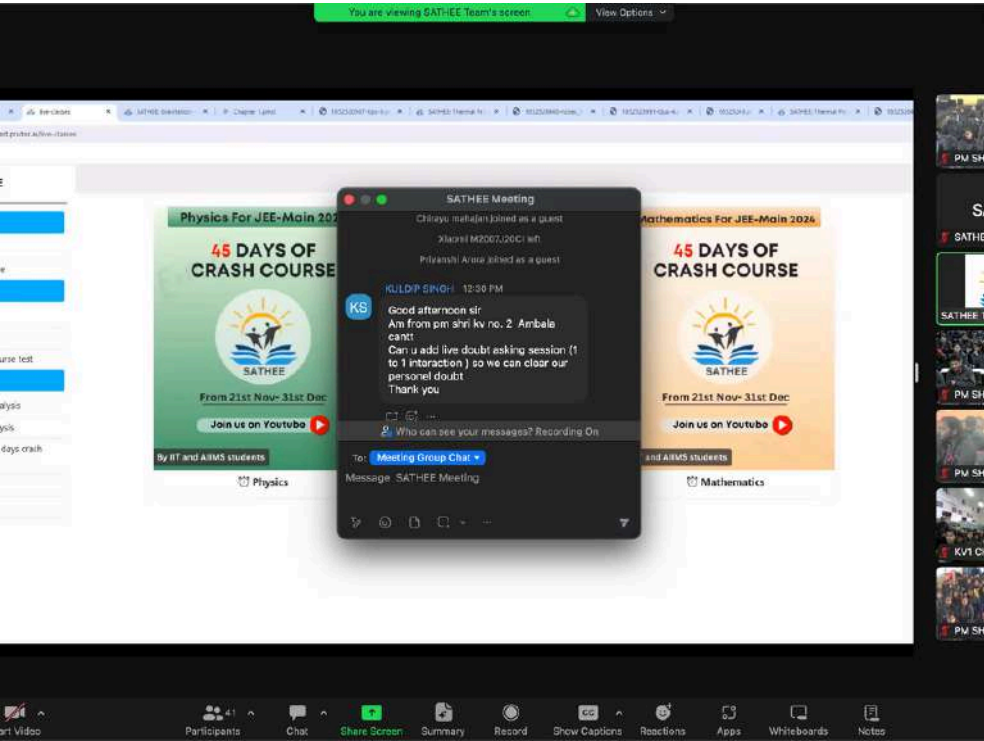
Teachers Name	Participated Students	Asked Question by
<ul style="list-style-type: none">• Mala Srivastav• Vaibhav Jain• Atul Tiwari	51	<ul style="list-style-type: none">• Bhavya atmika



Teachers Name	Participated Students	Asked Question by
<ul style="list-style-type: none">• Ms. Sonal Shulka• Mr. manish Pal• Mr. P.K Pawaiya + 5 Teachers	152	<ul style="list-style-type: none">• Shruti Patel• Chaitanya Kirti Pathak• Arnav + 8 Students



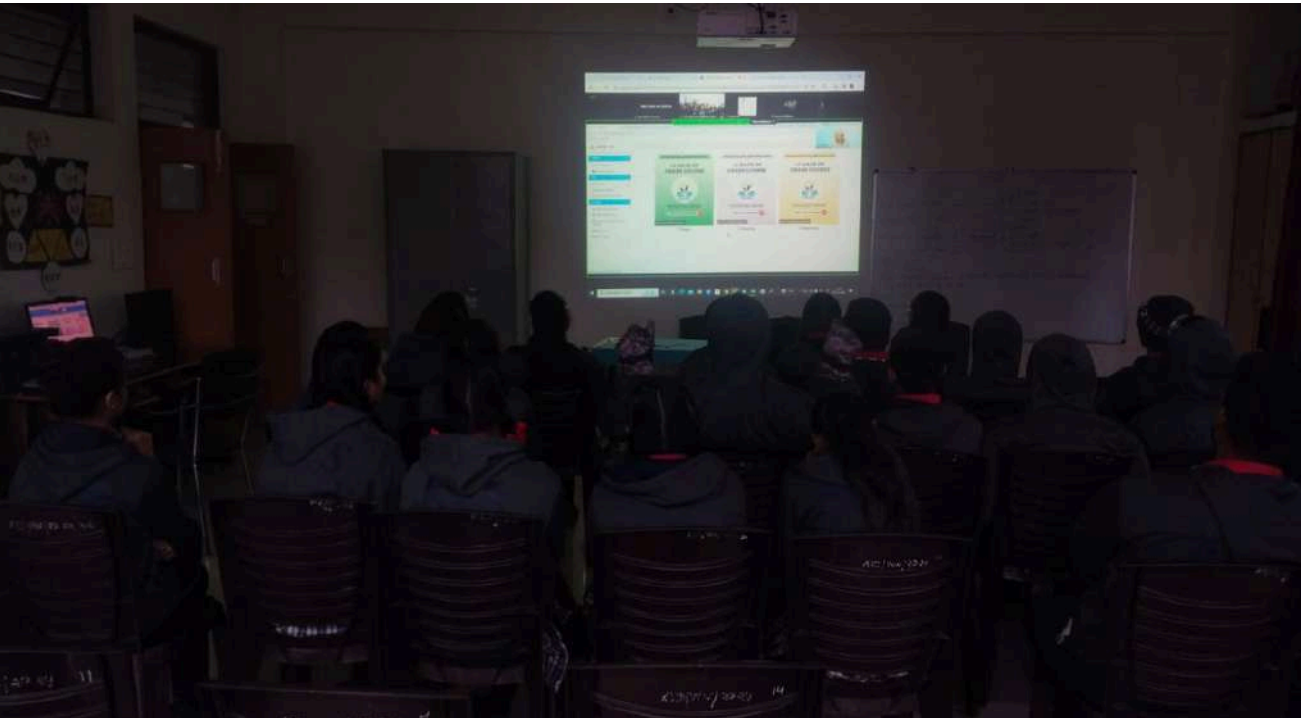
Teachers Name	Participated Students
<div><ul style="list-style-type: none">Mr. Sk. DubeyMrs. SandhyaMrs. Manadakini</div>	26



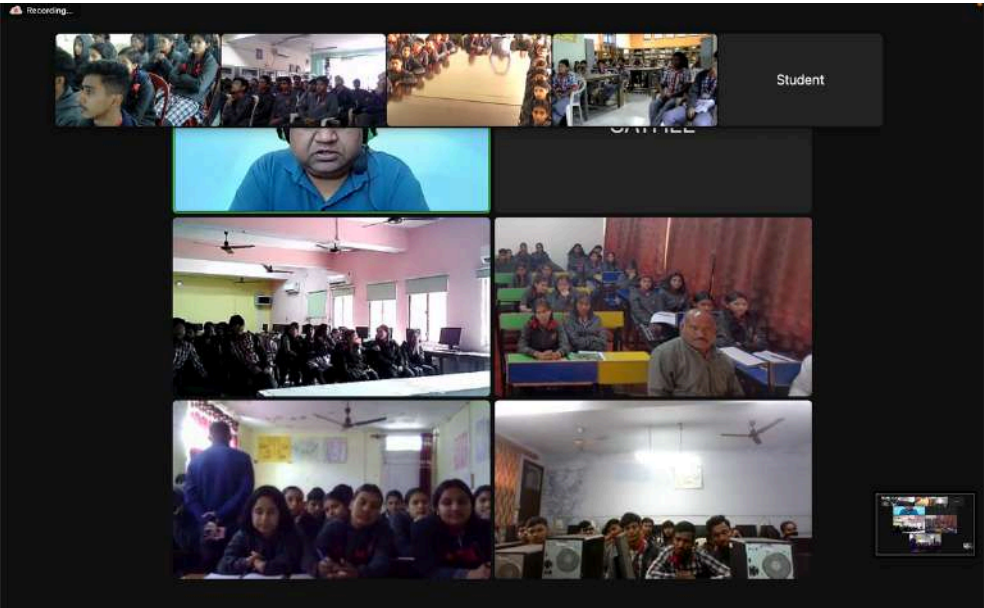
Teachers Name	Participated Students	Asked Question by
<ul style="list-style-type: none">Mr. Mahendra Parihar	21	<ul style="list-style-type: none">Siddhant RawatRohit singhMohit Sahu




Teachers Name	Participated Students	Asked Question by
<ul style="list-style-type: none">Mr. Parmod KumarMr.Shailendra SharmaMr. Manoj Kumar	29	<ul style="list-style-type: none">Sagam Dohre



Teachers Name	Participated Students	Asked Question by
<ul style="list-style-type: none">• Mr. Pankaj Patel• Mr. Rajesh Lakra• Mr. Abhishek	221	<ul style="list-style-type: none">• Mehak• Kabir• Aditya



Teachers Name	Participated Students
<ul style="list-style-type: none">Sh. Karan Singh	19



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Rahul Garg

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Teachers Name	Participated Students
<ul style="list-style-type: none">• Ms. Abha Jain, PGT CS,• Mr. Jitendra Singh PGT Maths• Ms. Megha Savner PGT	50



Teachers Name	Participated Students
<ul style="list-style-type: none">• Rajesh kumar meena• Prashant	46



Teachers Name	Participated Students
• Jyoti Jain	50



Teachers Name	Participated Students
<ul style="list-style-type: none">• Mr. Saurabh R2.• Mr. K.K Rathore3.• Mr. Mohar Singh Meena	380



Teachers Name	Participated Students	Asked Question by
<ul style="list-style-type: none">Mr Sukan Das DhekwareMr Vinod Kumar Kanojiya	46	<ul style="list-style-type: none">Ansh TiwariKartik



Teachers Name	Participated Students
<ul style="list-style-type: none">Shivkamal Singh	29



Teachers Name	Participated Students	Asked Question by
<ul style="list-style-type: none">Manish Kumar	36	<ul style="list-style-type: none">AditiYuvraj



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Teachers Name	Participated Students	Asked Question by
<ul style="list-style-type: none">Avinash Ghorse	32	<ul style="list-style-type: none">Yukta Mahale



School Name: KV Dewas (Madhya Pradesh)

Teachers Name	Participated Students
<div><ul style="list-style-type: none">• Mr. Mahendra• Mr. Prem• Mr. Anand</div>	211

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SATHEE

GRAVITATION

GRAVITATION: Universal Law of Gravitation

$F \propto \frac{m_1 m_2}{r^2}$ or $F = G \frac{m_1 m_2}{r^2}$

where $G = 6.67 \times 10^{-11} \text{Nm}^2 \text{kg}^{-2}$ is the universal gravitational constant.

Newton's Law of Gravitation in vector form:

$\vec{F}_{12} = G \frac{m_1 m_2}{r^2} \hat{r}_{12}$ & $\vec{F}_{21} = G \frac{m_2 m_1}{r^2} \hat{r}_{21}$

Non $\vec{F}_{11} = -\vec{F}_{21}$, thus

$\vec{F}_{21} = -\frac{Gm_1 m_2}{r^2} \hat{r}_{12}$

Comparing above, we get $\vec{F}_{12} = -\vec{F}_{21}$

Gravitational Field $\vec{E} = \frac{\vec{F}}{m} = \frac{GM}{r^2} \hat{r}$

Gravitational potential : gravitational potential, $V = -\frac{GM}{r}$, $E = -\frac{dV}{dr}$

1. Ring, $V = \frac{GM}{\sqrt{a^2 + r^2}}$, $E = \frac{GM}{(a^2 + r^2)^{3/2}} r$

or $E = \frac{GM}{a^2} \cos \theta$

Gravitational field is maximum at a distance,

$r = \frac{a}{\sqrt{2}}$ and it is $-\frac{2GM}{3\sqrt{3}a^2}$

2. Thin Circular Disc:

$V = -\frac{2GM}{\sqrt{a^2 + r^2}} \left[\frac{a^2 + r^2}{a^2 + r^2} \right] = -\frac{2GM}{\sqrt{a^2 + r^2}} \cos \theta$

3. Non conducting solid sphere

(a) Point P inside the sphere, $r < a$, then

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JNV CHAMBA

JNV MOGA

PM Shri JNV Una

KV NHPC SINGTA

deep Kumar jnv Moga

TAIO

DAVID

KV KALPETTA

PM SHRI KENDRIYA V

Archana Yadav

Dinesh kumar Tiwari

PMSHRI KV NIMU JALG...

harinder gupta

ranjeet singh

JNV KANGRA

Akshay Dagaya

JNV KANGRA

KV AFS NALIYA

KV DONGARGARH

JNV KATHUA

Sunil Verma

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PM SHRI JNV MANSA JOIN

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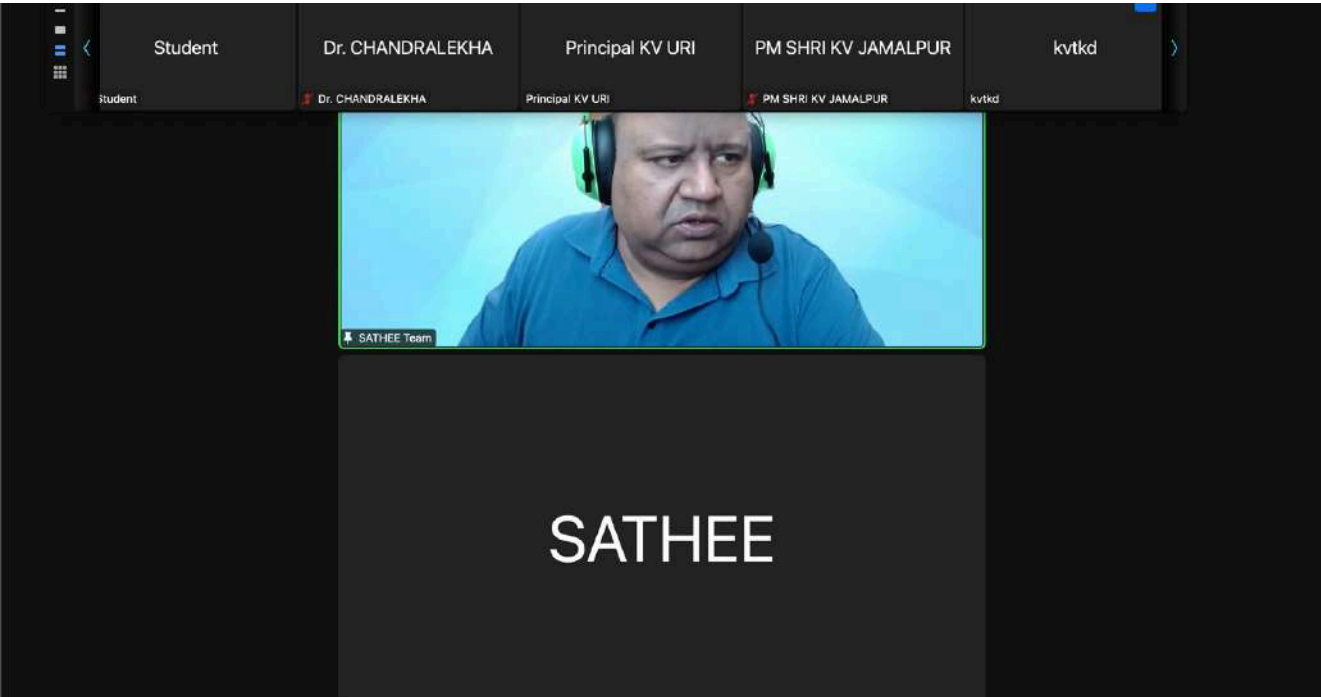
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Teachers Name	Participated Students
<ul style="list-style-type: none">• Mr. Jitesh Thorat• Mr. R.S Thakur• Mr. Neelkant Verma	64



School Name : PM SHRI K.V Mudkhet (Maharashtra)

Teachers Name	Participated Students	Asked Question by
<ul style="list-style-type: none">Mr Vivek Kaushik	12	<ul style="list-style-type: none">Piyush BhureNeha Chavhan

