



# SANDARBH

2020-2021



## **IPS Academy** **INSTITUTE OF ENGINEERING & SCIENCE**

(A UGC Autonomous Institute, Affiliated to RGPV)

*Knowledge, skills & values*

**Civil Engineering Department**







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## **Message from the Principal**

Technical Education is the most potential instrument for socio-economic change. Presently, the engineer is seen as a high-tech player in the global market. Distinct separation is visible in our education between concepts and applications. Most areas of technology now change so rapidly that there is a need for professional institutes to update the knowledge and competence. I sincerely advise the young engineers to face the major challenges of industry with a persistent search for innovation of achieving economy and improved durability. I am delighted to note that the engineering graduates have been able to demonstrate their capable identities in different spheres of life and occupied prestigious positions within the country and abroad.

At last  
Think happy. Act happy. Be happy.

**Dr. Archana Keerti Chowdhary Principal**

## **Editorial**

In this edition we have tried to be a little more intensive on the technical side by including numerous technical articles on civil engineering facts. The making of this magazine has been a daunting task, but it sure has been a special experience.

Special vote of thank to all the faculty members of civil engineering department for being a constant motivators and guides, encouraging the entire editorial team to strive for excellence for bringing out a better and improved version of the magazine, and all the students who made invaluable contribution to the magazine by sharing some of their articles .  
Last but definitely not the least, this magazine could not have been possible if it were not for the relentless effort and endless spirit of the editorial team members.

Let's keep the good work going.  
**Editorial Team**






# **Vision**

Be the preferred destination locally, regionally and internationally for the Civil Engineering society as a leading department providing high quality programs and services in Civil Engineering fields.

# **Mission**

To offer outstanding U.G. & P.G. education, research guidance, professional consultancy, outreach and manpower training as well as leadership in Civil Engineering fields.







# Highlights of the Department

## Faculties

Patents by the Faculties 03  
Book Published by the Faculties 10  
Post Doctoral Program 01  
Special Awards 05  
Research Paper Published 51  
STTP/FDP/Seminars/Workshop Attended 87

## Students

Received Gold and Silver Medals 02  
Received Chancellor Scholarship 07  
Selected in IES and other public Sectors 10  
Established as an Entrepreneur 65  
Projects with IEDC (DST) 10  
Research Papers Published 206

## Social Initiatives

Weather Station installed. Road Safety Campaign  
Week

## State of the Art Laboratories

Instrumentation Lab Heavy Structures Lab  
Simulation Lab

## Life Membership

Indian Concrete Institute.  
Indian Water Works Association. Indian Water  
Resources Society Indian Geotechnical Society

## Student Chapter

Indian Concrete Institute. Student Council





## Laboratories

- Strength of materials
- Engineering geology
- Instrumentation lab
- Transportation lab
- Software lab
- Project lab
- Fluid mechanics lab
- Survey lab
- Concrete /CMTlab I & II
- Theory of structure lab
- Geotechnical engineering lab

## Major Softwares

- STAAD Pro
- Auto CAD
- AutoDesk Civil3D 2009
- Primavera P 6.2
- Primavera Contractor
- ANSYS
- SAP 2000
- Abaqus 6.12
- ETABS
- GMS ver 6.5
- AFT Impulse4.0
- STAAD Pro Foundation+Section Wizard
- Abaqus 11.2
- DIANA FEA
- MIDAS GEN





# Major Equipment



**Total Station**



**UTM & CTM**



**Weather Station**



**Pumps and Turbines**



**Bituminous Testing Apparatus**



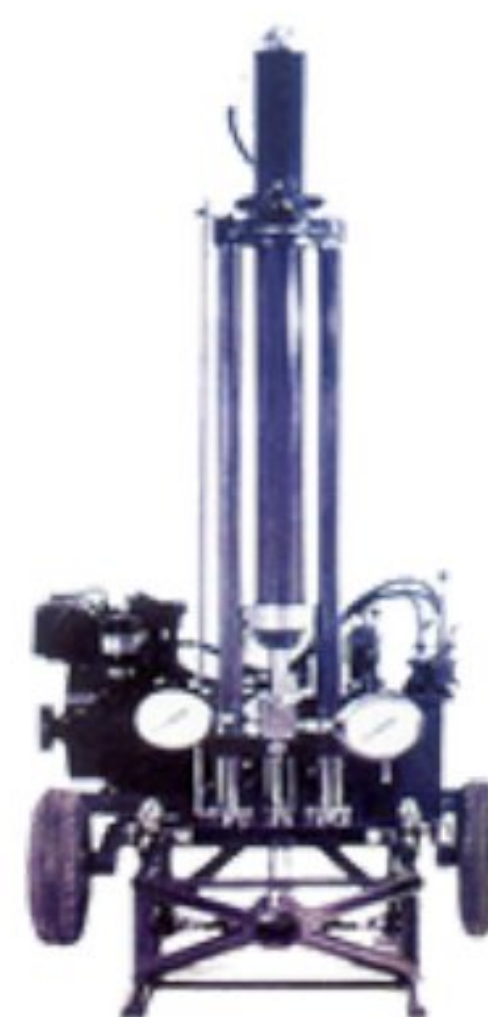
**CBR Test Apparatus**



**Polariscope**



**DCPT**



**SCPT**



**Data Logger**



# Major Upcoming Events of *CIVILIPSA*

*"Eco- Enviro-Sustainability" Under TEQIP III*

Jun 29 - Jul 3 2020

*FDP on "Advancements in Earthquake Engineering" Under TEQIP III*

Jul 6-10 2020

*Internship & Virtual Labs Training*

July 2020

*National Workshop on Mix Design*

Aug 17-20, 2020

*Engineers Day*

Sep 15, 2020

*SAMEEKSHA 2020*

Annual National Quiz Competition

Sep 21-26, 2020

*National Workshop on Building Design & Drawing*

Oct 05-10, 2020

*SRUJAN 2020*

National Seminar on Enhancement of Digital Skills in Civil Engineering

Oct 12-17, 2020

*National Workshop on Advance Surveying*

March 01-06, 2021

*NEEV 2021*

National Level Paper Presentation Contest

April 05-10, 2021

Organized by

**Civil Engineering Department**



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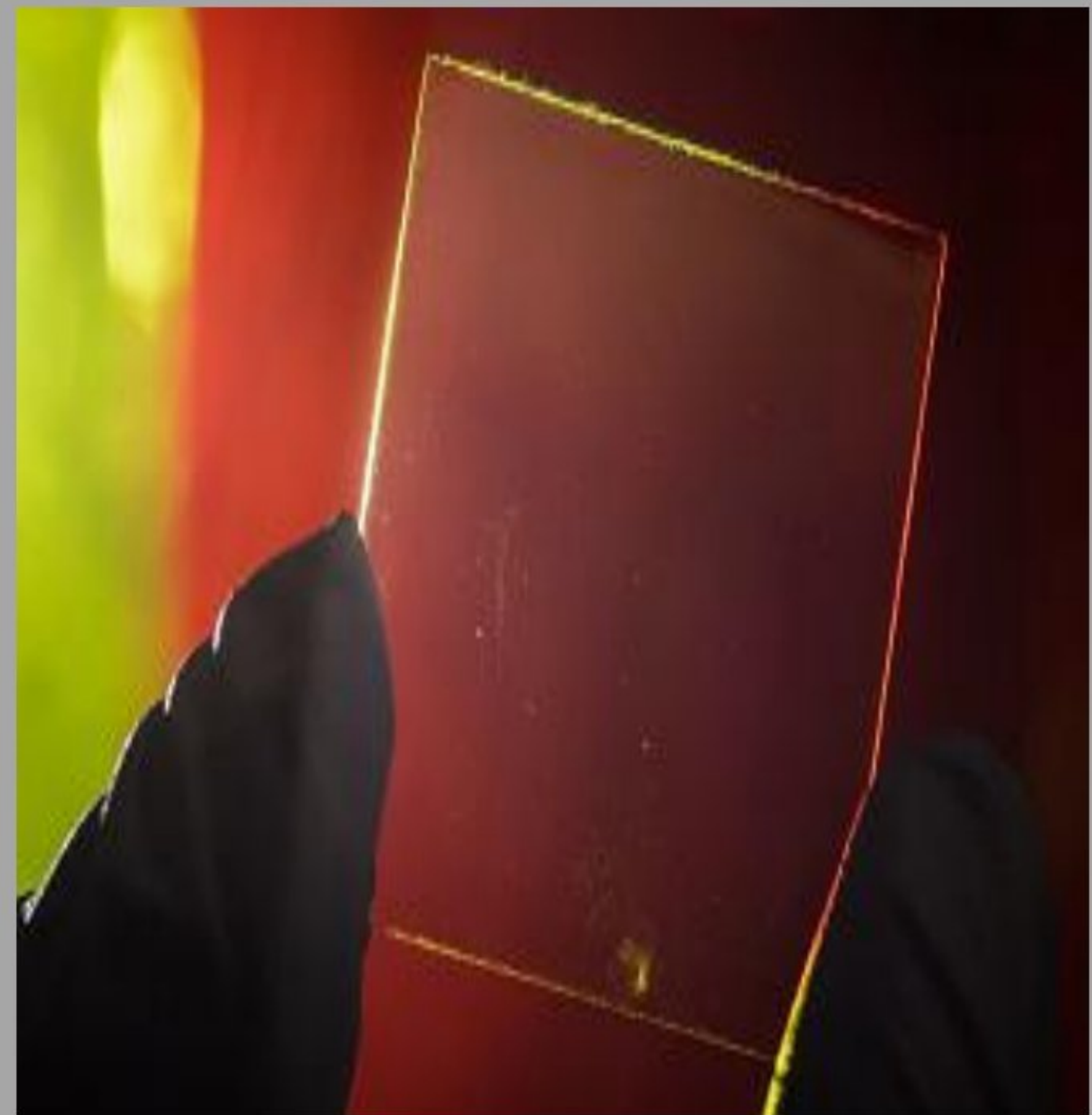
# FULLY TRANSPARENT SOLAR CELL

**Aayushi chawla**  
II YR

Back in August 2014, researchers at Michigan State University have created a fully transparent solar concentrator, which could turn any window or sheet of glass (like your Smartphone's screen) into a photovoltaic solar cell. Unlike other —transparentll solar cells that we've reported on in the past, this one really *is* transparent, as you can see in the photos throughout this story. According to Richard Lunt, who led the research at the time, the team is confident the transparent solar panels can be efficiently deployed in a wide range of settings, from —tall buildings with lots of windows or any kind of mobile device that demands high aesthetic quality like a phone or e-reader.ll

Today, Ubiquitous Energy, an MIT startup we first reported on in 2013, is now getting closer to bringing its transparent solar panels to market. Lunt cofounded the company and remains assistant professor of chemical engineering and materials science at Michigan State University. Essentially, what they're doing is instead of shrinking the

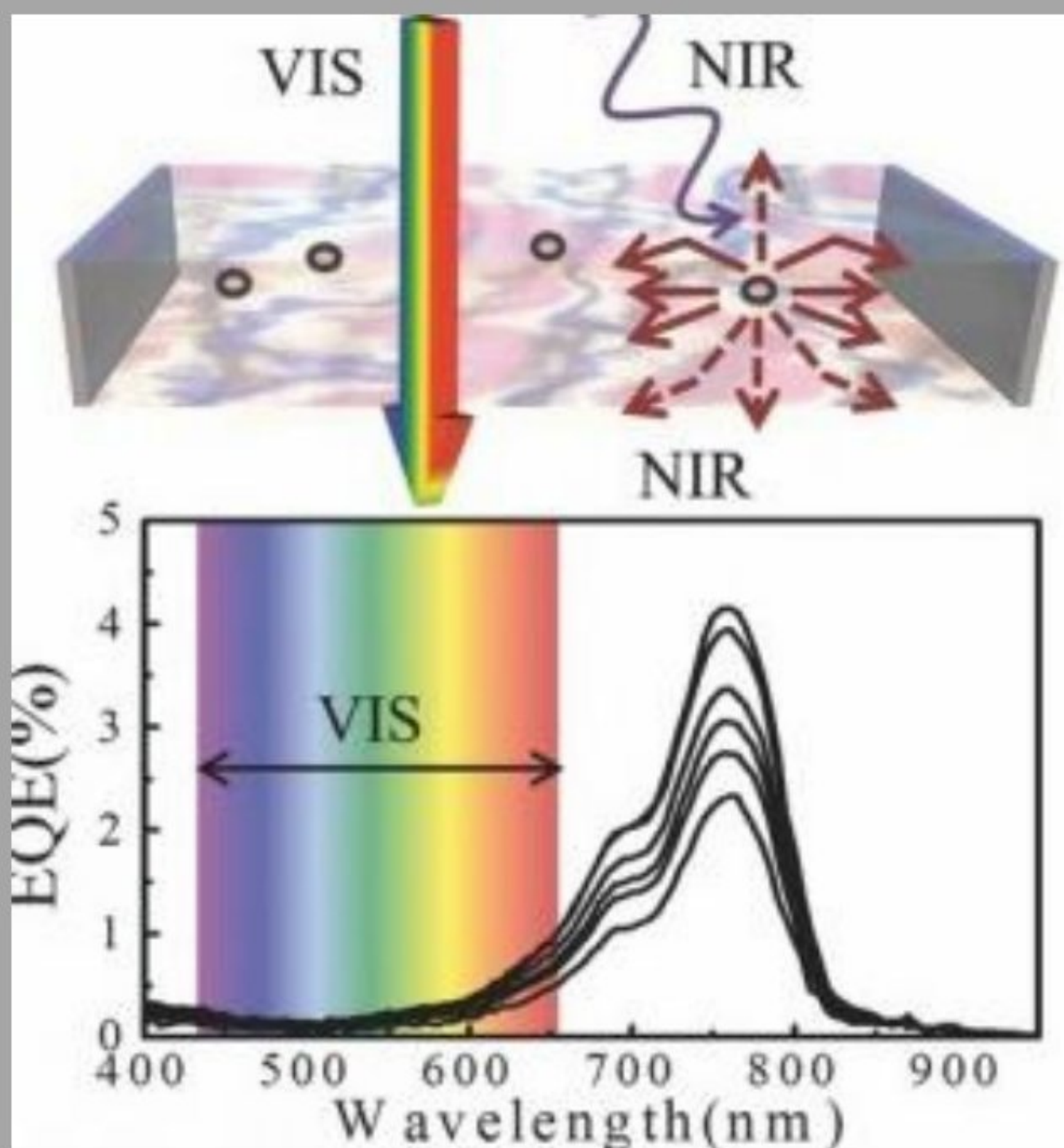
components, they're changing the way the cell absorbs light. The cell selectively harvests the part of the solar spectrum we can't see with our eye, while letting regular visible light pass through.



Scientifically, a transparent solar panel is something of an oxymoron.

To get around this limitation, the Michigan State researchers use a slightly different technique for gathering sunlight. Instead of trying to create a transparent photovoltaic cell (which is nigh impossible), they use a *transparent luminescent solar concentrator* (TLSC).





The TLSC consists of organic salts that absorb specific non-visible wavelengths of ultraviolet and infrared light, which they then luminesce (glow) as another wavelength of infrared light (also non-visible). This emitted infrared light is guided to the edge of plastic, where thin strips of conventional photovoltaic solar cell convert it into electricity. [Research paper: DOI: 10.1002/adom.201400103—Near-Infrared Harvesting Transparent Luminescent Solar Concentrators]

If you look closely, you can see a couple of black strips along the edges of plastic block. Otherwise, though, the active organic material and thus the bulk of the solar panel are highly transparent. (Read: Solar singlet fission bends the laws of physics to boost solar power efficiency by 30%.)

The prototype TLSC currently has an efficiency of around 1%, but they think 10% should be possible once production commences.

Non-transparent luminescent concentrators (which bathe the room in colorful light) max out at around 7%. On their own these aren't huge figures, but on a larger scale every window in a house or office block the numbers quickly add up. And while we're probably not talking about a technology that can keep your Smartphone or tablet running indefinitely, replacing your

device's display with a TLSC could net you a few more minutes or hours of usage on a single battery charge.

—It opens a lot of area to deploy solar energy in a non-intrusive way, Lunt said in an interview with Michigan State's Today blog. —It can be used on tall buildings with

lots of windows or any kind of mobile device that demands high aesthetic quality

like a phone or e-reader. Ultimately we

want

to make solar harvesting surfaces that you

do not even know are there.



# How to prepare for 1. GRE

Mradul Nagar

III YR

There are some basic principles for people who are trying to prep on their own.



Crafting studying technique is something more tactical, and personal, that you'll have to do on your own, based on what you know about how you best learn. Most of these, apart from distinctions as noted, apply to standardized tests in general:



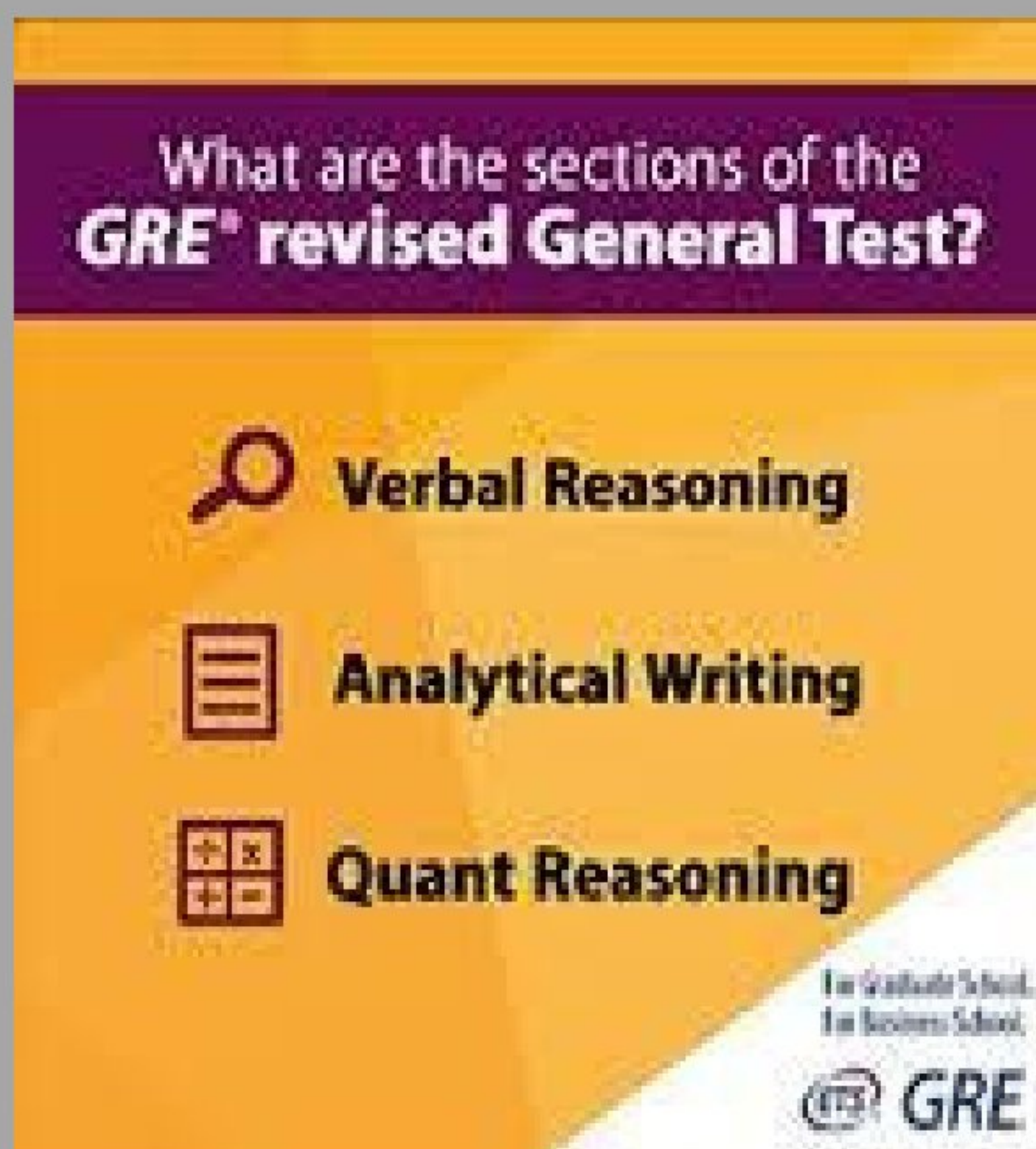
Start by creating a realistic schedule of daily work. Because the daily part is important, realistic probably translates to 15-20 minutes a day. "I'm going to spend two hours a night" is well-intentioned, but unlikely to happen.

2. Use only the official materials. There is only 1 published book for the GRE.
3. Materials include practice problems and practice tests. Do the practice problems first, and then do regular practice testing as the actual test date approach there are two official GRE practice tests that are free to download. Because the tests are adaptive, they can be taken multiple times. You can get away with around three sittings per test without significant overlap, so that allows you six practice tests. These should be taken once a week for the six weeks leading up to the test, in an environment that simulates the actual testing environment as closely as possible (e.g., wake up and start the test at the times you would need to, isolate yourself in a distraction-free room, don't let yourself listen to music, put your phone somewhere else).
4. Find someone with whom you can review the questions you get wrong.



This doesn't have to be a professional if that's not feasible for you, but it *should* be someone who's good at the relevant content, or has scored well on the test before, or both.

5. Do more practice problems for the content areas that seem to be surfacing the highest frequency of incorrect answers on your practice tests?



Though there is no official vocabulary list, GRE prep requires studying vocabulary. Antonyms and analogies (and, to a lesser extent, sentence completions) lean much more heavily on sheer vocabulary than the passage or vocabulary in context questions that have largely replaced them on tests like

the SAT for precisely that reason (see How have the SATs changed over the past 20-30 years?). They come far closer to being "you either knows it or you don't." Fortunately, there are a lot of vocabulary books out there, and just doing a little every day increases the odds that you'll get these questions correct.

7. Finally, just to underscore consistent, well-planned preparation is key. On tests like the GRE and the GMAT, cramming is basically a giant crapshoot.







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### CIVILIPSA'S



# SAMEEKSHA

## 2020

Analyse Yourself

Registration  
till 20 Sept.

21-26  
September

[bit.ly/sameeksha2020](https://bit.ly/sameeksha2020)



THEME

दीर्घता  
india

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*CIVILIPSA*

PRESENTS

NATIONAL LEVEL PAPER PRESENTATION SYMPOSIUM

**NEEV 2021**

.....Unlocking knowledge at the alacrity  
of thought

27th April - 1st May

Register Now



<https://ies.ipsacademy.org/neev-2021/>



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# **IPS ACADEMY**

## **INSTITUTE OF ENGINEERING & SCIENCE**

(NBA ACCREDITED 7 UG PROGRAMS)

**CIVIL ENGINEERING DEPARTMENT**

is organizing a

### **One week Indo-Russian FDP on Advancements in Earthquake Engineering (under TEQIP III)**

**6<sup>th</sup> to 10<sup>th</sup> July 2020**

**Convener**

**Dr. Amit Sharma**

**+919926424474**

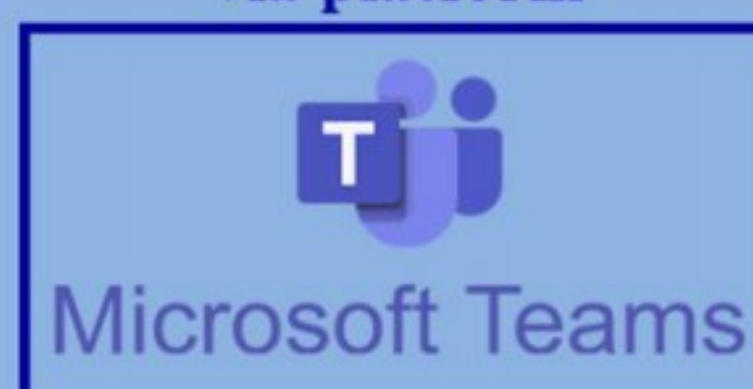
**amitsharma@ipsacademy.org**

**Registration**

**<https://bit.ly/advearth>**



via platform



**Highlights**

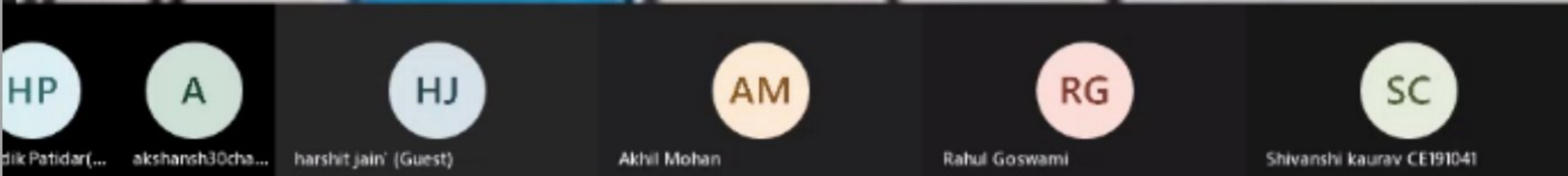
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- Vulnerability Assessment
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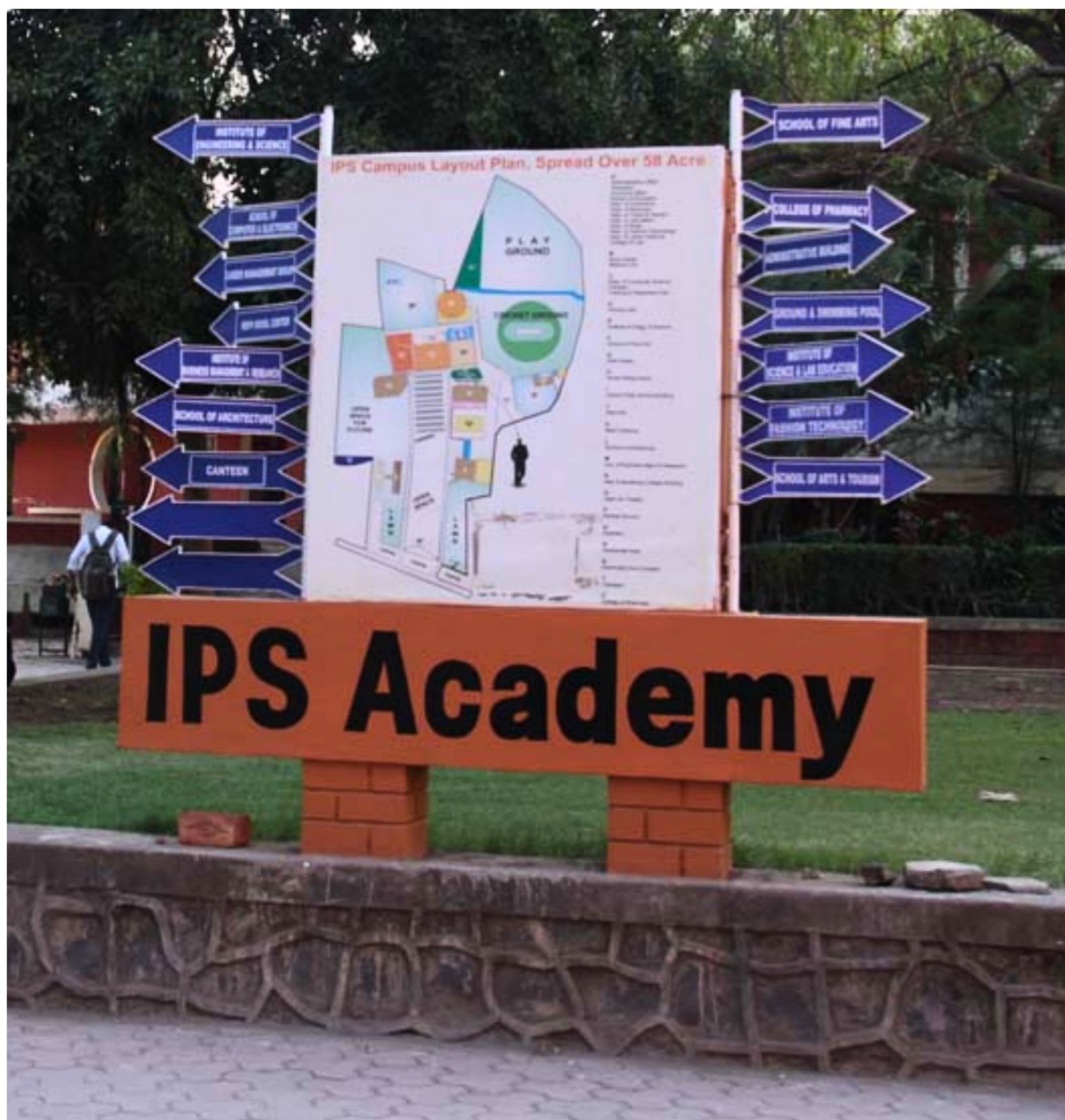












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