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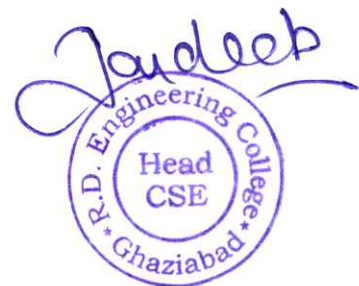
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VIDEO LECTURES OF DBMS

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PREPARED BY : MR. VIJAY(Asst. Prof., CSE)


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Definitions

Superkey :- A superkey of a relation schema R is a set of attributes which is a subset of R with the property that no two tuples in any legal relation state of R will have same values.

Key: A key K is a superkey with the additional property that removal of any attribute attribute from K will cause K not to be a superkey anymore

If a relation schema has more than one key, then each of the key is called a candidate key. One of the candidate keys is arbitrarily designated to be the primary key, and the others are called secondary keys.

Prime attribute :- An attribute which is a member of some



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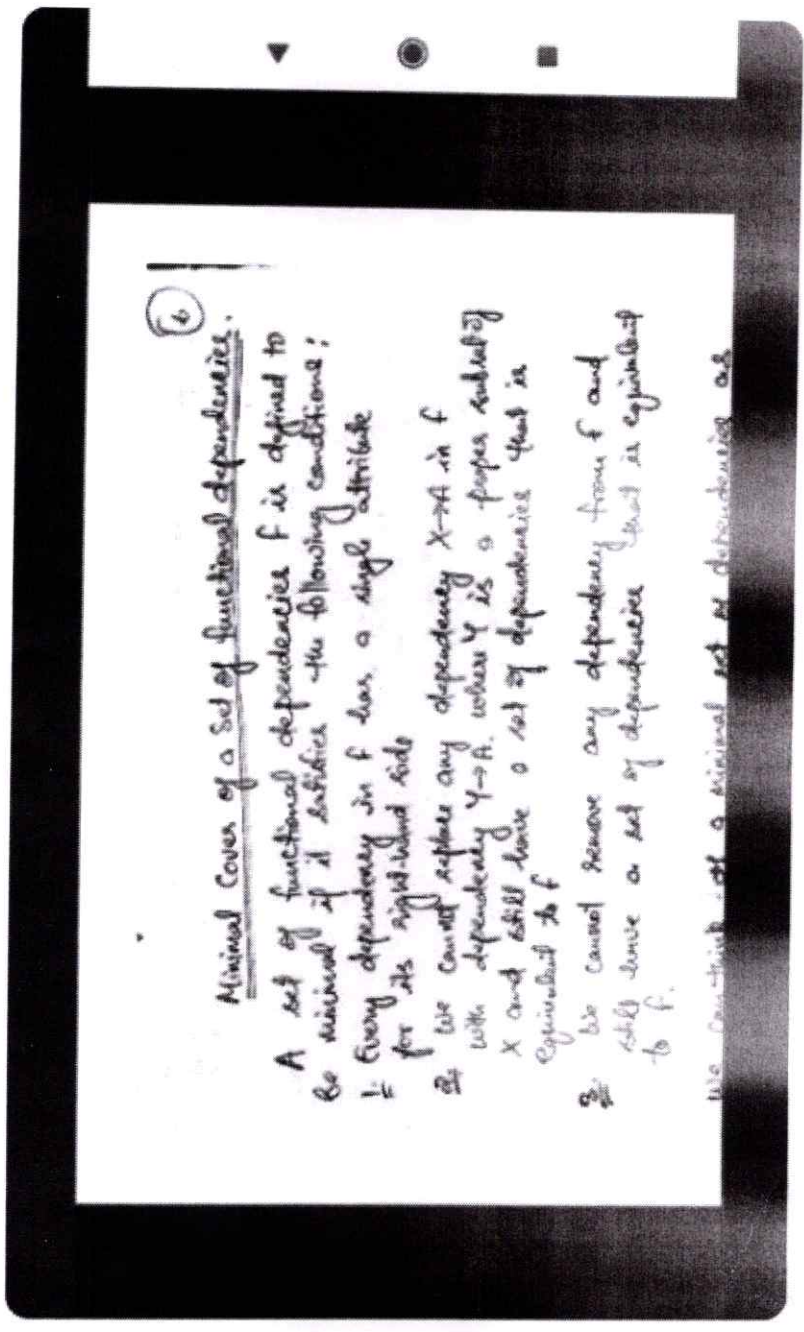
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CLOSURE OF A SET OF FUNCTIONAL DEPENDENCIES

Suppose F is a given set of functional dependencies. We can prove that certain other functional dependencies are also held. We say that such functional dependencies are logically implied by F .

For example: Given a relation schema $R = (A, B, C, G, H, I)$ and the set of functional dependencies

$A \rightarrow B$
 $A \rightarrow C$
 $CG \rightarrow H$
 $CG \rightarrow I$
 $B \rightarrow H$

In this case,

Closure of a set of functional Dependencies

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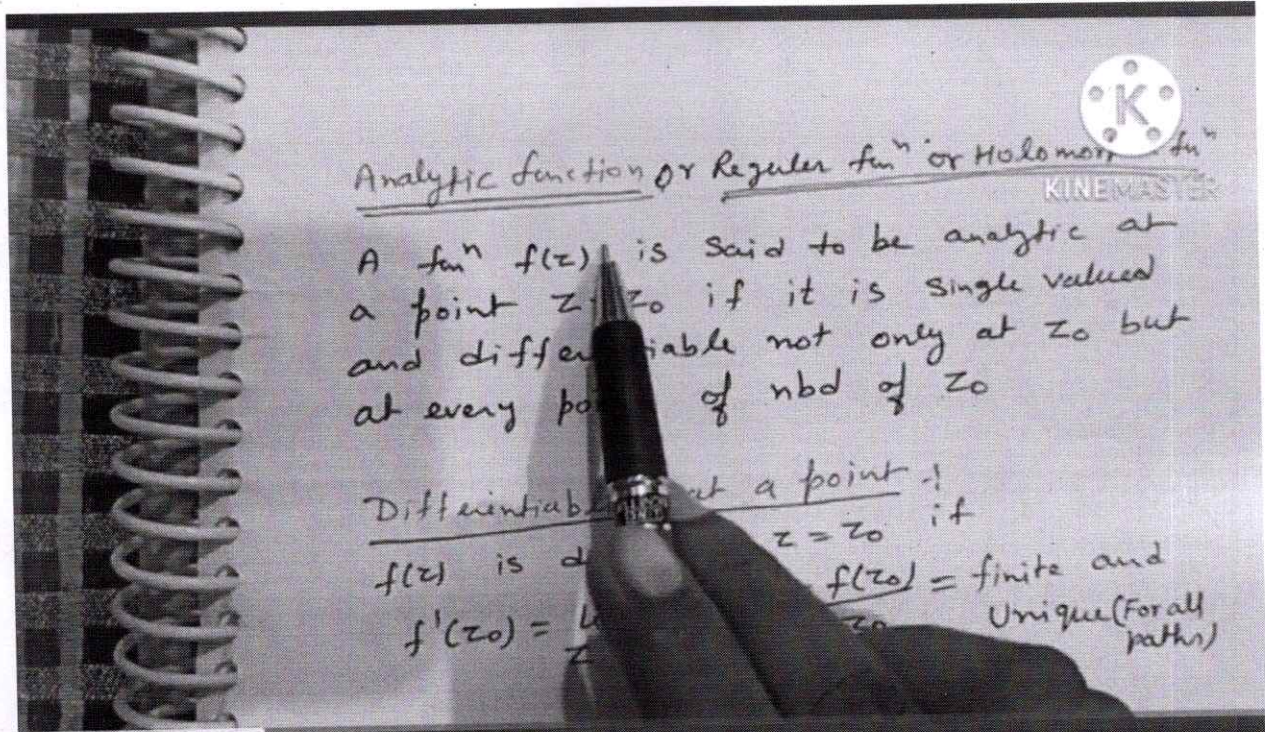
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SCIENCE & HUMANITY

Video Lectures by
Prof. HARISHANKAR SHARMA
Subject – Mathematics


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IMPORTANT TOPICS (UNIT-4) | ENGG. MATHEMATICS-II (KAS203T) || AKTU

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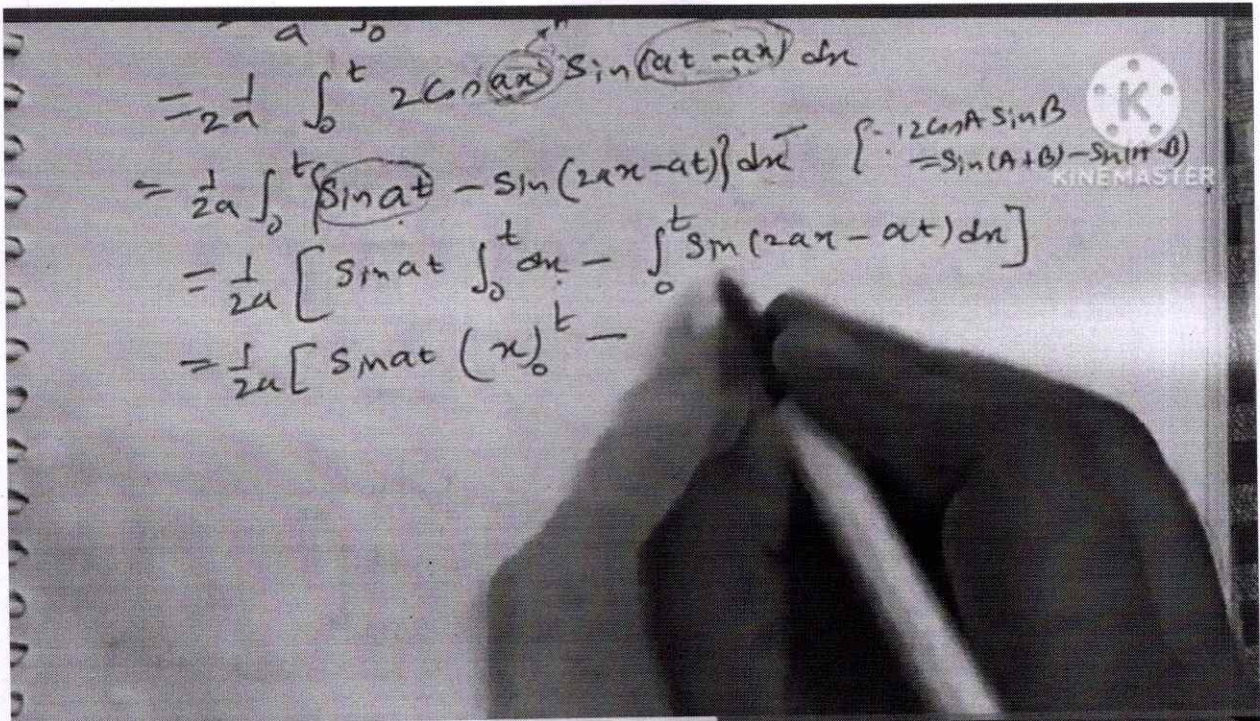
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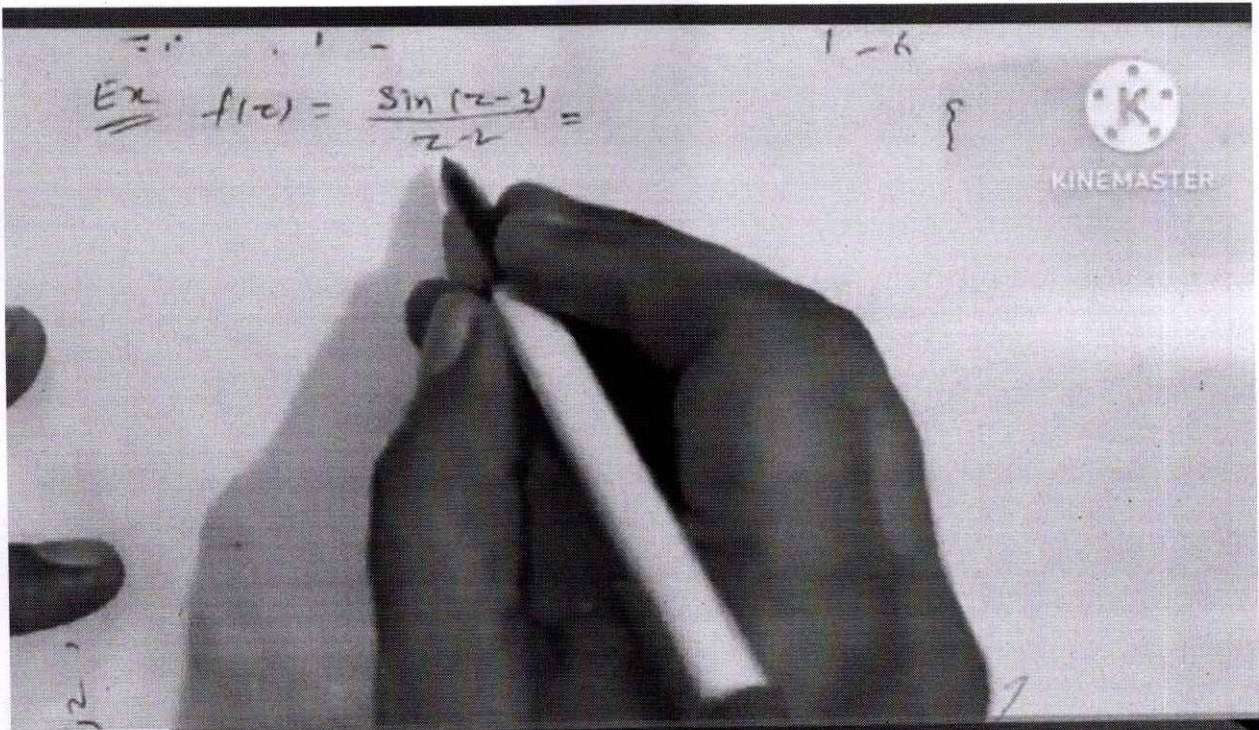


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$$B = \int \frac{Ru}{w} dx + C_2 \quad \& \quad w = |u' v|$$

Step-t Putting the values of A and B in (2) we get required Solⁿ.

Ex Solve by variation of parameters


$$y'' - 6y' + 9y = \frac{e^{3x}}{x^2} - 0 \quad [2012]$$


Solⁿ Comparing (1) with $\frac{d^2y}{dx^2}$

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Example: Express $f(x) = (\pi - x)^2$ as a Fourier series

in $0 < x < 2\pi$. Hence deduce the sum $1 + \frac{1}{2^2} + \frac{1}{3^2} + \dots$

Solⁿ Let the Fourier series of $f(x)$ in $[0, 2\pi]$

$$f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos nx + \sum_{n=1}^{\infty} b_n \sin nx$$

where $a_0 = \frac{1}{\pi} \int_0^{2\pi} f(x) dx = \frac{1}{\pi} \int_0^{2\pi} (\pi - x)^2 dx$

$$= \frac{1}{\pi} \left\{ \frac{(\pi - x)^3}{3(-1)} \right\}_0^{2\pi} = -\frac{1}{3\pi} [-\pi^3 - \pi^3] \quad \therefore \int (ax+b)^n dx = \frac{(ax+b)^{n+1}}{(n+1) \cdot a}$$

$a_0 =$



MODULE 3 ONE SHOT REVISION|| FOURIER SERIES

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$$A.E. \quad m^2 - 1 = 0 \Rightarrow m = -1, 1$$

$$C.F. = c_1 e^{m_1 x} + c_2 e^{m_2 x} = c_1 e^{-x} + c_2 e^x = c_1 u + c_2 v$$

$$\Rightarrow u = e^{-x}, v = e^x$$

$$\text{Let sol}^n \text{ is } y = Au + Bv = Ae^{-x} + Be^x$$

$$y = Ae^{-x} + Be^x \quad \text{--- (2)}$$



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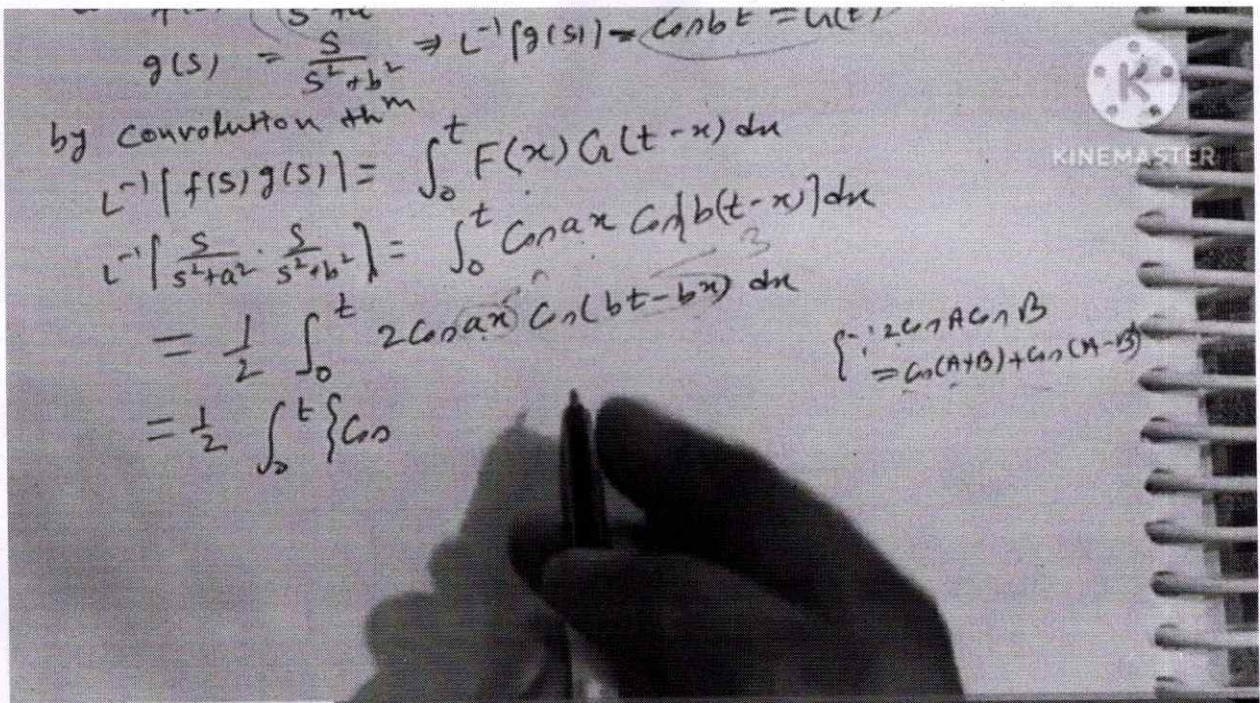


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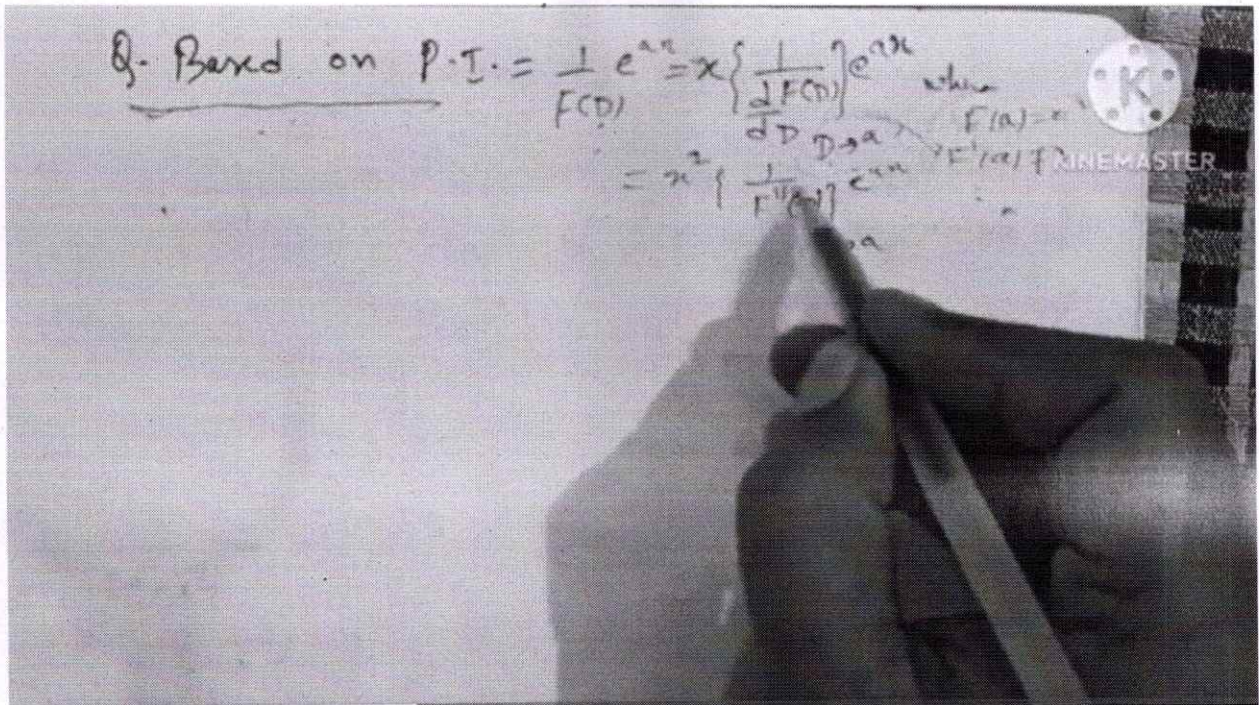
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L6 PI all cases (All examples in one Shot) Linear Differential Equation of higher ord..

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Working Steps to Solve Complex Integral

Step-1 Put $z = x + iy \Rightarrow dz = dx + i dy$

Step-2 From given eqⁿ of Curve

find $y = \dots$ in terms of x
then $dy = \dots$ in terms of x

Step-3 Find $dz = dx + i dy = \dots$ in terms of x

Step-4 Using all these values

$$\int_C f(z) dz = \int \dots$$

L1 || COMPLEX VARIABLE (Integration) Module 5 Complex Integration

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Ex Evaluate $\int_0^{3+i} (z)^2 dz$ along the real axis from $z=0$ to $z=3$ and then along a line parallel to imaginary axis from $z=3$ to $z=3+i$.

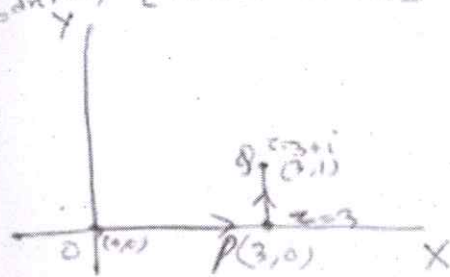
Solⁿ:

$$\int_0^{3+i} (z)^2 dz = \int_0^{3+i} (x-iy)^2 (dx+idy)$$

$$= \int_{OPQ} (x-iy)^2 (dx+idy)$$

$$z = x+iy \rightarrow dz = dx+idy$$

$$\bar{z} = x-iy$$



L1||COMPLEX VARIABLE (Integration) Module 5 Complex Integration

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Sol: Here $f(x)$ defined in $[0, 2]$
 length of interval $= 2 - 0 = 2$
 $l = \frac{\text{length}}{2} = \frac{2}{2} = 1$

Let Fourier Series

$$f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{l}\right) + \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{l}\right)$$

But $l = 1$

$$f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos(n\pi x) + \sum_{n=1}^{\infty} b_n \sin(n\pi x)$$

When $a_0 = \frac{1}{l} \int_0^2 f(x) dx = \frac{1}{1} \left[\int_0^1 \pi x dx + \int_1^2 \pi(2-x) dx \right]$
 $= \pi \left(\frac{x^2}{2} \right)_0^1 + \pi \left(2x - \frac{x^2}{2} \right)_1^2 = \pi \Rightarrow \boxed{a_0 = \pi}$

$$a_n = \frac{1}{l} \int_0^2 f(x) \cos(n\pi x) dx = \frac{1}{1} \left[\int_0^1 \pi x \cos(n\pi x) dx + \int_1^2 \pi(2-x) \cos(n\pi x) dx \right]$$

MODULE 3 ONE SHOT REVISION (HALF RANGE SERIES)

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(SAMPLE FORMAT)

Innovation in Teaching & Learning

Approach	Process	Impact
Flipped Classroom Approach	Provided some video lecture and study material to the students and students applied what they learnt in class the next day through a presentation.	<ul style="list-style-type: none"> Students have more group work or student collaboration time to cover subject activities, discussions and peer reviewing. Student learning can be self-paced to help them learn at their own pace and in their own time.

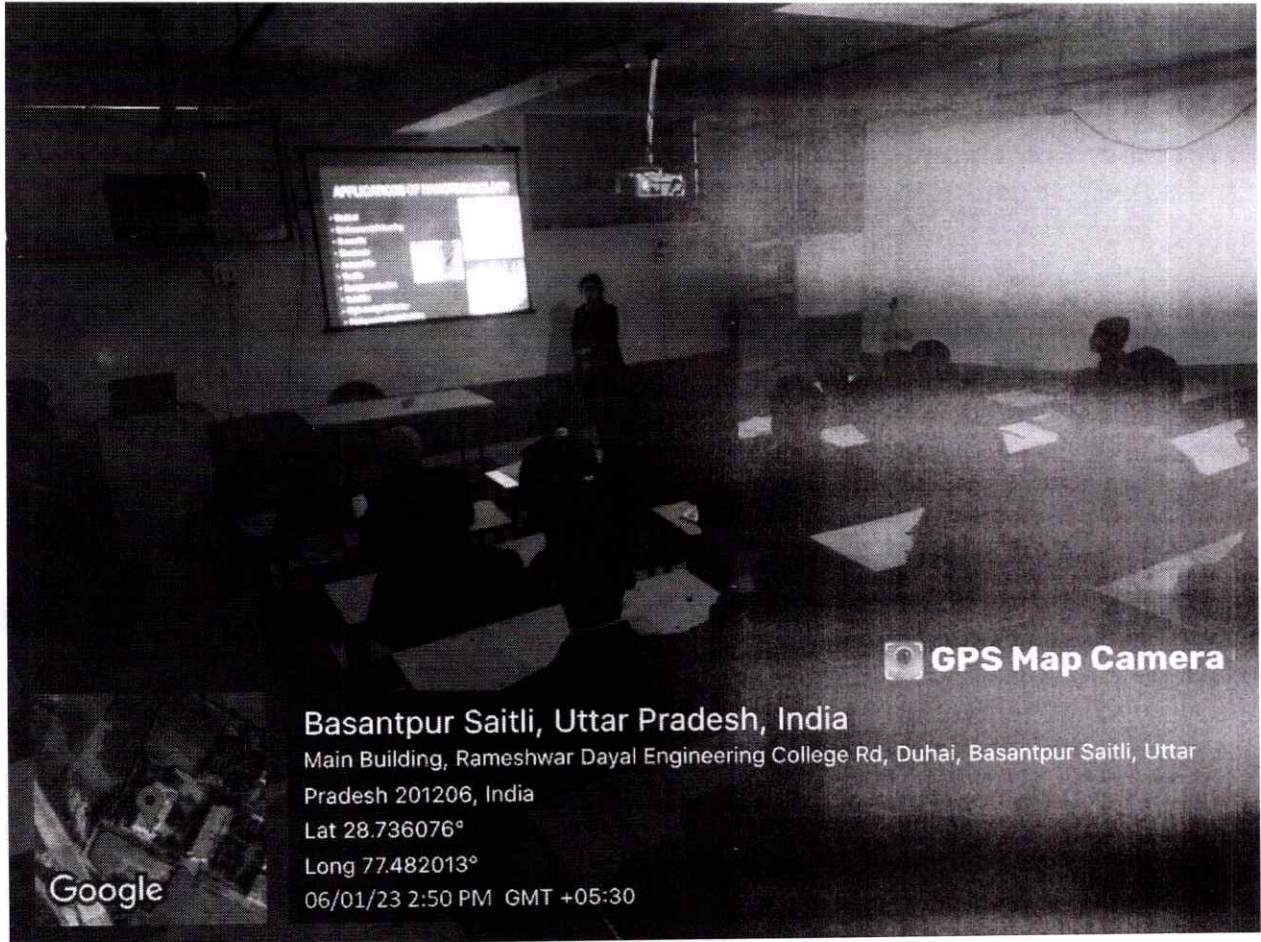
Presentation topics based on flip classes approach <i>physics</i>						
S.No.	GROUP NUMBER	Roll No	Students Name	Presentation Topic	Presentation Date	Timing
1	1	2202310100023	ARJUN DEV RAJORA	He-Ne laser	06/01/2023	2:30 PM - 3:20 PM
2		2202310100024	ASHU DHANKER	Ruby laser		
3	2	2202310100043	ISHIKA TYAGI	Stimulated emission of radiation	07/01/2023	11:10 AM - 12:00 PM
4		2202310100046	KARTIK MEENA	Single mode fibre		
5	3	2202310100054	MAYANK JAIN	CVD method	07/01/2023	12:10 PM - 01:00 PM
6		2202310100055	MAYANK KUMAR			
7	4	2202310100060	PARI SHARMA	Sol gel method	07/01/2023	2:30 PM - 3:20 PM
8		2202310100064	PRAKASH CHAUHAN			
9		2202310100066	PRERIT SINGH			


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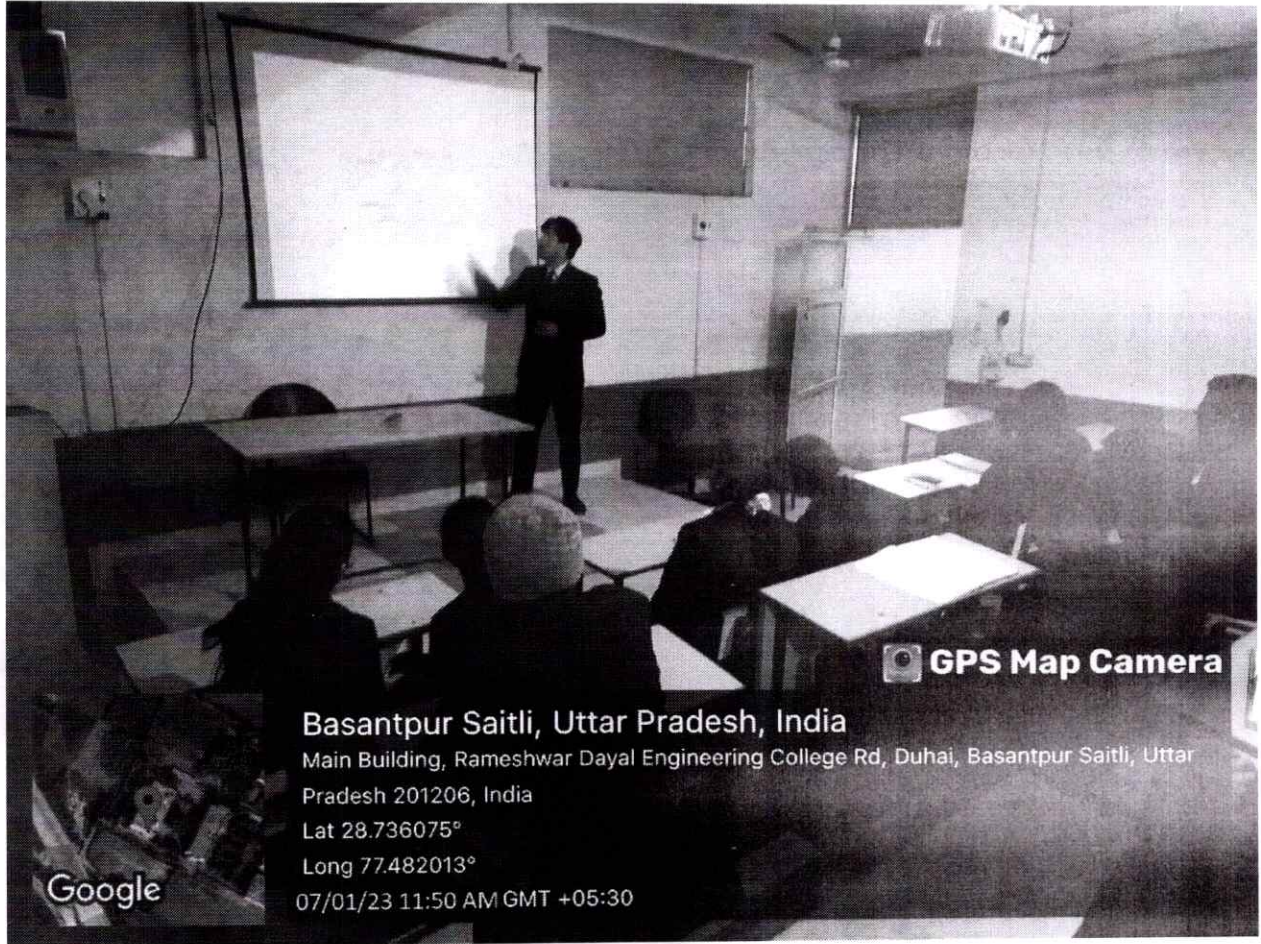
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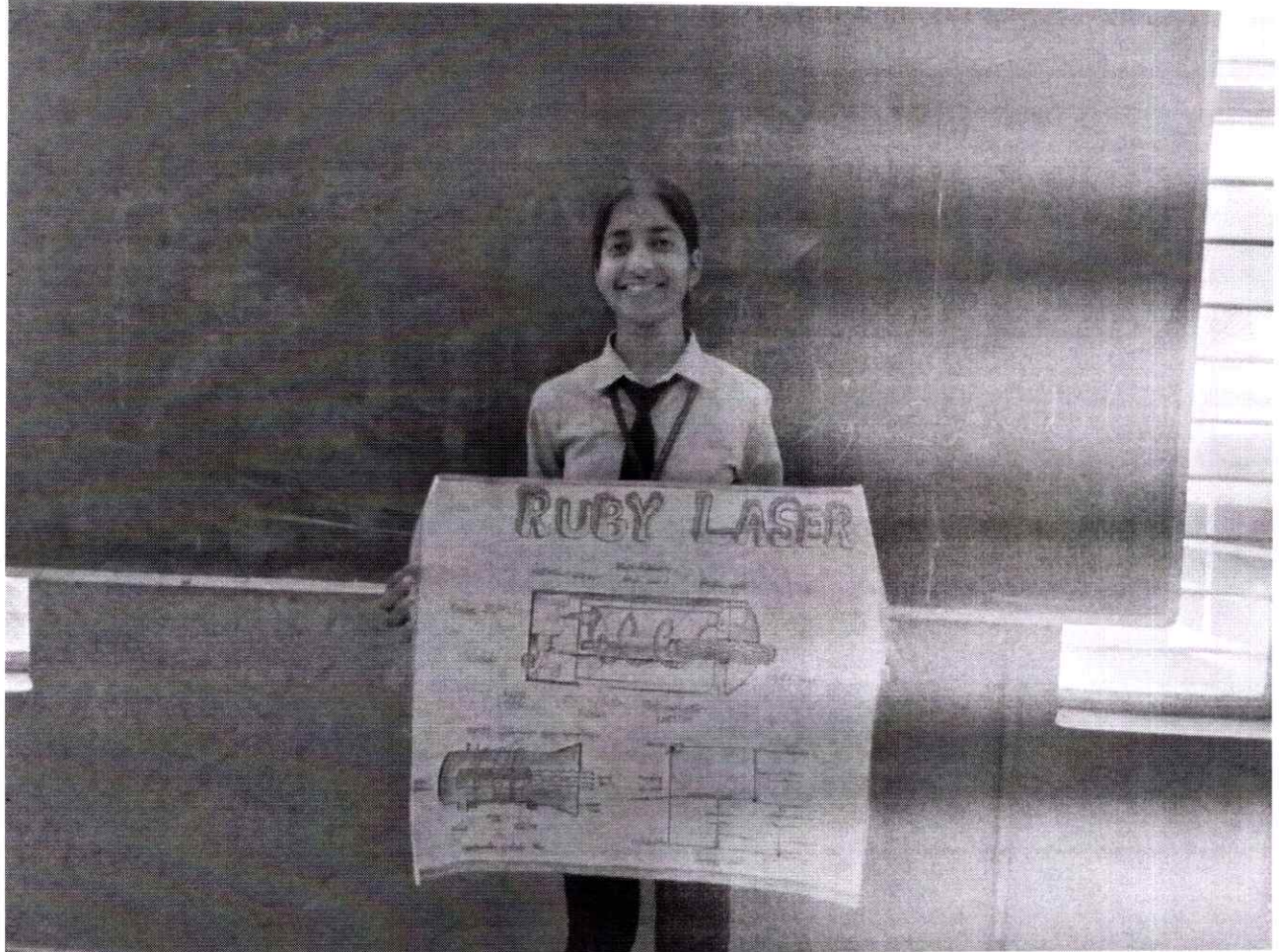
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POSTER PRESENTATION BY STUDENTS

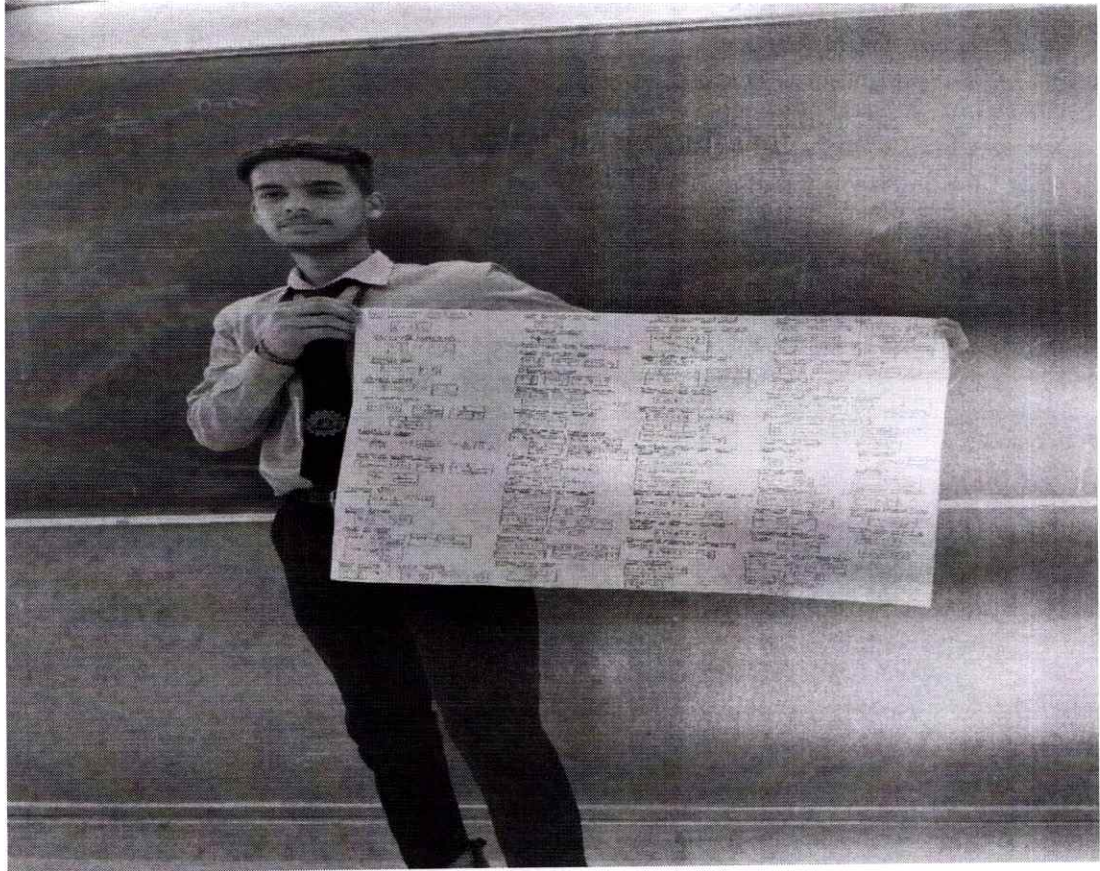



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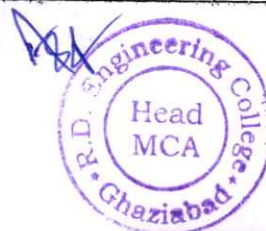
Innovation in Teaching & Learning

Approach	Process	Impact
Flipped Classroom Approach	Provided some video lecture and study material to the students and students applied what they learnt in class the next day through a presentation.	<ul style="list-style-type: none"> Students have more group work or student collaboration time to cover subject activities, discussions and peer reviewing. Student learning can be self-paced to help them learn at their own pace and in their own time.

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S.No.	GROUP NUMBER	Roll No	Students Name	Presentation Topic	Presentation Date	Timing
1	2022_DBMS_1	2202310140001	AADARSH SHARMA	Database System vs File System	8/4/23	12:40 to 01:30
2		2202310140003	AAKASH SHARMA			
3		2202310140005	AAYUSH SHARMA			
4	2022_DBMS_2	2202310140004	AAYUSH KAUSHIK	Characteristics of SQL, Advantage of SQL	15/4/23	11:00 to 11:50
5		2202310140017	ANIKET TYAGI			
6		2202310140022	ANSHUL SHRIVASTAVA			
7	2022_DBMS_3	2202310140027	BHAGVINDER SINGH	Relational Data Model Concepts, Integrity Constraints	15/4/23	11:50 to 12:40
8		2202310140010	ABHISHEK SHARMA			
9		2202310140014	AKASH GIRI			
10	2022_DBMS_4	2202310140035	HARSH TYAGI	Relational Algebra, Relational Calculus	22/4/23	12:40 to 1:30
11		2202310140038	HARSHITA			
12	2022_DBMS_5	2202310140051	KESHAV SHARMA	Relational Data Model Concepts, Integrity Constraints, Entity Integrity, Referential Integrity	29/4/23	10:00 to 10:50
13		2202310140058	MANSI TYAGI			
14		2202310140045	JYOTI SHARMA			
15		2202310140041	HIMANSHU SHARMA			
16	2022_DBMS_6	2202310140002	AAKANSHA SHARMA	ER Model Concepts	6/5/23	11:00 to 11:50
17		2202310140019	ANKIT KUMAR			
18		2202310140025	ARPIT BHADORIA			
19		2202310140031	DEVANSHU RATURI			
20	2022_DBMS_7	2202310140030	DEEPANSHU SHARMA	Keys, Concepts of Super Key,	13/5/23	11:00 to 11:50

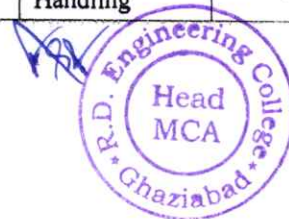
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21		2202310140048	KARAN KUMAR	Candidate Key, Primary Key		
22		2202310140043	JATIN TYAGI			
23		2202310140055	KULDEEP			
24	2022_DBMS_8	2202310140053	KHUSHI TYAGI	Data Definitions Language, DML, Overall Database Structure	20/5/23	12:40
25		2202310140060	MANVI TYAGI			to
26		2202310140040	HIMANSHU			1:30
27		2202310140061	MOH KAIF			
28	2022_DBMS_9	2202310140050	KASHISH TYAGI	Generalization, Aggregation	20/5/23	9:50
29		2202310140034	GAURV SAINI			to
30		2202310140028	DEEPAK GAUTAM			10:50
31		2202310140044	JITENDER DHANGHAR			
32	2022_DBMS_10	2202310140016	AMNESH	Joins, Unions, Intersection, Minus, Cursors, Triggers, Procedures in SQL/PL SQL	27/5/23	10:00
33		2202310140033	FAHAD KHAN			to
34		2202310140009	ABHISHEK KUMAR			10:50
35	2022_DBMS_11	2202310140024	ANUJ KUMAR BHARDWAJ	Inclusion dependence, loss less join decompositions	27/5/23	12:40
36		2202310140057	LAKSHAY			to
37		2202310140013	AKASH			1:30
38		2202310140059	MANSI TYAGI			
39	2022_DBMS_12	2202310140021	ANKUSH CHAUDHARY	Serializability of Schedules	3/6/23	11:00
40		2202310140012	AKANKSHA CHAUDHARY			to
41		2202310140023	ANTU TYAGI			11:50
42	2022_DBMS_13	2202310140007	ABHINAV KUMAR BALIYAN	Concurrency Control	10/6/23	11:00
43		2202310140037	HARSHIT TYAGI			to
44		2202310140008	ABHISHEK KUMAR			11:50
45		2202310140020	ANKIT KUMAR			
46	2022_DBMS_14	2202310140011	ADITYA SINGH	Concurrent Transaction	24/6/23	12:40
47		2202310140049	KASHISH TYAGI			to
48		2202310140046	KALASH TYAGI			1:30
49	2022_DBMS_15	2202310140029	DEEPAI TYAGI	Validation Based Protocol	26/6/23	10:00
50		2202310140006	ABHAY SINGH			to
51		2202310140052	KHUSHI BHARDWAJ			10:50
52		2202310140018	ANIRUDH SINGH			
53	2022_DBMS_16	2202310140039	HIMANI TYAGI	Checkpoints, Deadlock Handling	27/6/23	11:00
54		2202310140042	HIMANSHU SHARMA			to
						11:50

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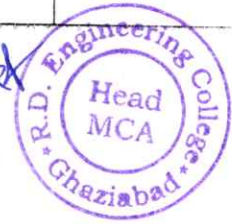




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55		2202310140015	AKSHAY KUMAR(LATER)			
56		2202310140056	KUNAL GIRI			
57	2022_DBMS_17	2202310140032	DINESH GUPTA	Time Stamping Protocols for Concurrency Control	28/6/23	10:00 to 10:50
58		2202310140054	KOMAL PANDEY			
59		2202310140036	HARSHIT TYAGI			
60		2202310140026	ARVIND KUMAR RAI			

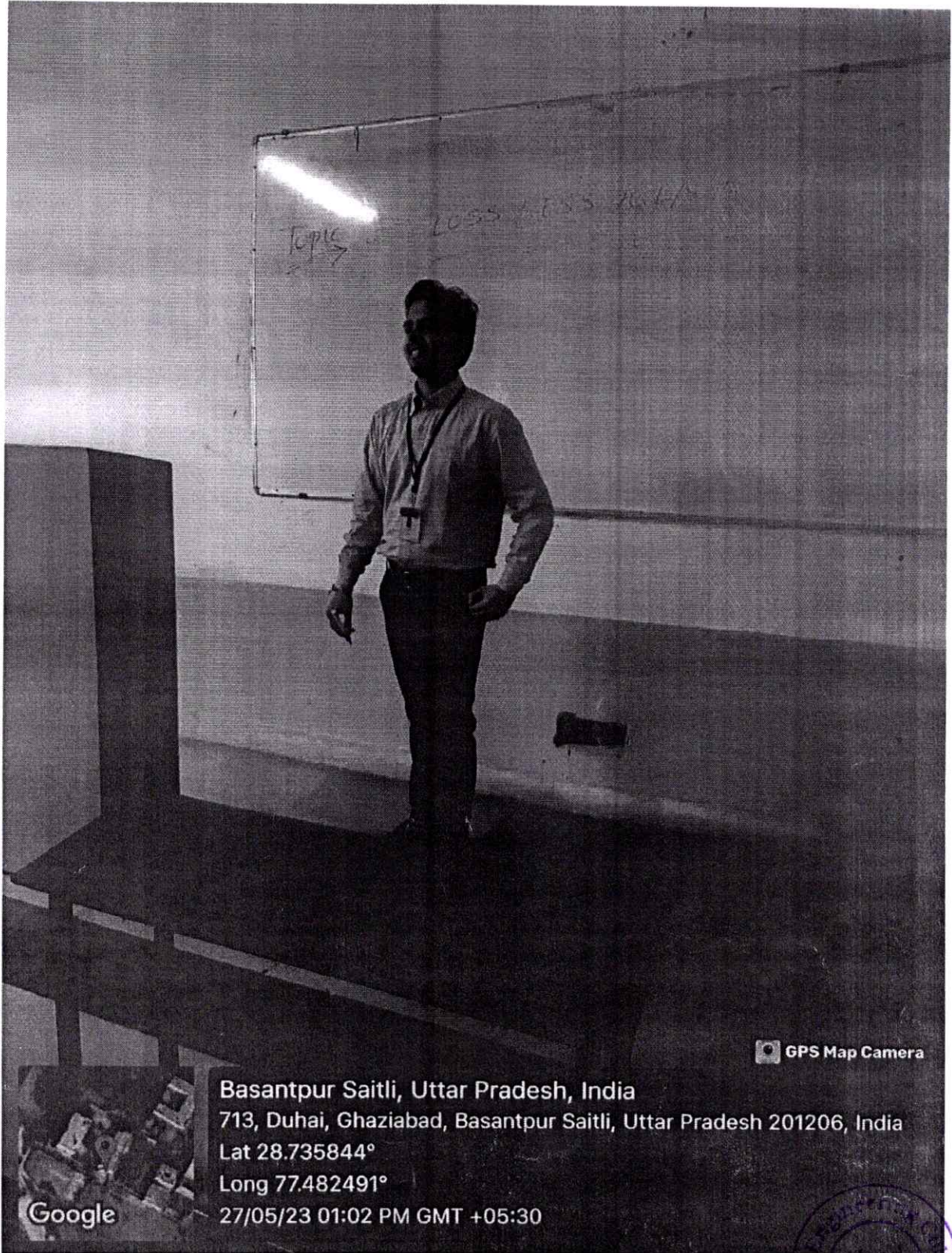

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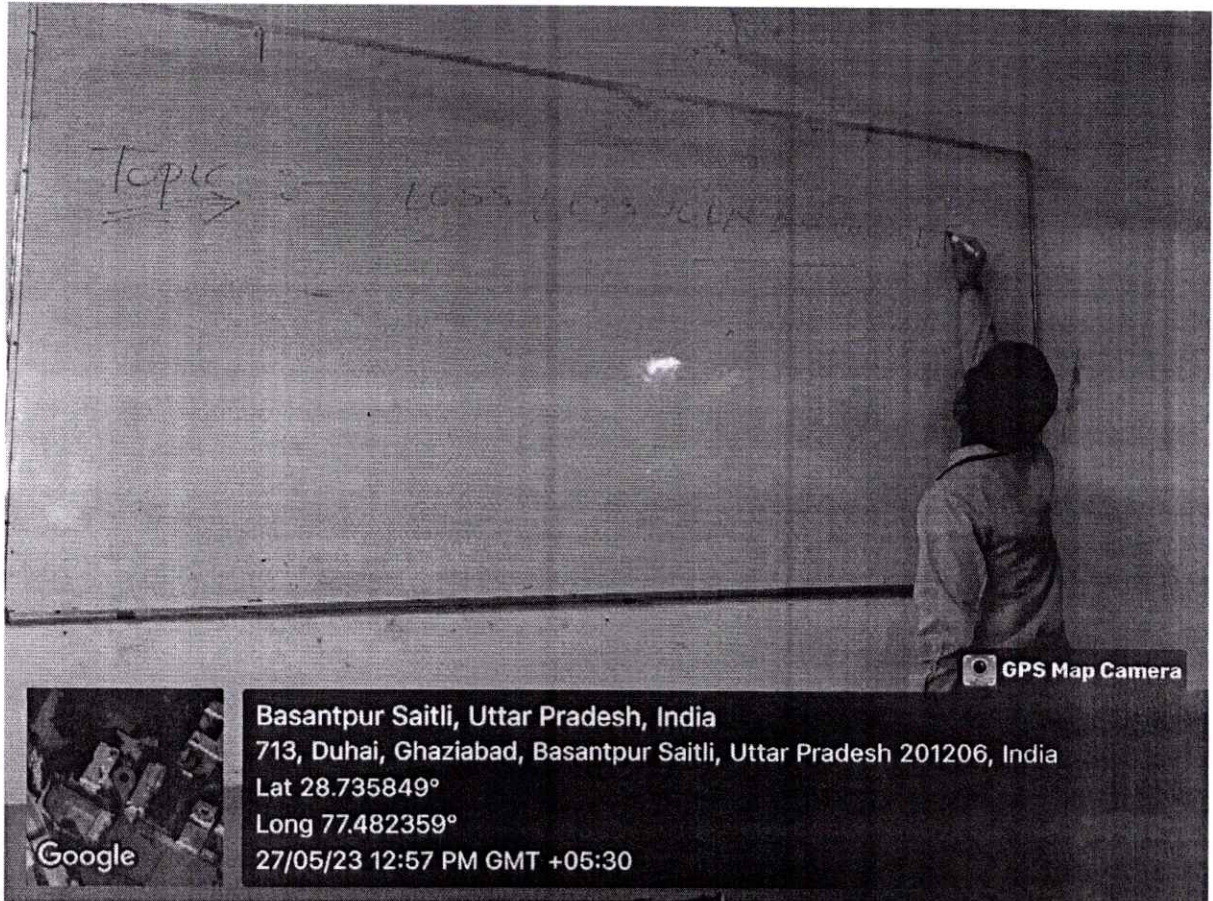
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