



Pune District Education Association's  
**Annasaheb Magar Mahavidyalaya**  
**Hadapsar, Pune- 411028**

Affiliated to Savitribai Phule Pune University, Pune



## Self Study Report: 2024 (4<sup>th</sup> Cycle)



### **Criterion - 5** **Student Support and** **Progression**

#### Key Indicator- 5.1 Student Support

#### **Metric: 5.1.2 (QnM)**

capacity development and skills enhancement activities are organised for improving students' capability

1. Soft skills
2. Language and communication skills
3. Life skills
4. Awareness of trends in technology



Submitted to  
**NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL BENGALURU**



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## Self Study Report: 2024 (4<sup>th</sup> Cycle)

### 5.1.2 - Capacity development and skills Enhancement Activities

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**PDEA's Annasaheb Magar Mahavidyalaya, Hadapsar, Pune-28**  
**SSR 2024 (4<sup>th</sup> Cycle)**

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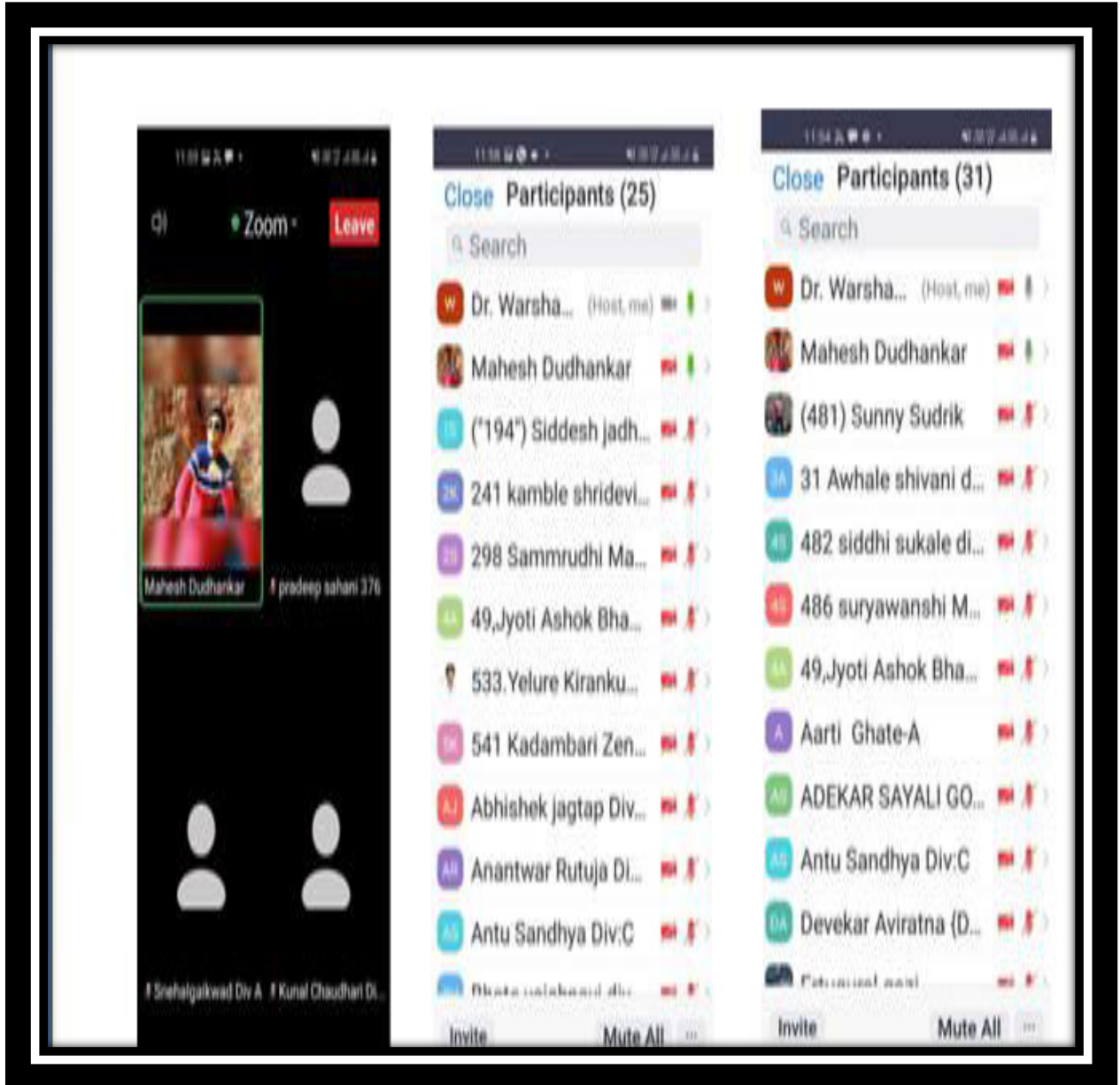
# Soft Skills

## 2021 - 2022

**1. A Webinar on  
English Grammar  
By  
English Department**

## Webinar on English Grammar

### Photo

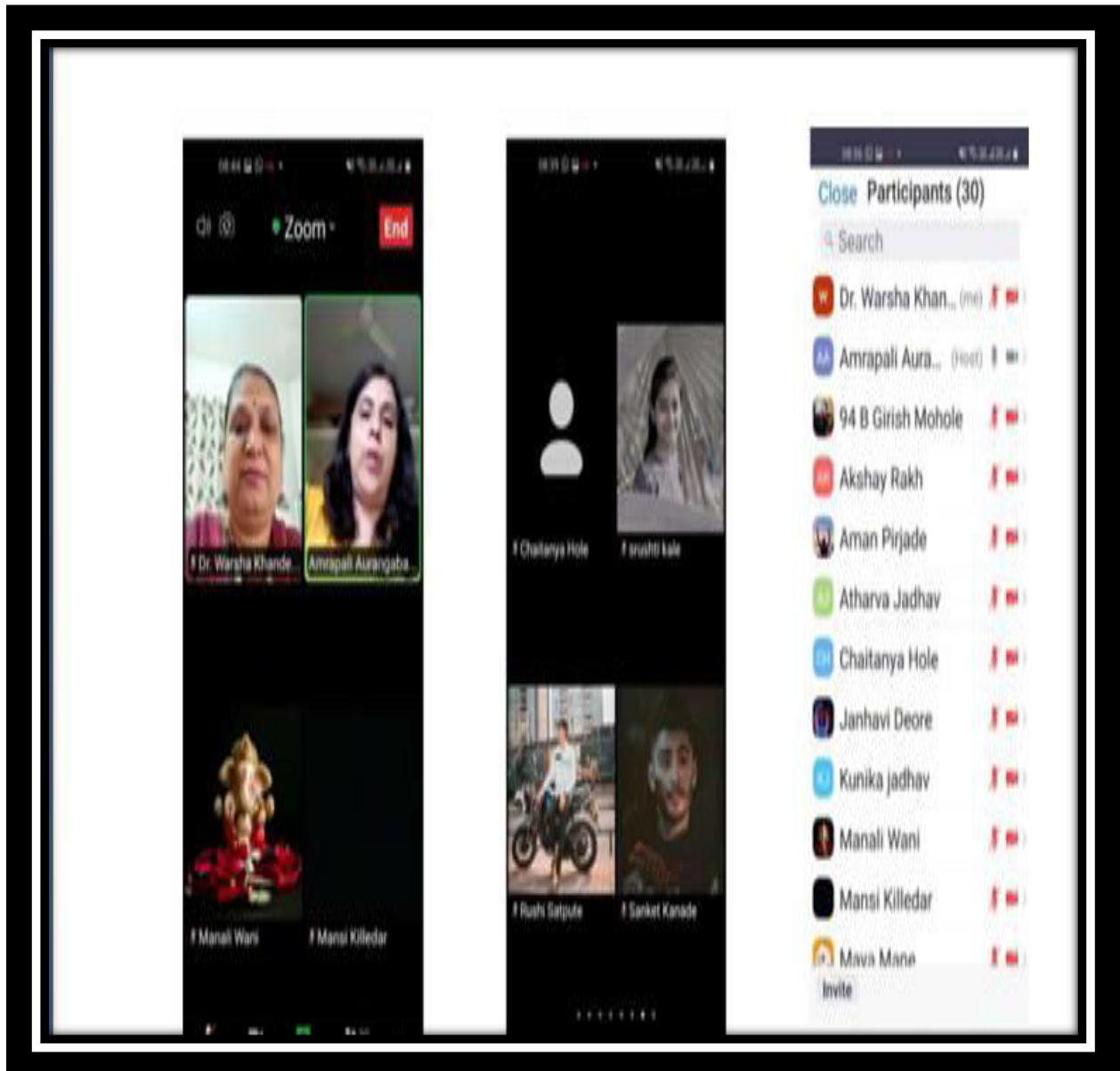


**2. A Webinar on Role of  
Soft Skills in  
Personality  
By  
English Department  
(08/10/2021)**



## Role of Soft Skills in Personality Development

### Photo



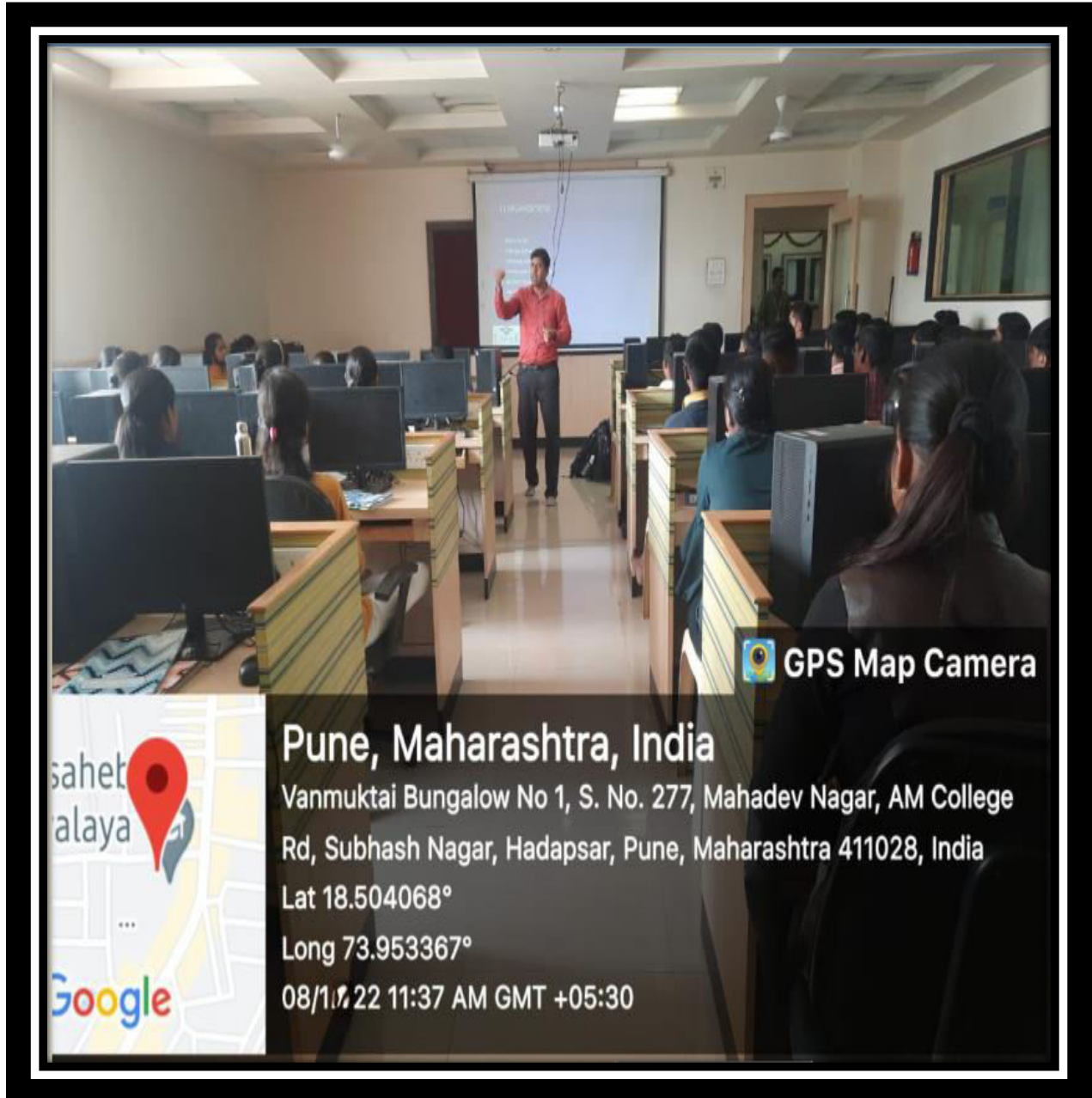
### **3. A Guest Lecture on Soft Skills**

**By**

**Computer Science  
Department (08/01/2022 )**

## A Guest Lecture on Soft skills

### Photos of Guest Mr.Shinde Pratikshya Delivering Lecture



## **4. Group Discussion**

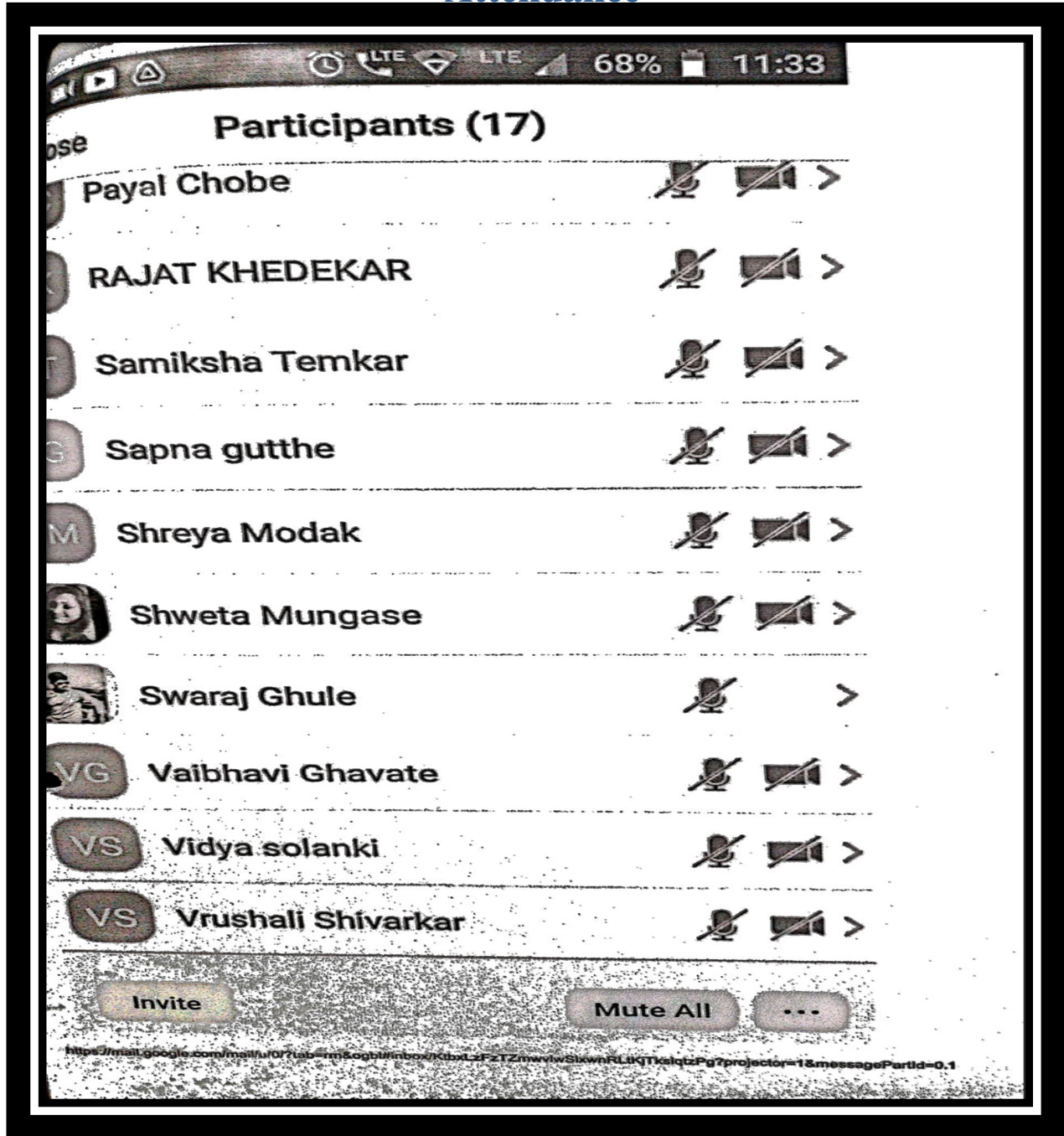
**By**

**BBA Department**

**(19/01/2022 )**

## Group Discussion

### Attendance



**5. Guest Lecture on  
HPLC Technique:  
Application  
By  
Chemistry Department  
(26/03/2022 )**

## A Lecture on HPLC Technique: Application

### Photos of PPT Presentation



**PDEA'S**  
ANNASAHEB MAGAR COLLAGE,HADAPSAR,  
PUNE ,411028

Guest Lecture on  
HPLC- TECHNIQUE & APPLICATIONS

Organised by  
**Department of Chemistry**  
Resource Person :- Dr. Shrikant Takle

Date : 26/03/2022      Time : 3:00 pm



Co-ordinator  
Prof-Mahesh Shinde

HOD  
Dr.N.N.Bhujbal

Vice Principal  
Dr.Prashant Mulay

Principal  
Dr.Pandit Shelke

## A Lecture on HPLC Technique: Application

### Photos of felicitation of Guest Dr.Shrikant Takale





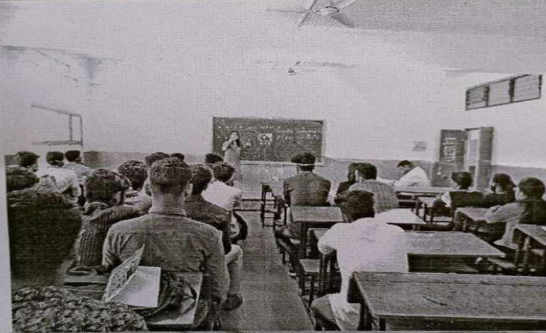
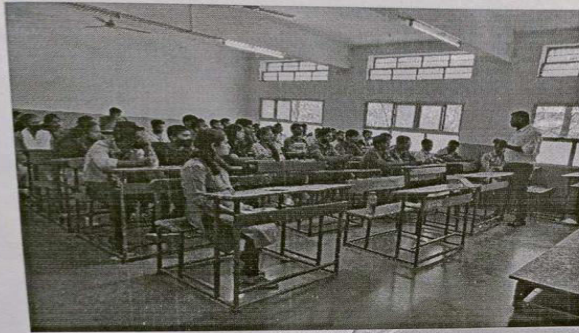
## A Lecture on HPLC Technique: Application

Photos of Guest Dr. Shrikant Takale addressing students



**6. A Lecture on Personality  
Development and career  
counseling  
By  
BBA department  
(06/04/2022 )**

## A Lecture Personality Development and Career Counseling Photos of Guest Dr Vishal Weldode Explaining students



Shot on OnePlus  
By Astia Mare

**7. Quiz Competition**  
**By**  
**Physics Department**  
**(29/04/2022 )**

## Quiz Competition

### Photos



**Language and  
Communication  
2021 - 2022**

**1. A Lecture by a Creative  
Writer on Hindi Day**

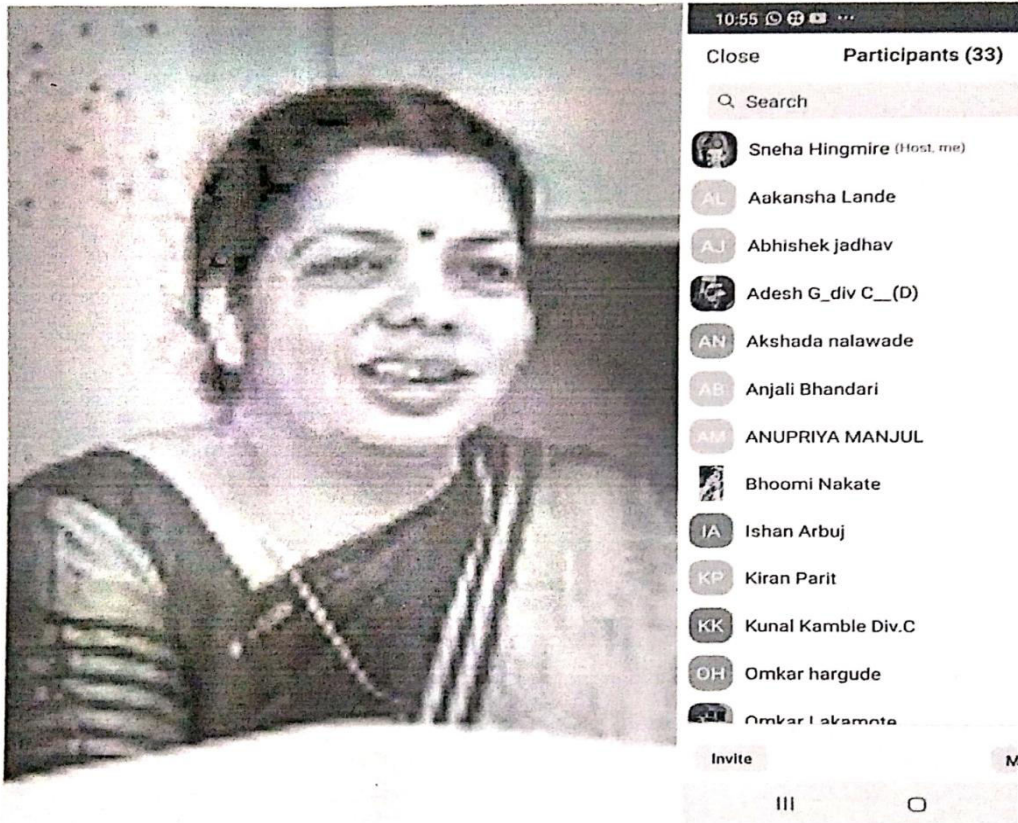
**By**

**Hindi Department**

**14/09/2021**

## A Lecture by a Creative Writer on Hindi Day

### Attendance



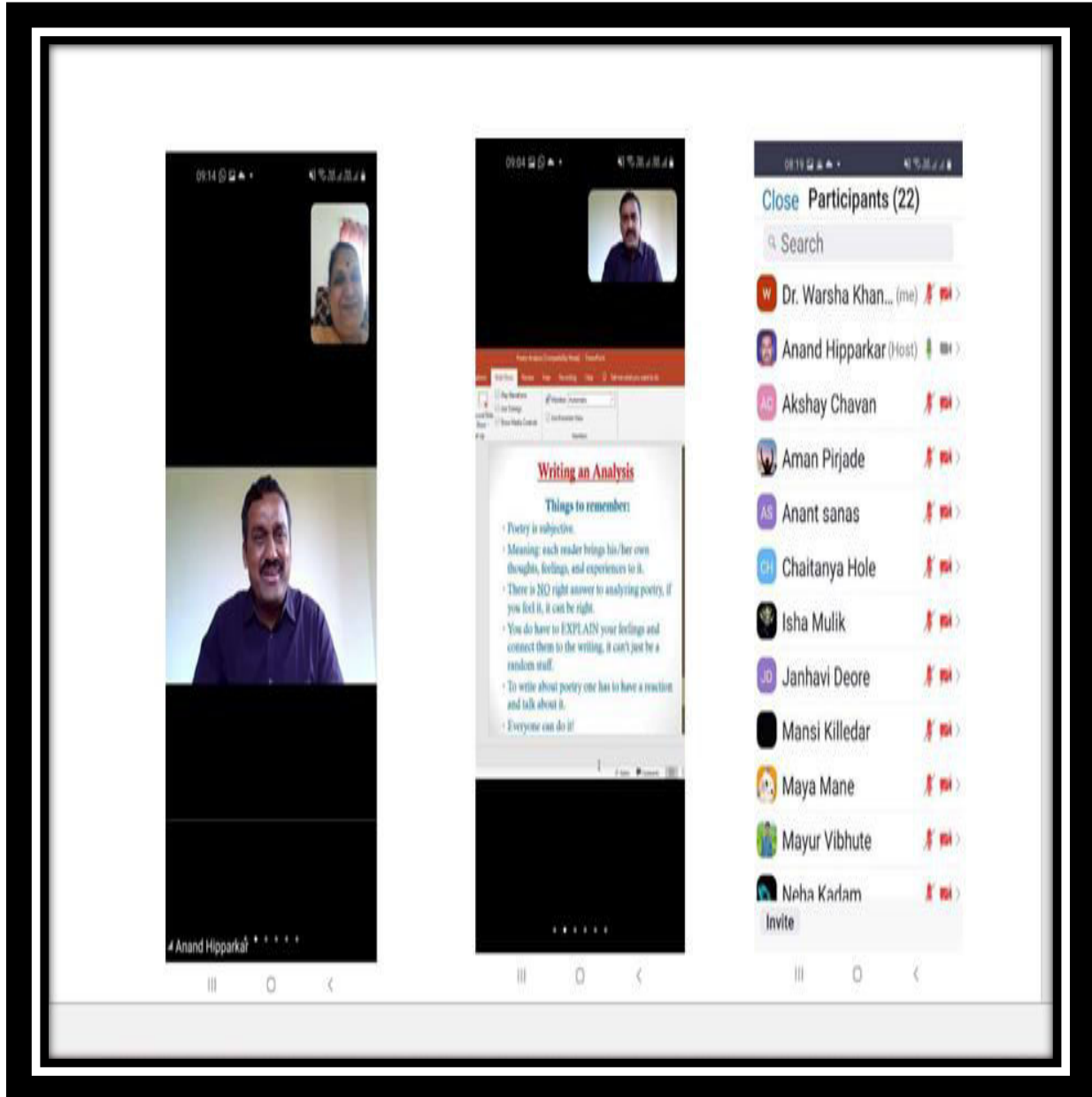
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**2. A Webinar on  
Appreciation of Poetry  
By  
English Department  
09/10/2021**

## A Webinar on Appreciating Poetry

### Photo



**3. Vaachan Prerana Din (Reading  
inspiration Day): Kavya vaachan  
(Poetry Recitation)**

**By**

**Hindi Department**

**15/10/2021**

**Vachan Prerana Din (Reading Inspiration Day):  
Kaavyavaachan (Poetry Recitation)**

**Photos**



**4. A Certificate Course in  
Communication Skills**

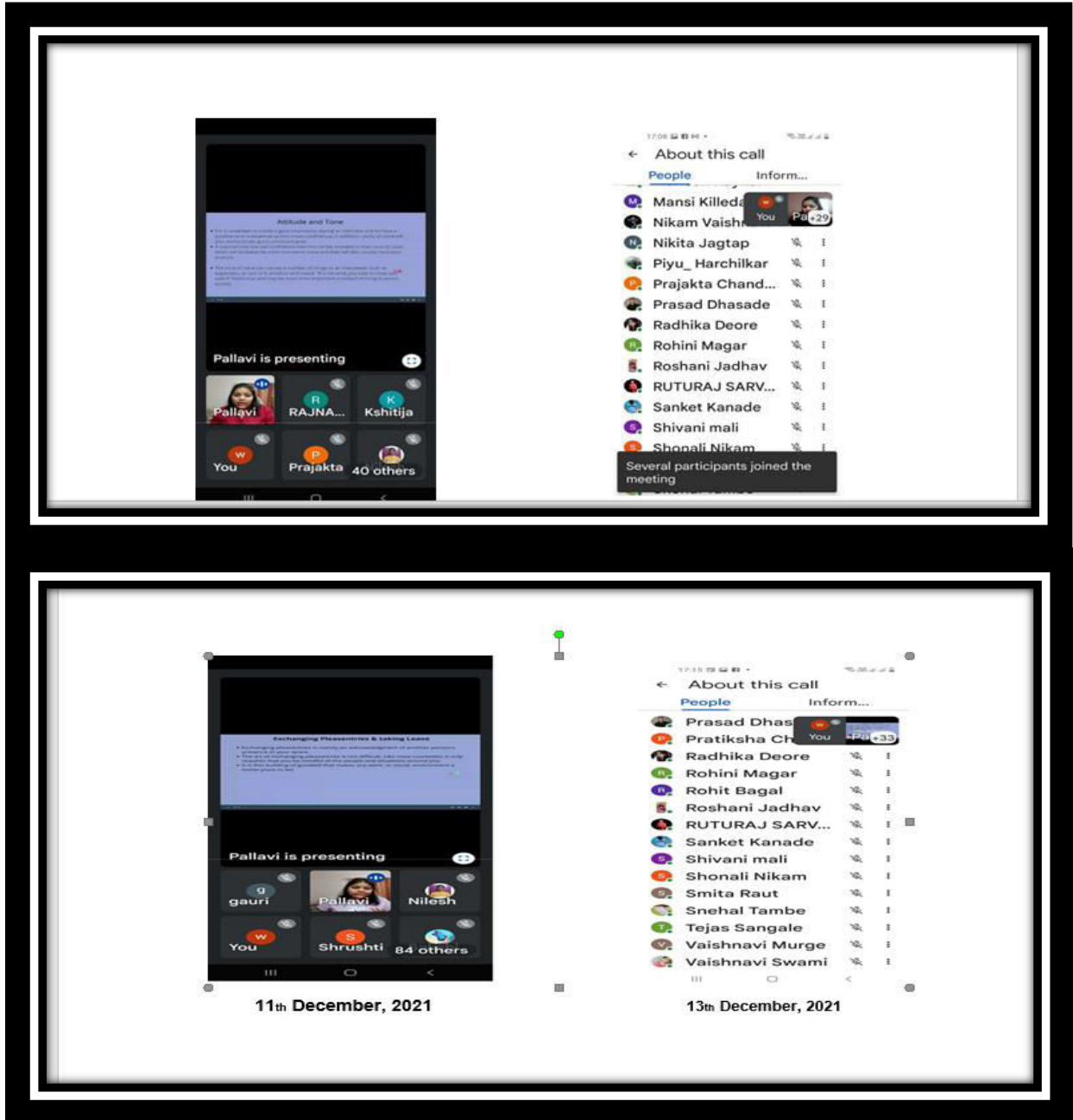
**By**

**English Department**

**06/12/2021 to 23/12/2021**

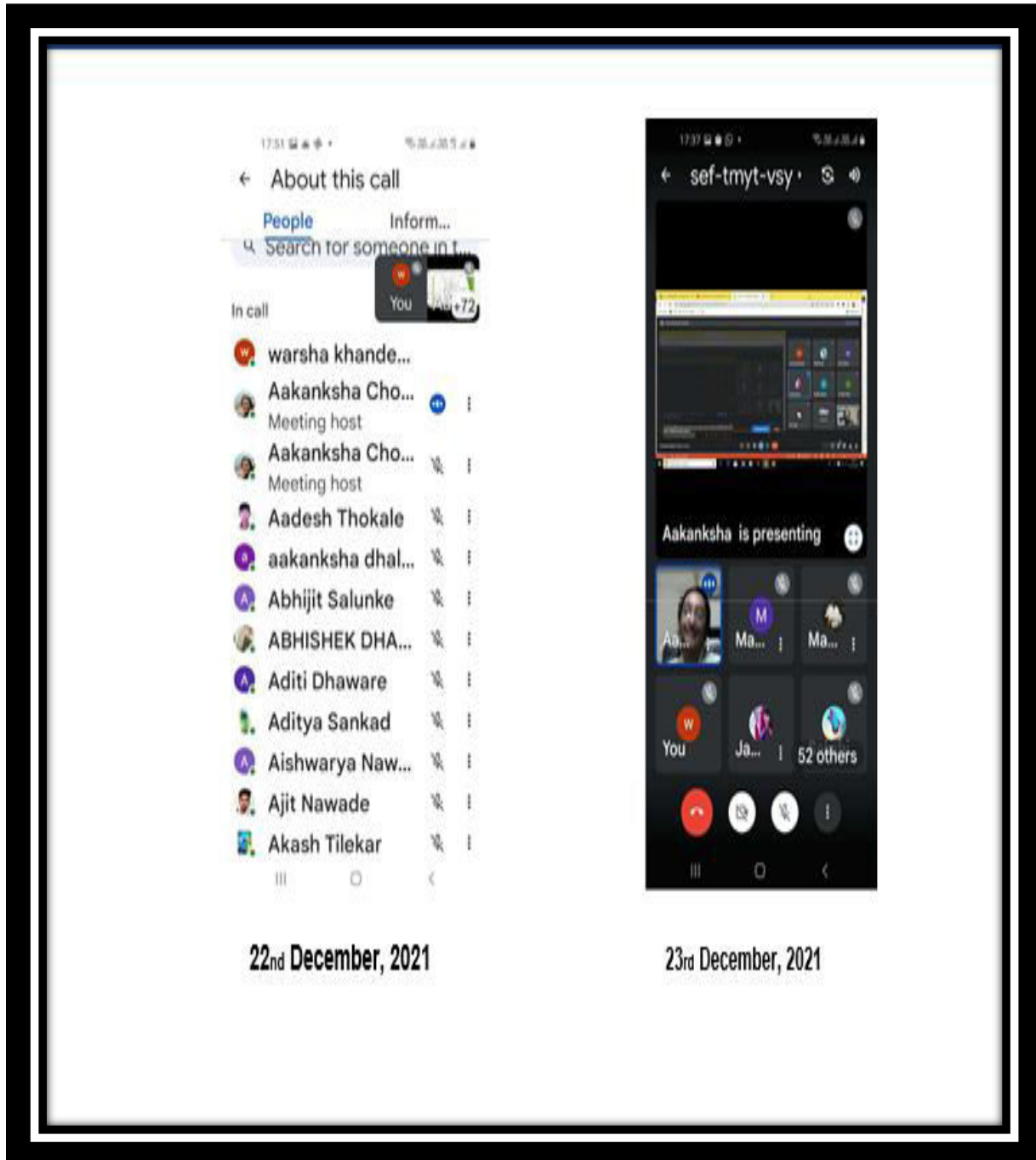
## A Certificate Course in Communication Skills

### Photo



## A Certificate Course in Communication Skills

### Photo



**5. Short Story Writing  
Competition**

**By**

**BBA Department**

**27/04/2022**



## Short Story Writing Competition

### Photos



## Short Story Writing Competition

### Photos



## Sample Short Story 1


### मंजिल

कुछ करना है, तो डटकर चल।  
थोड़ा दुनियां से हटकर चल।  
लीक पर तो सभी चल लेते है।  
कभी इतिहास को पलटकर चल॥  
बिना काम के मुकाम कैसा?  
बिना मेहनत के, दाम कैसा?  
जबतकना हाँसिल हो मंजिल तोराह में, आराम कैसा?  
अर्जुन सा, निशानारख।  
मनमें, नाकोई बहानारख!  
लक्ष्य सामने है, बस उसी पे अपना ठिकाना रख ॥  
सोचमत, साकार कर।  
अपने कर्मों से प्यार कर।  
मिलेगा तेरी मेहनत का फल।  
किसी और का इंतजार कर जो चले थे अकेले उनके पीछे आज मेले है...  
जो करते रहे इंतजार उनकी  
जिंदगी में आज भी झमेले है॥

Sima Ashok Zende  
(TYBBA)

## Sample Short Story 2

**MS Dhoni**



**Personal information**

|                  |  |
|------------------|--|
| <b>Full name</b> | Mahendra Singh Dhoni   |
| <b>Born</b>      | 1981 (age 39)<br>Ranchi, Bihar, India<br>(now in Jharkhand), |
| <b>Nickname</b>  | Mahi, Captain Cool,<br>MSD, Thala <sup>[1]</sup>             |
| <b>Batting</b>   | Right-handed   |
| <b>Bowling</b>   | Right-arm medium   |
| <b>Role</b>      | Wicket-keeper<br>batsman                                     |

## Sample Short Story 2

### **Mahendra Singh Dhoni (**

■ pronunciation (help·info) born 7 July 1981), is a former Indian international cricketer who captained the Indian national team in limited-overs formats from 2007 to 2016 and in Test cricket from 2008 to 2014. Under his captaincy, India won the inaugural 2007 ICC World Twenty20, the 2010 and 2016 Asia Cup; the 2011 ICC Cricket World Cup and the 2013 ICC Champions Trophy. A right-handed middle-order batsman and wicket-keeper, Dhoni is one of the highest run scorers in One Day Internationals (ODIs) with more than 10,000 runs scored and is considered an effective "finisher" in limited-overs formats.<sup>[2][3][4]</sup> He is widely regarded as one of the greatest wicket-keeper batsmen and captains in the history of the game.<sup>[5][6][7][8][9][10][11]</sup> He was also the first wicket-keeper to effect 100 stumpings in ODI cricket.<sup>[12]</sup>

# Life Skills

2021 - 2022

# **1. Webinar on Mental and Emotional Wellbeing**

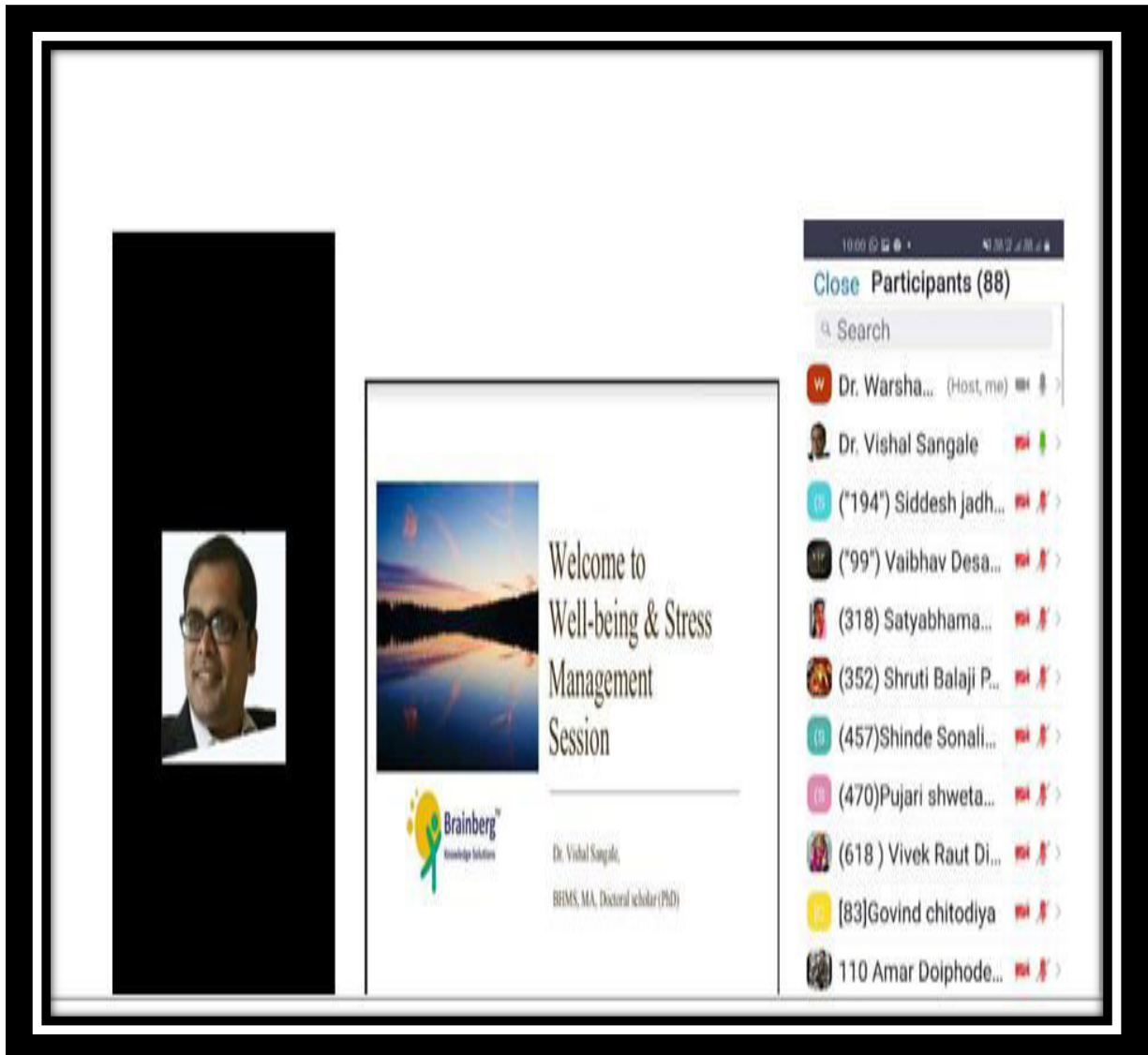
**By**

**English Department.**

**26/08/2021**

## Webinar on Mental and Emotional Wellbeing

### Photo

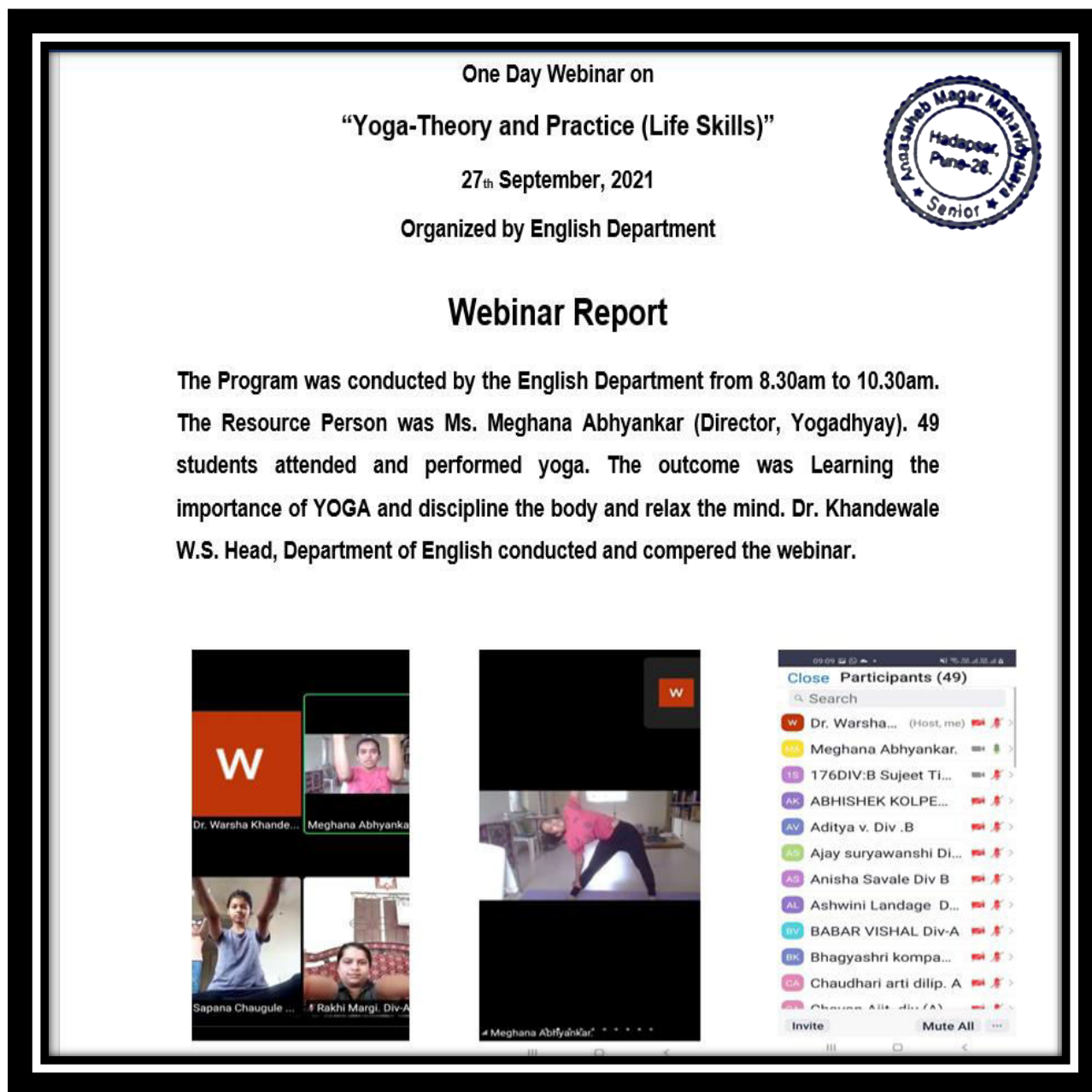




**2. Webinar on Yoga  
Theory and Practice**  
**By**  
**English Department**  
**27/09/2021**

## Webinar on Yoga Theory and Practice

### Photo



### **3. World Hand Wash Day**

**By**

**Microbiology Department**

**21/10/2021**

## World Hand Wash Day

### Photo

ii) No. of Staff: 15

8. Activity report submitted to

- a) Principal / Vice Principal / Registrar: Yes
- b) HODS for monthly report : Yes
- c) Magazine : Yes
- d) IQAC: Yes


9. How do your activities contribute to the mission and vision of the institution?

10. Photographs:



  
Prof. Neha Nitin Patil  
Head  
Department of Microbiology,  
Annasaheb Magar Mahavidyalaya,  
Hadapsar, Pune - 411028

  
Dr. Ramakant P. Joshi  
Co-ordinator  
IQAC Committee  
Annasaheb Magar Mahavidyalaya,  
Hadapsar, Pune-28

  
Dr. Pandit N. Shelke  
PRINCIPAL  
Annasaheb Magar Mahavidyalaya  
Hadapsar, Pune - 411 028



## **4. Nutrition Workshop**

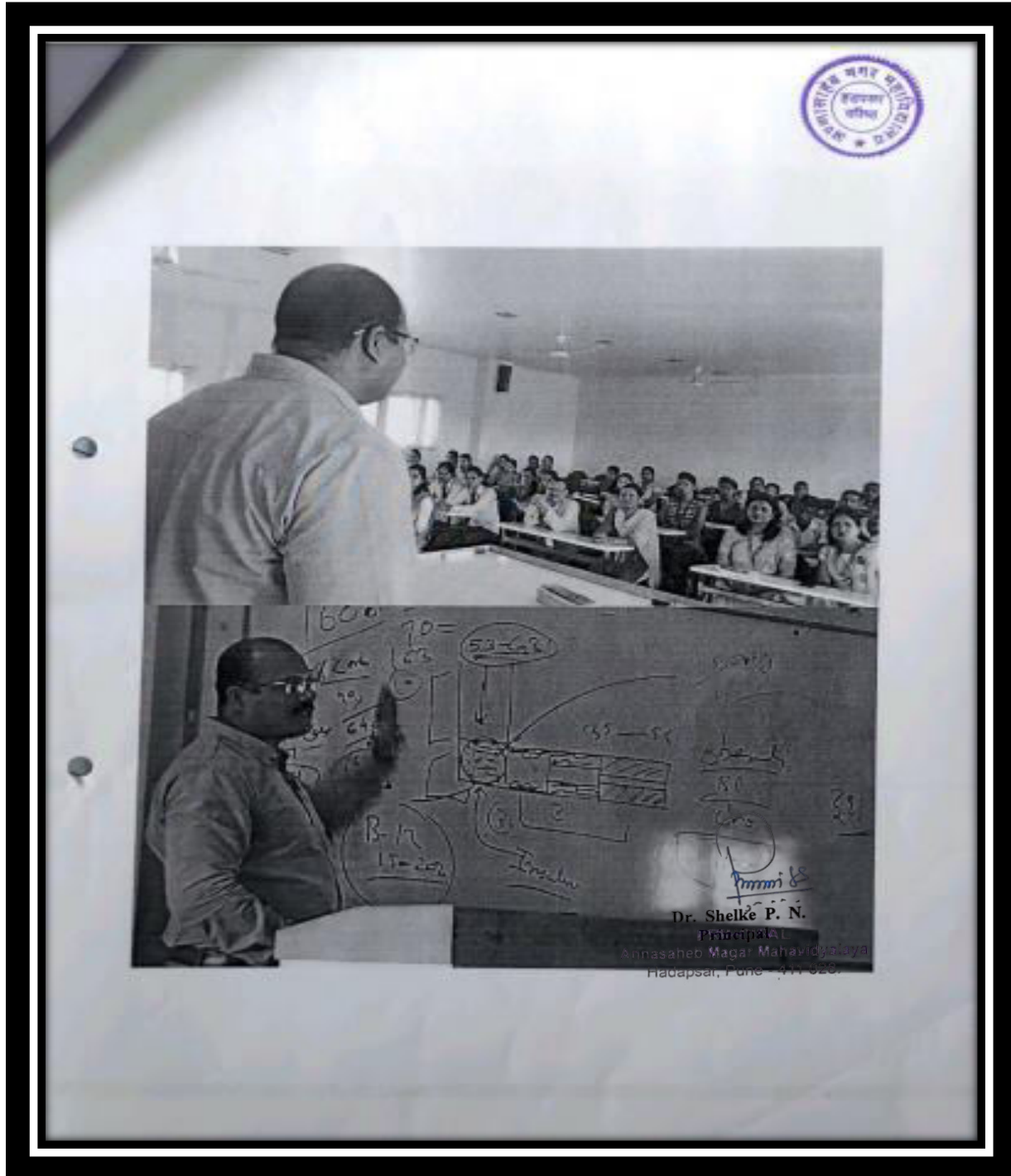
**By**

**Gymkhana department**

**25/10/2021**

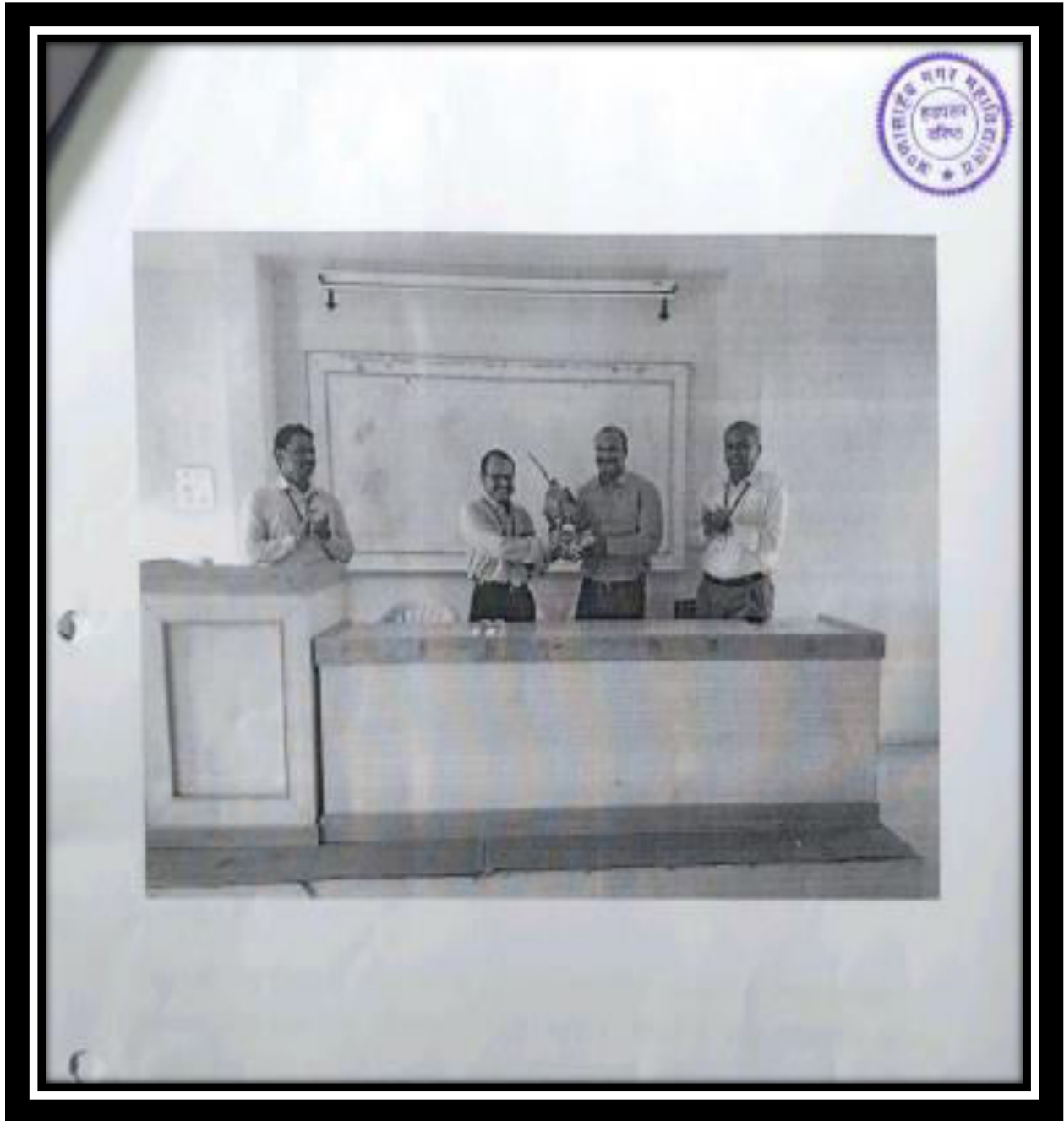
## Nutrition Workshop

### Photos



## Nutrition Workshop

### Photos



## **5. A Yoga Session**

**By**

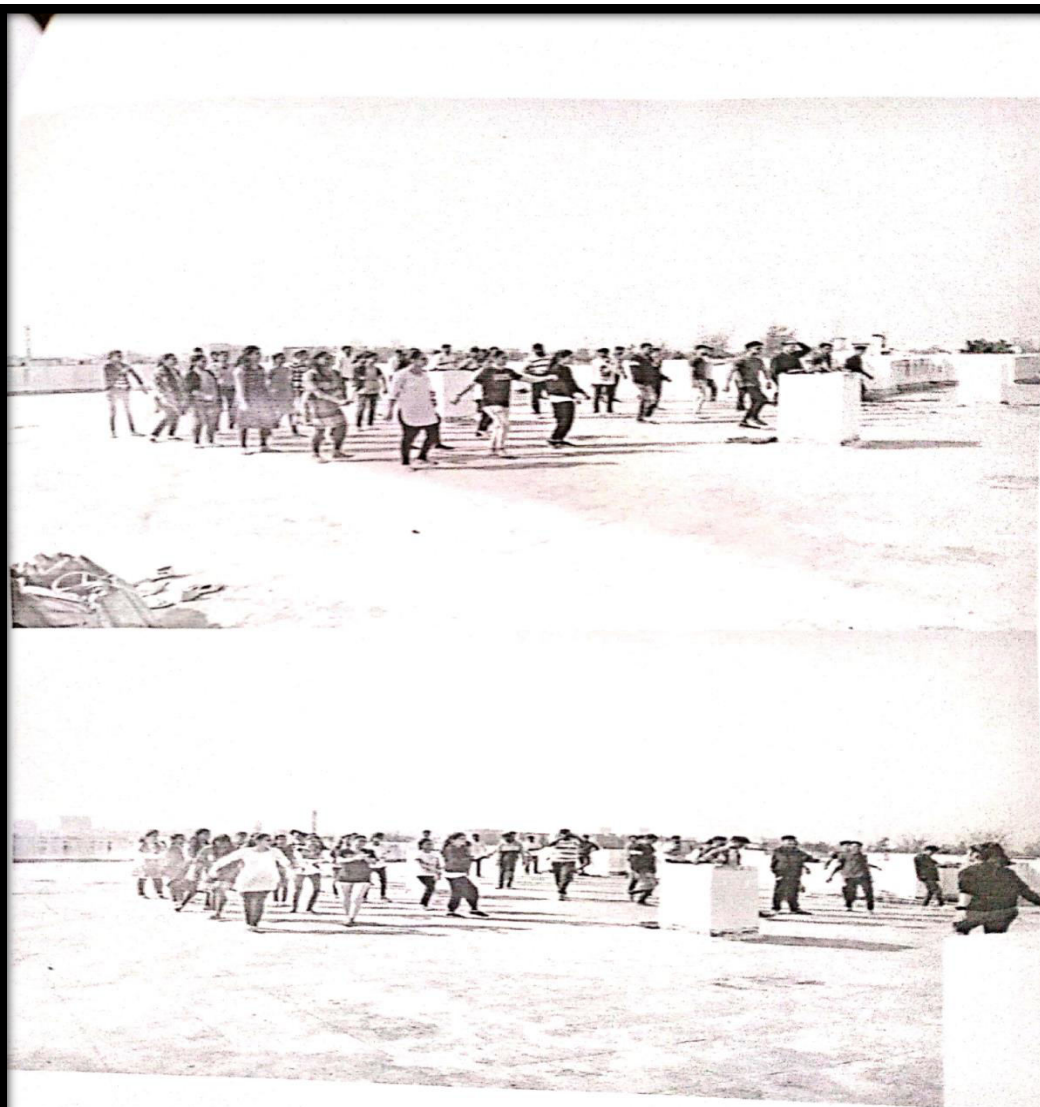
**BBA Department**

**13/12/2021**



## A Yoga Session

### Photos



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**6. Sanitary Napkins  
Distribution Program  
By  
Commerce Department  
( 03/02/2022 )**

## Sanitary Napkins Distribution Programme

### Photos of Inaugural Function and Sanitary Napkins Distribution among students



## **7. Self- Defense Program**

**By**

**Commerce department**

**18/02/2022**

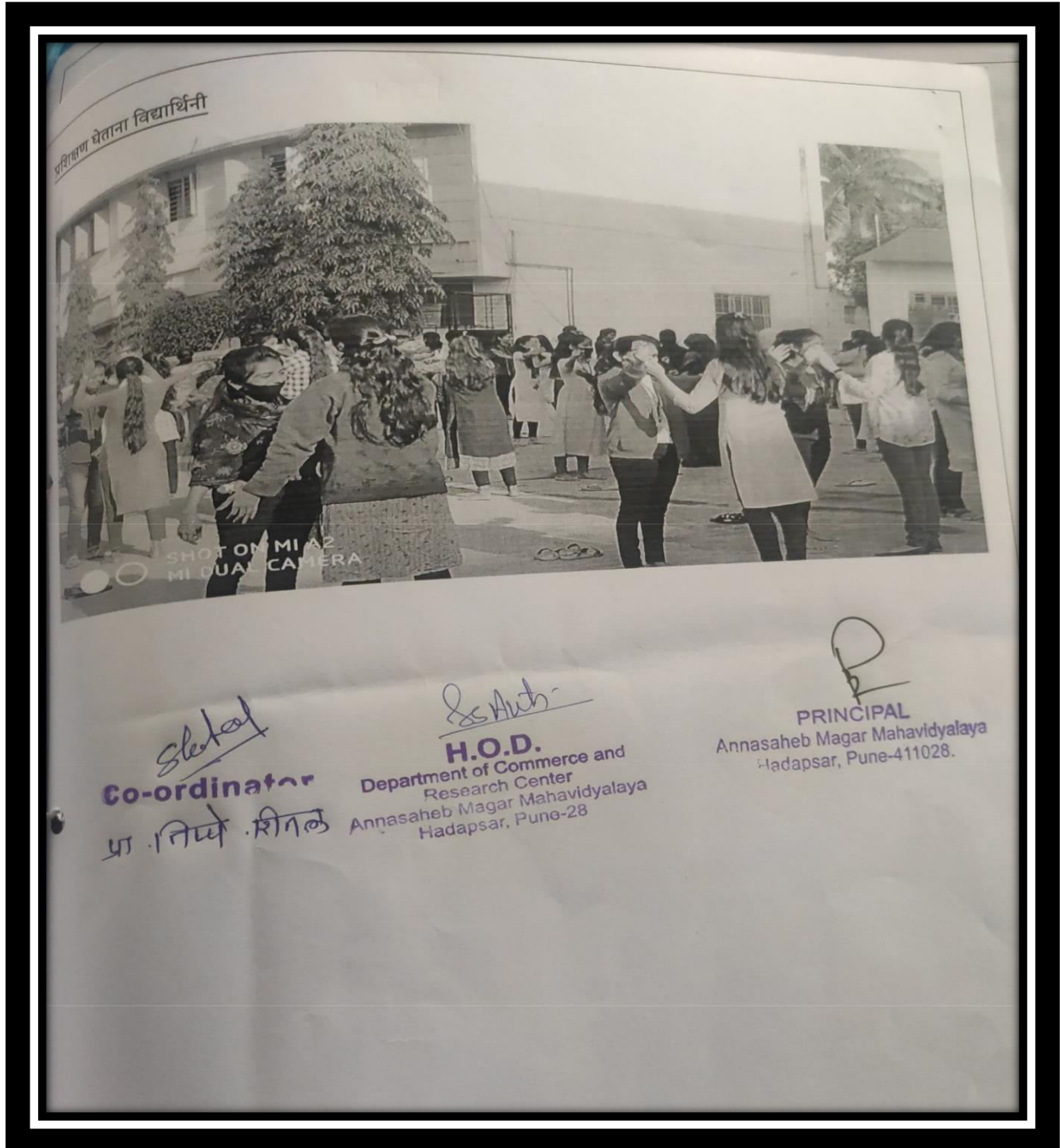
## Self-Defence Program

### Photos of Students Learning Different skills



## Self-Defence Program

### Photos of Students Learning Different skills



**8. Free Medical  
Checkup Camp**

**By**

**Zoology Department  
08/03/2022**

## Free Medical Checkup Camp

Photos of Inaugural Function ,Principal sir address,  
Distribution of medicines, medical check up of staff and  
students





**9. World Water Day**  
**By**  
**Microbiology Department**  
**22/03/2022**

## World Water Day

### Photos of Posters made by Students



## World Water Day

### Photos of Posters made by Students



## World Water Day

### Photos of Inaugural Function



**10. Free Health Checkup  
Center**

**By**

**Zoology Department  
26/03/2022**

## Free Health Checkup Centre

Photos of check up done by Doctors on regular basis of students and Staff



| Apollo-Manjari Multispecialty Hospital   |            |                      |
|--|------------|----------------------|
| As per MOU these doctors will be available to attend OPD in Anna Sahab Magar College |            |                      |
| Doctor Name  | Date       | Timings              |
| Dr. Sachin Sarap<br>Dr. Manjusha   | 23/04/2022 | 10:00 am to 12:00 pm |
| Dr. Anmol Patil<br>Dr. Manjusha  | 14/05/2022 | 10:00 am to 12:00 pm |
| Dr. Sachin Sarap<br>Dr. Leela White  | 28/05/2022 | 10:00 am to 12:00 pm |
| Dr. Anmol Patil<br>Dr. Leela White   | 11/06/2022 | 10:00 am to 12:00 pm |







अण्णासाहेब मगर महाविद्यालय, हडपसर, पुणे-२८

अपोलो-मांजरी मल्टीस्पेशलिटी हॉस्पिटल संचालित

**HEALTH CENTER**

**OPD DAY :**

**2<sup>nd</sup> & 4<sup>th</sup> Saturday** 

**Time : 10 am to 12 pm**

**Mob. 9850079284**

**11. A Lecture on 'Mi  
Kasa Ghadlo' (How I  
Evolved)**

**By**

**Microbiology Department  
01/04/2022**

## A Lecture on 'Mi Kasa Ghadalo' (How I Evolved)

### Photo



हडपसर : व्याख्यानमालेचे उद्घाटन करताना सिटी कॉर्पोरेशनचे व्यवस्थापकीय संचालक अनिरुद्ध देशपांडे, समवेत अन्य मान्यवर.



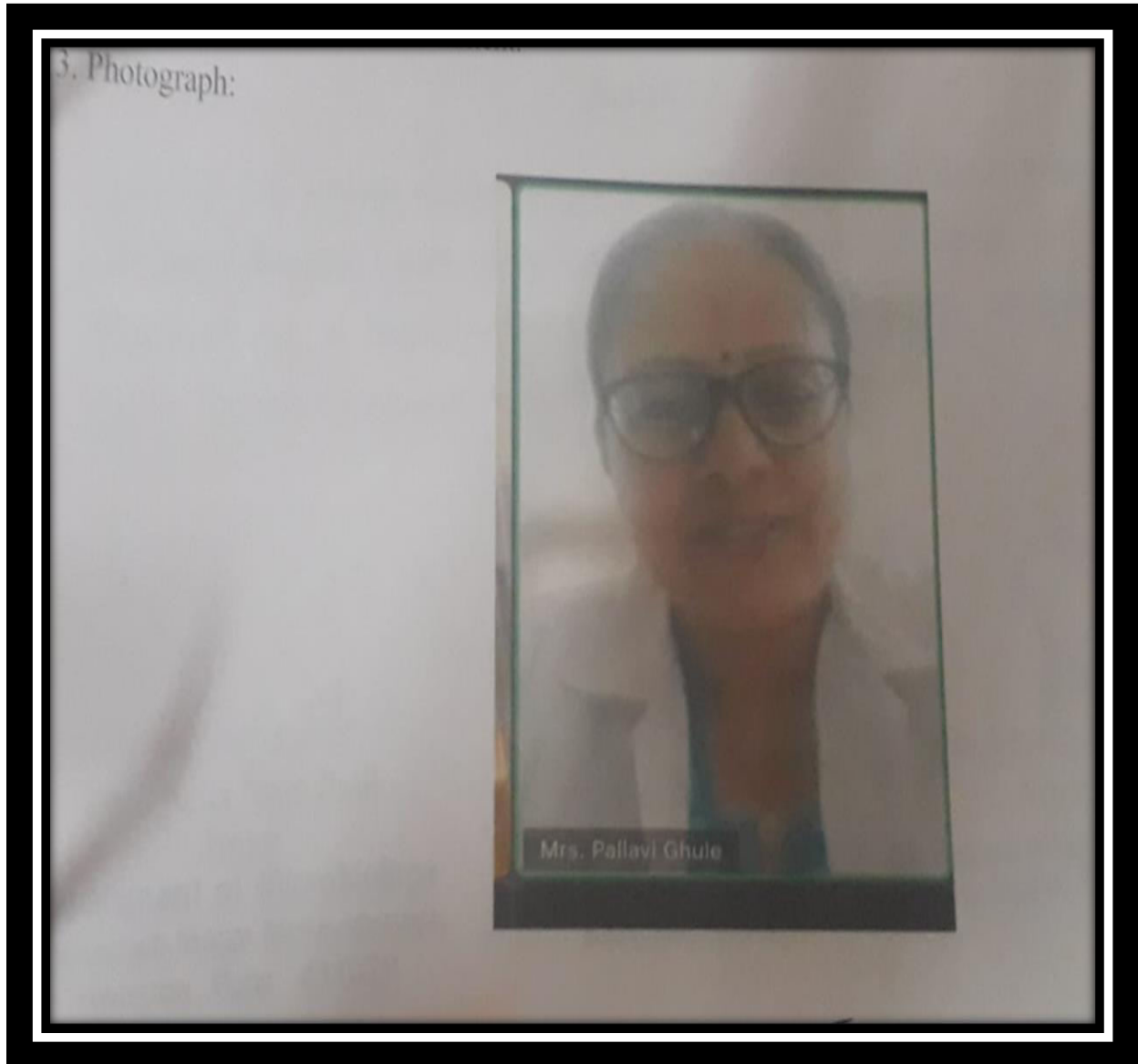
**12. A lecture on 'The  
Value of Good Health' on  
World Health Day**

**By**

**Microbiology Department**

**07/04/2022**

## A Lecture on 'Value of Good Health' on World Health Day Photo



**13. Awareness Rally on  
“Reduce Usage of Plastic”  
By BBA Department  
22/04/2022**

## Awareness Rally on 'Reduce Usage of Plastic'

### Photos



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## Awareness Rally on 'Reduce Usage of Plastic'

### Photos



## Awareness Rally on 'Reduce Usage of Plastic'

### Photos



# Awareness of Trends in Technology 2021 - 2022

# 1. How to Make PPT

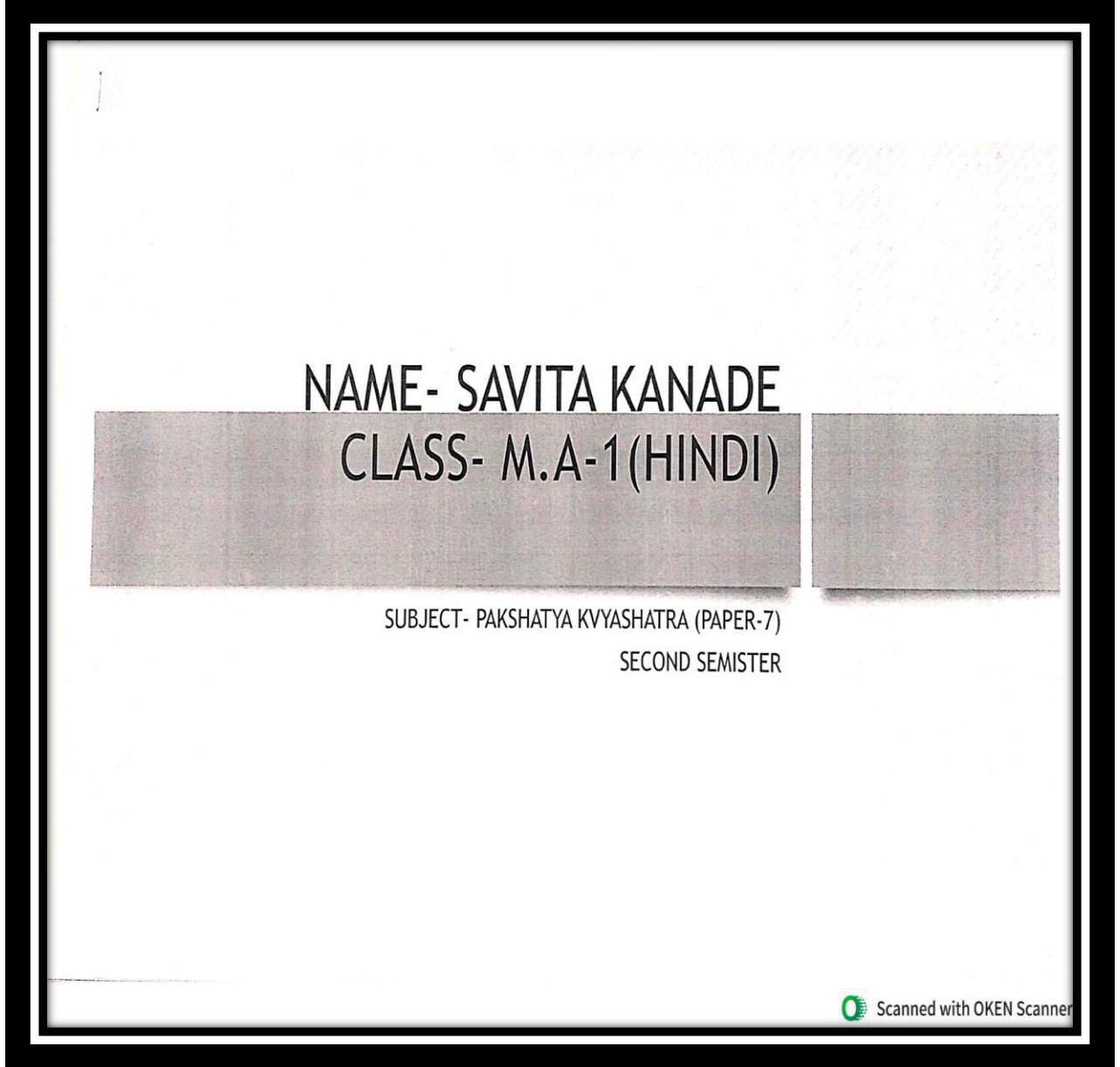
By

Hindi Department

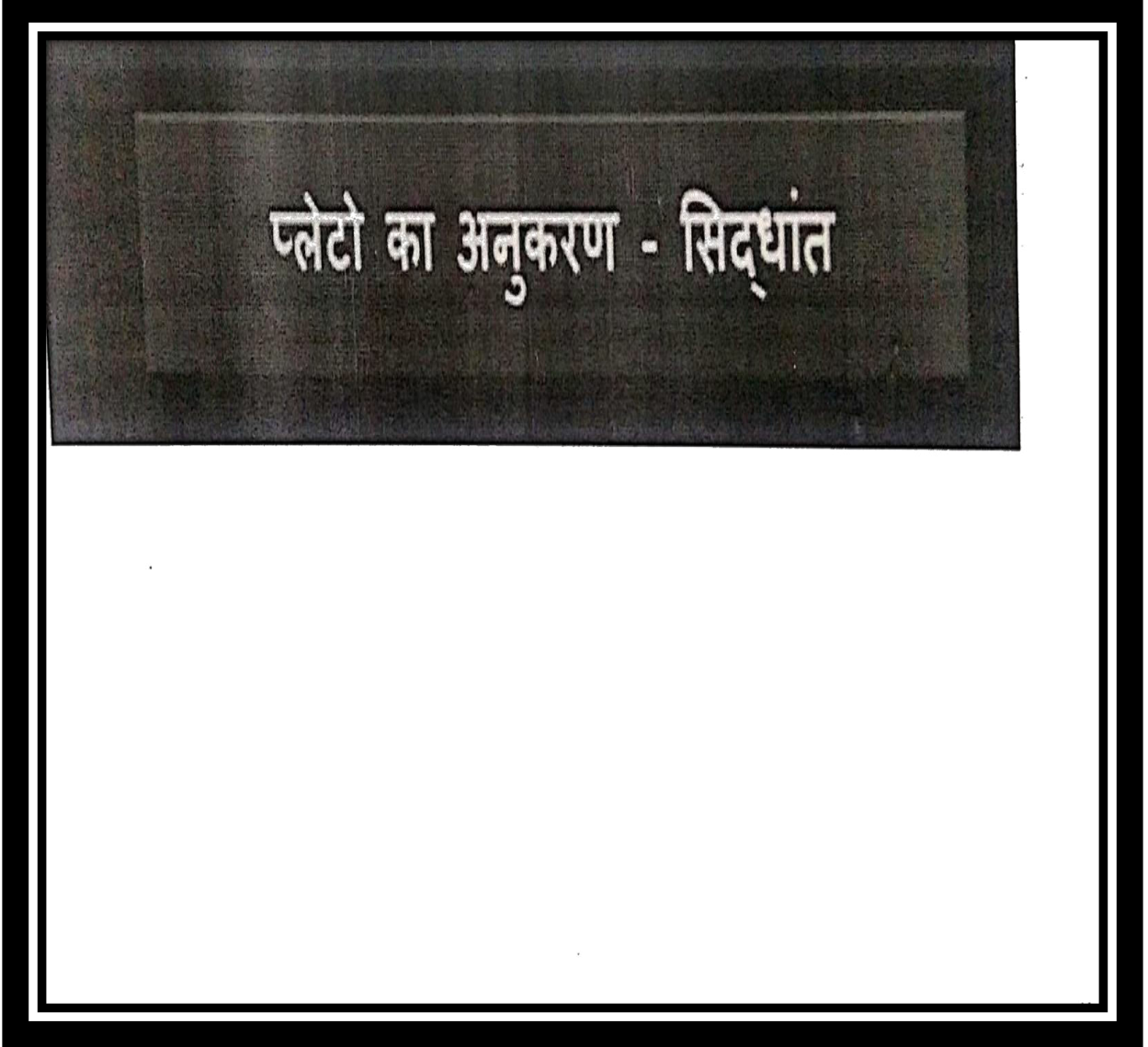
25/09/2021



**Student's PPT 1**



## Student's PPT 1



## Student's PPT 1

### प्लेटो का अनुकरण - सिद्धांत

यूनानी दार्शनिकों की परम्परा में सुकरात के शिष्य प्लेटो का एक महत्वपूर्ण स्थान है। प्लेटो की रचनाओं में 'द रिपब्लिक', 'दि स्टेट्स मैन' एवं 'दि प्रसिद्ध लाँज' प्रमुख हैं।

प्लेटो और अनुकरण का अर्थ -

होमर ने 'अनुकरण' शब्द के लिए 'मीमेसिस' शब्द का प्रयोग किया था। प्लेटो ने अनुकरण को सभी कलाओं की मौलिक विशेषता बताया है तो कहीं कल्पना तथा रचनात्मक शक्ति के अर्थ में प्रयुक्त किया है। उन्होंने इस संसार का मूल सत्य ईश्वर को स्वीकार करते हुए कहा है कि - ईश्वर के सत्य की अनुकृति यह संसार है और इस संसार का अनुकरण ही काव्य है।

Student's PPT 1

प्लेटो का अनुकरण - सिद्धांत

प्लेटो के अनुकरण - सिद्धांत की मूल मान्यताएँ -

1. ईश्वर द्वारा रचित प्रत्यय - जगत ही सत्य है, ईश्वर स्रष्टा है ।
2. वस्तु - जगत, प्रत्यय - जगत की अनुकृति या छाया होने के कारण मिथ्या या असत्य है ।
3. कला - जगत वस्तु - जगत का अर्थात् अनुकरण का अनुकरण होने के कारण और भी मिथ्या है क्योंकि वह अनुकृति की अनुकृति करता है । कलाकार अनुकर्ता है ।

Student's PPT 1

| प्लेटो का अनुकरण - सिद्धांत                              |  |
|--|--|
| प्लेटो और अरस्तू के अनुकरण - सिद्धांत में अंतर -         |  |
| प्लेटो   | अरस्तू   |
| 1 प्लेटो ने 'अनुकरण' शब्द का अर्थ हूँ-बहूँ नकल बताया था। | अरस्तू के अनुसार यह पुनः सृजन का पर्याय है।                                    |
| 2 कवि अनुकृति की अनुकृति करता है।                        | कला प्रकृति और जीवन का पुनः प्रस्तुतिकरण है।                                   |
| 3 कवि को 'अनुकर्ता' बताया है।                            | कवि को कर्ता सिद्ध किया है।  |
| 4 काव्यकला को नैतिक और आदर्शवादी दृष्टिकोण से देखा।      | सौंदर्यवादी दृष्टि से देखते हुए यह अतिपादित किया कि कला प्रकृति की अनुकृति है। |

Student's PPT 1

प्लेटो का अनुकरण - सिद्धांत

प्लेटो का काव्य पर आक्षेप -

प्लेटो द्वारा काव्य एवं कवि पर गंभीर आरोप लगाए गए | जैसे -

1. काव्य अनुकृति की अनुकृति है |
2. कवि ना केवल स्वयं अज्ञानी है बल्कि वह अज्ञान का प्रसारक भी है |
3. काव्य क्षुद्र मानवीय भावों पर आधारित होता है | कलात्मक रचनाएँ समाज के लिए अनुपयोगी हैं |
4. काव्य लोगों में वासनाजन्य क्षुद्र भावों को जगाता है | कवि समाज में अनाचार एवं दुर्बलता का पोषण करने का अपराधी है |

Student's PPT 1

## प्लेटो का अनुकरण - सिद्धांत

### प्लेटो के अनुकृति - सिद्धांत का मूल्यांकन

1. प्लेटो ने अपने युग के काव्य की दूषित प्रवृत्तियों के प्रभाव के कारण कविता पर गंभीर आरोप जड़े पर इसका अभिप्राय यह नहीं कि प्लेटो पूरी तरह से काव्य के विरोधी थे। उन्होंने ऐसी कविताओं को महत्वपूर्ण, उचित व प्रभावोत्पादक माना है, जिनमें वीर पुरुषों की गाथा हो या देवताओं के स्त्रोत हो।
2. डॉ. देवेन्द्रनाथ शर्मा के अनुसार कला की अनुकरण मूलकता की उद्भावना का श्रेय प्लेटो को ही है।

Student's PPT 1

प्लेटो का अनुकरण - सिद्धांत

3. डॉ. गणपतिचंद्र गुप्त के अनुसार प्लेटो ने कविता को अनुकृति बताकर काव्य - मौमांसा के क्षेत्र में एक ऐसे सिद्धांत की प्रतिष्ठा की, जो परवर्ती युग में विकसित होकर काव्य - समीक्षा का बना ।

निःसंदेह, प्लेटो का अनुकृति - सिद्धांत पाश्चात्य काव्यशास्त्र का एक महत्वपूर्ण सिद्धांत है ।

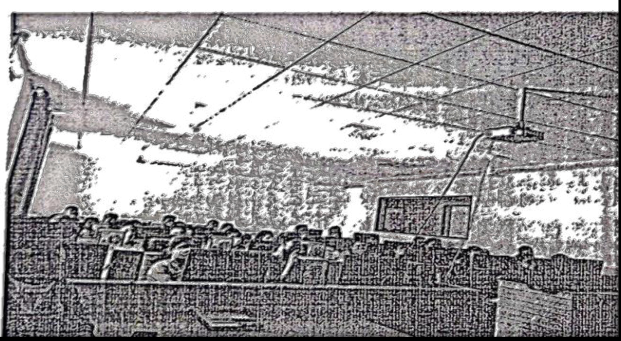
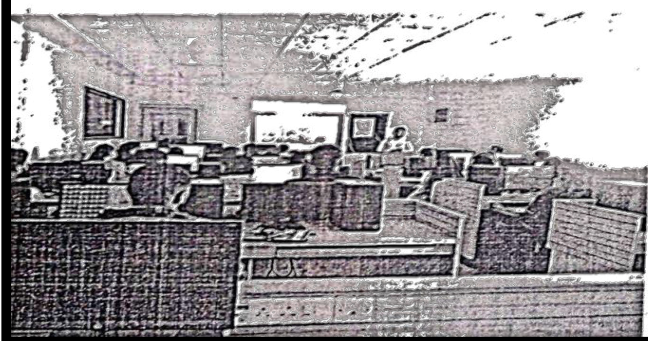
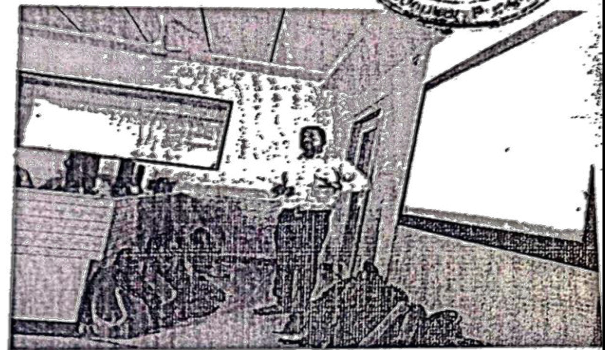
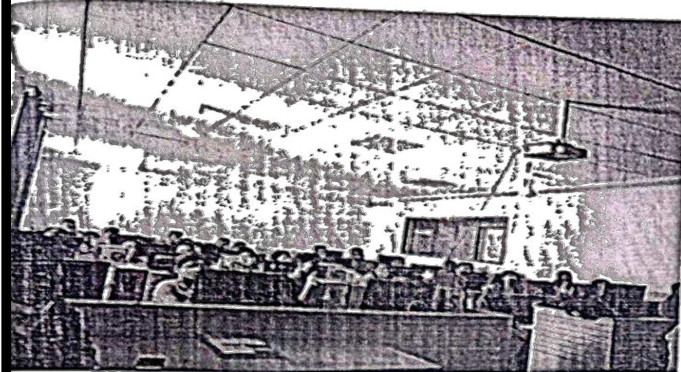


**2. Guest Lecture on Web  
Framework  
By  
Computer Science  
Department**

## Guest Lecture on Web Framework

### Photos

Activity Photos :



**3. Guest Lecture on Cyber  
Security  
By  
Computer Science  
Department**

## Guest Lecture on Cyber Security

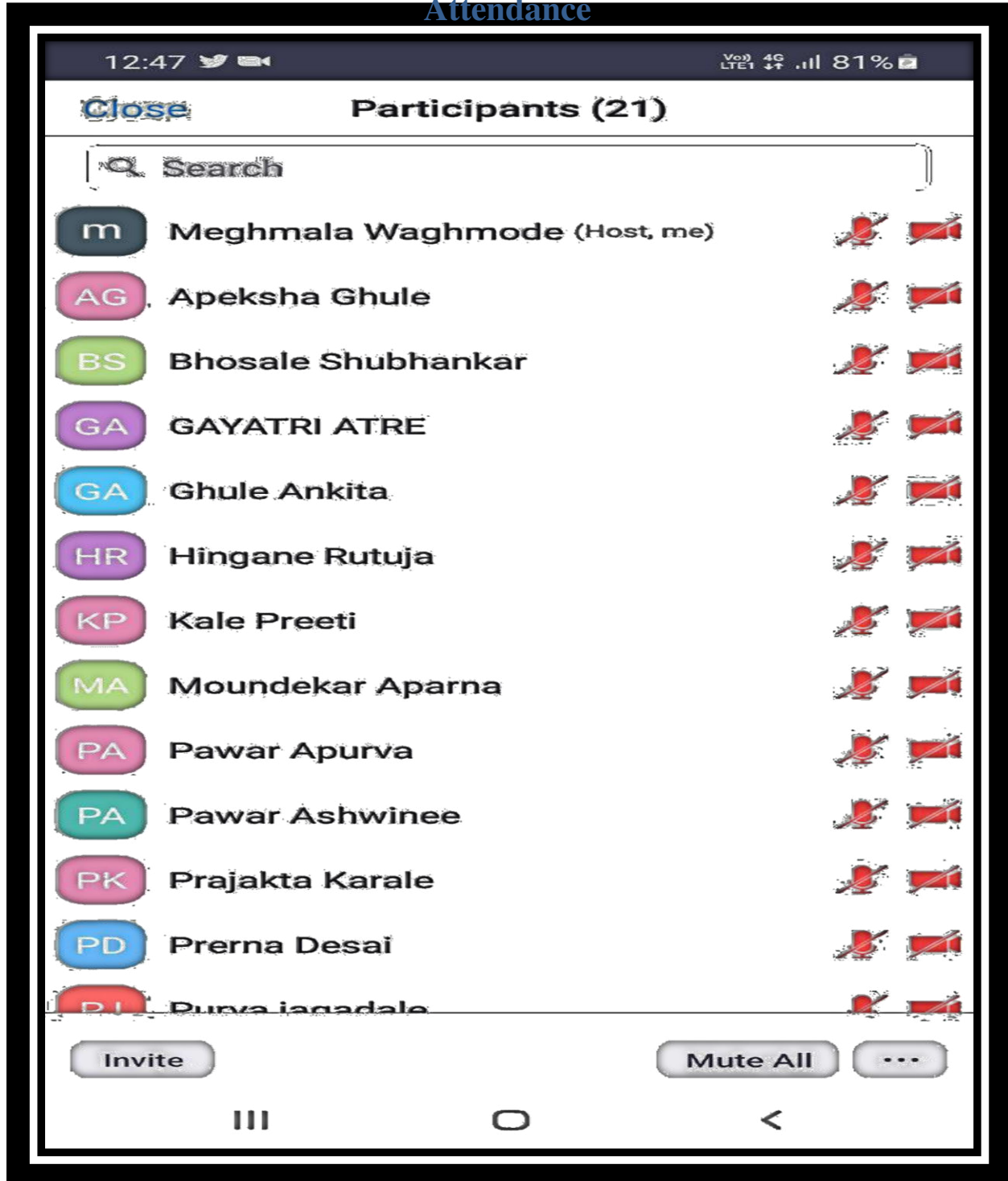
### Photos of Demo lecture Presented by Guest Mr. Akshya Raut



**4. Online PPT  
Presentation by Students  
By  
Microbiology Department  
28/04/2022 and 19/05/2022**

## Online PPT Presentations

### Attendance



## Student's Online PPT 1



The image is a screenshot of a Zoom mobile app interface during a meeting. At the top, the status bar shows the time 13:12, signal strength, VoLTE, and 76% battery. The Zoom interface includes a speaker icon, a 'Zoom' label with a dropdown arrow, and a red 'End' button. The main content is a slide with a green and white background. The slide title is 'Cytokine Receptor Five Families:'. Below the title is a paragraph: 'Receptors for the various cytokines are quite diverse structurally, but almost all belong to one of five families of receptor proteins'. This is followed by a numbered list of five families: 1. Immunoglobulin superfamily receptors, 2. Class I Cytokine receptor family (also known as the hematopoietin receptor), 3. Class II cytokine receptor family (also known as the interferon receptor family), 4. TNF receptor family, and 5. Chemokine receptor family. A sixth bullet point reads 'Three Subfamilies of Class I Cytokine Receptors'. The bottom of the screen shows the Zoom control bar with icons for 'Unmute', 'Start Video', 'Stop Share', 'Participants' (18), and 'More'. A white mobile phone icon is overlaid on the right side of the slide.

**Cytokine Receptor Five Families:**

- Receptors for the various cytokines are quite diverse structurally, but almost all belong to one of five families of receptor proteins
- 1. Immunoglobulin superfamily receptors
- 2. Class I Cytokine receptor family (also known as the hematopoietin receptor)
- 3. Class II cytokine receptor family (also known as the interferon receptor family)
- 4. TNF receptor family
- 5. Chemokine receptor family
- Three Subfamilies of Class I Cytokine Receptors

## Student's Online PPT 1

**ANNASAHEB MAGAR MAHAVIDYALYA, HADAPSAR, PUNE-28**

CORE COMPULSORY THEORY PAPER

TC 1-CELL SURFACE MOLECULES AND RECEPTORS

GUIDENCE BY-MEGHMALA WAGHMODE MAM  
PRESENTED BY-JAGADAE PURVA  
SHRUTI WAGHMODE

### Introduction

- ▶ TLRs are germline-encoded pattern recognition receptors
- ▶ Sense conserved molecular structures produced by microorganisms
- ▶ Play essential role in host defence to microbial infection.
- ▶ Activate intracellular signalling pathways
- ▶ Induce genes involved in immune responses and inflammation.
- ▶ Act as a bridge between Innate and Adaptive immunity by mediating dendritic cell maturation and activation of pathogen-specific T lymphocytes.

- ▶ TLRs recognize pathogens and generates an immediate defence response.
- ▶ Induce cytokines which destroy or limit invading pathogens.
- ▶ Activation of APCs & expression of MHC and co-stimulatory molecules like CD40, CDW, CD86 and CD70.
- ▶ Activation and differentiation of naive T cells into Th1, Th2, Th3 and Th17 cells or T-reg, facilitating cell mediated immune responses.

### Cellular Localisation of TLR's

TLR1, TLR2, TLR4, TLR6, TLR11 (Plasma membrane)

TLR3, TLR3, TLR4, TLR5, TLR6, TLR7, TLR8, TLR9, TLR10, TLR10 (Endosomal/lysosomal membrane)

LPS, flagrin, peptidoglycan, Lipopeptide (Pam3CSK4), Lipopeptide (MALP-2), LPS, CpG DNA, dsRNA, ssRNA, CpG DNA, dsRNA, ssRNA, TLR domain, Plasma membrane, Endosomal/lysosomal membrane



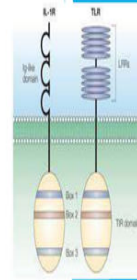
## Student's Online PPT 1

### Cellular Localisation of TLR's

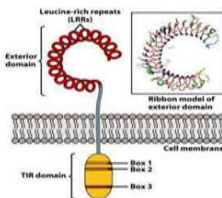
- ▶ TLR1, TLR2, TLR4, TLR5, and TLR6 localized on the cell surface and recognize microbial membrane components.
- ▶ TLR3, TLR7, TLR8, and TLR9 expressed within intracellular vesicles and recognize nucleic acids.
- ▶ Intracellular vesicles with TLR3, TLR7, TLR8, and TLR9 are localized in endoplasmic reticulum (ER), endosomes, lysosomes, and endolysosomes.
- ▶ Intracellular localization important for avoiding contact with "self" nucleic acids and risk of autoimmunity.
- ▶ Regulated mechanism is present for TLR mobilization

### Structure of TLR's

- ▶ TLRs are type I membrane glycoproteins.
- ▶ Homology in the cytoplasmic region---interleukin-1 receptors (IL-1Rs) superfamily
- ▶ Extracellular region of TLRs contains leucinerich repeat (LRR) motifs, & IL 1Rs contains three immunoglobulin-like domains

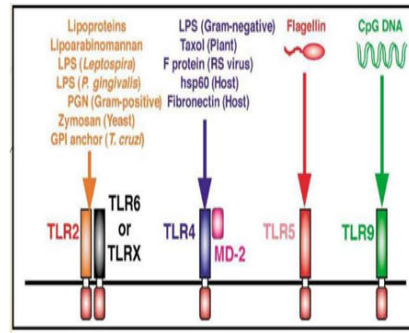


### Structure of TLR's



- ▶ Toll-like receptors (TLRs) and interleukin-1 receptors (IL-1Rs) have a conserved cytoplasmic domain, that is known as the Toll/IL-1R (TIR) domain.
- ▶ The TIR domain is characterized by the presence of three highly homologous regions (known as boxes 1, 2 and 3).

### Ligands for TLR's



## Student's Online PPT 1

### Ligands for TLR's

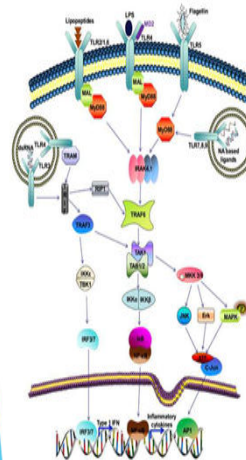
| Receptor | Ligand   | Origin of ligand  |
|----------|--|---|
| TLR11    | Triacyl lipopeptides<br>Soluble factors  | Bacteria and mycobacteria<br><i>Mycobacterium neoaurum</i>  |
| TLR2     | Lipopolysaccharides<br>Peptidoglycan<br>Lipoteichoic acid<br>Lipoteichoic acid<br>Phenol soluble modulin<br>Glycosaminoglycans<br>Cytolysin<br>Hemolysin<br>Alylcell lipopolysaccharide<br>Alylcell lipopolysaccharide<br>Zymosan<br>Heat shock protein 70 <sup>*</sup><br>Heat shock protein 70 <sup>*</sup>  | Various pathogens<br>Gram-positive bacteria<br>Gram-positive bacteria<br>Mycobacteria<br><i>Staphylococcus epidermidis</i><br><i>Staphylococcus aureus</i><br><i>Propionium multivatum</i><br><i>Neisseria</i><br><i>Leptospira interrogans</i><br><i>Flavobacterium meningosepticum</i><br>Fungi<br>Host |
| TLR3     | Double-stranded RNA  | Viruses   |
| TLR4     | Lipopolysaccharide<br>Flagin<br>Fusion protein<br>Envelope protein<br>Heat shock protein 60 <sup>*</sup><br>Heat shock protein 70 <sup>*</sup><br>Type II repeat extra domain A of fibronectin <sup>*</sup><br>Oligosaccharides of hyaluronic acid <sup>*</sup><br>Polysaccharide fragments of heparan sulfate <sup>*</sup><br>Fibrinogen <sup>*</sup> | Gram-negative bacteria<br>Plants<br>Respiratory syncytial virus<br>Mouse mammary tumour virus<br><i>Cytomegalovirus pneumoniae</i><br>Host<br>Host<br>Host<br>Host<br>Host  |
| TLR5     | Flagellin  | Bacteria  |
| TLR6     | Dialcyl lipopeptides<br>Lipoteichoic acid<br>Zymosan   | <i>Chlamydia pneumoniae</i><br>Gram-positive bacteria<br>Fungi  |
| TLR7     | Imidazoquinoline<br>Loxanthine<br>Bircamnine<br>Single-stranded RNA  | Synthetic compounds<br>Synthetic compounds<br>Synthetic compounds<br>Viruses  |
| TLR8     | Imidazoquinoline<br>Single-stranded RNA  | Synthetic compounds<br>Viruses  |
| TLR9     | CpG-containing DNA   | Bacteria and viruses  |
| TLR10    | N.D.   | N.D.  |
| TLR11    | N.D.   | Uropathogenic bacteria  |

### TLR Signaling Pathway

- 1) MyD88 (myeloid differentiation primary-response protein 88)
- 2) IRAK family (IL-1-receptor-associated kinases)
- 3) TRAF6 (tumour-necrosis-factor receptor-associated factor 6)
- 4) NF- $\kappa$ B (nuclear factor- $\kappa$ B)

### TOLL LIKE RECEPTOR (TLR) SIGNALLING PATHWAY

When TLRs are stimulated by their respective ligands, they dimerize and recruit downstream adaptor molecules, such as myeloid differentiation primary response protein 88 (MyD88), MyD88-adaptor-like (MAL), Toll/interleukin (IL)-1 receptor (TIR)-domain-containing adaptor-inducing interferon- $\beta$  (TRIF), TRIF-related adaptor molecule (TRAM), which activate other downstream molecules leading to the activation of signaling cascades that converge at the nuclear factor- $\kappa$ B (NF- $\kappa$ B), interferon (IFN) response factors (IRF) and mitogen-activated protein (MAP) kinases. These molecules induce the transcription of several proinflammatory molecules, such as interleukin (IL)-6, IL-8, IL-12, and tumor necrosis factor  $\alpha$  (TNF- $\alpha$ ). The secretion of these molecules counters the threat posed by microbes and helps activate other immune components. AP1, activator protein 1; ATF, activating transcription factor; dsRNA, double-stranded RNA; ERK, extracellular signal-regulated kinase; IKK, inhibitor of kappa light polypeptide gene enhancer in B-cell kinase; IRAK, IL-1 receptor-associated kinase; JNK, c-Jun N-terminal kinase; LPS, lipopolysaccharide; MyD88, myeloid differentiation factor; MyD88, MyD88; NA, nucleic acid; IAB, transforming growth factor- $\beta$ -activated kinase 1/MAP3K7-binding protein; TAK, transforming growth factor- $\beta$ -activated kinase; TRAF, tumor necrosis factor receptor-associated factor; RIP1, receptor-interacting protein 1.



1. Ligand binding
2. Dimerization
3. Recruitment of adaptor molecules
4. Activation of signal transduction pathways

## Student's Online PPT 1

activates IRAKs and TRAF6  
TIR-domain-containing MyD88 mediates TLR pathway that Activation of the IKK complex (inhibitor of nuclear factor- $\kappa$ B

(IKB)- kinase complex),

and NF- $\kappa$ B and releases NF- $\kappa$ B from its inhibitor.

inflammatory cytokines.

TIRAP (TIR domain- containing adaptor protein), is involved in the MyD88- dependent signaling pathway through TLR2 and TLR4. TLR3- and TLR4-mediated activation of interferon (IFN)- regulatory factor 3 (IRF3) and

the induction of IFN- $\beta$  are observed in a MyD88-independent manner.



**TRAF:TNF receptor associated factor**

### TLR'S AND SUSCEPTIBILITY TO DISEASES

TLR 1:  
 1] PROTECTION AGAINST LEPROSY

TLR 3  
 1] Herpes Simplex Encephalitis  
 TLR3 is vital for natural immunity to HSV-1 in the CNS and neurotropic viruses have contributed to the evolutionary maintenance of TLR3.

2] Age-related macular degeneration (Responsible for blindness)

TLR 5  
 1] Susceptibility to Legionnaire disease  
 2] Resistance to systemic lupus erythematosus

## Student's Online PPT 1

**NEUROLOGICAL DISEASES WITH POSSIBLE LINK TO TLR PATHWAY**

|  |                            |
|--|----------------------------|
| 1] Leptosy                                 | 13] Parkinson's Disease    |
| 2] Herpes Simplex Encephalitis             | 14] Perinatal brain injury |
| 3] Enteroviral and flaviviral encephalitis | 15] Multiple sclerosis     |
| 4] Malaria                                 |                            |
| 5] Toxoplasmosis                           |                            |
| 6] Trypanosomiasis                         |                            |
| 7] Lyme disease                            |                            |
| 8] Neurocysticercosis                      |                            |
| 9] Bacterial meningitis                    |                            |
| 10] Alzheimer's Disease                    |                            |
| 11] Prion Diseases                         |                            |
| 12] Amyotrophic Lateral Sclerosis.         |                            |

**THERAPEUTIC APPLICATION OF TLR'S**

- ▶ Cerebral cell proliferation and brain development.
- ▶ Inflammation has a strong effect on progenitor cells and reduce adult hippocampal neurogenesis.
- ▶ TLR stimulation inhibits neurite outgrowth.
- ▶ Microglial TLR are crucial as first line of defence against bacterial and viral infection.
- ▶ Treatment with synthetic oligodeoxynucleotide that contain cytosine phosphate guanosine (CpG - ODN) motif known to bind TLR9 has been suggested as possible treatment for prion disease.
- ▶ It is also helpful in prion degradation

**TARGETING TLR AS THERAPEUTIC APPLICATION IN PARKINSON'S DISEASES**

- ▶  $\alpha$ -synuclein immunization in a PD animal model may ameliorate disease progression.
- ▶ Targeting mechanisms in which  $\alpha$ -synuclein activates TLR signaling, may open a new horizon for therapeutic application in PD.

**OTHER APPLICATION OF TLR'S**

- ▶ TLR protein plays a key role in immune response against infections.
- ▶ Some TLR are able to detect specific host molecules such as high mobility group box (HMGB-1) and heat shock protein (hsp) and leads to inflammatory response.
- ▶ TLR9 detects unmethylated CpG dinucleotide present in viral and prokaryotic genome.
- ▶ The effect of synthetic CpG oligonucleotide like TLR9 ligands and their applications in cancer immunotherapy.
- ▶ TLRs are used for applications ranging from vaccine adjuvants to anti cancer, anti viral and anti allergic agents.

## Student's Online PPT 1

ANNASHEB MAGAR MAHAVIDYALAYA, HADAPSAR, PUNE-28

- CORE COMPULSORY THEORY PAPER
- CELL ADHESION MOLECULES
- GUIDANCE BY – MEGHMALA WAGHMODE MAM
- PRESENTED BY – ABHIJIT HARIBHAU BORKAR

**THANK YOU**

**Cell Adhesion Molecules (CAMs)**

- Cell adhesion molecules (CAMs) are a subset of cell adhesion proteins located on the cell surface involved in binding with other cells or with the extracellular matrix (ECM) in the process called cell adhesion
- In essence, cell adhesion molecules help cells stick to each other and to their surroundings
- Cell adhesion is a crucial component in maintaining tissue structure and function

English (India)

## Students PPT Presentation on Molecular Biology

### Notice + Attendance



Pune District Education Association's  
Annasaheb Magar College, Hadapsar, Pune-411028.

Department of Microbiology M.Sc.-I Microbiology  
Attendance 2021-22

#### Notice

**Subject: Molecular Biology**

**Name of the teacher: Ms. Borade U.B**

All M.Sc-I Students are here by informed that their Presentations will take on 25/05/2022.

Submission of Presentations should be done on the respective date and time only. No representation will be conducted.

| Sr.No. | Name of the students        | Name of the topic                   | sign         |
|--------|-----------------------------|-------------------------------------|--------------|
| 1.     | Atole Sourav Mohan          | Northern hybridization              | Atole Sourav |
| 2.     | Bhalerao Rohit Rajesh       | Hybridization by Northern tech.     | Rohit        |
| 3.     | Borkar Janhavi Avinash      | Protein Purification                | Janhavi      |
| 4.     | Chaoudhari Pratiksha Maruti | colony Hybridization                | Pratiksha    |
| 5.     | Chavan Amit Chaban          | Ti & Ri vectors                     | Amit         |
| 6.     | Chavan Vaibhav Jayvant      | phage display system                | Vaibhav      |
| 7.     | Choudhari Pranav Pandurang  | Enzyme RE, methylase, lipase        | Pranav       |
| 8.     | Dahatonde Puja Santosh      | Nick translation & Random priming   | Puja         |
| 9.     | Dhole Sonali Ashok          | plasmid, Bacteriophage              | Sonali       |
| 10.    | Dhumal Saurabh Manohar      | colony hybridization                | Saurabh      |
| 11.    | Gaikwad Pratiksha Sambhaji  | construction of genomic DNA         | Pratiksha    |
| 12.    | Gaikwad Rutuja C.           | Hybridization technique             | Rutuja       |
| 13.    | Gaikwad Shivani Rajesh      | southern, south-western             | Shivani      |
| 14.    | Garud Asmita Balasaheb      | cohesive end                        | Garud        |
| 15.    | Ghule Harshada Sandeep      | radioactive & non-radioactive       | Ghule        |
| 16.    | Gupta Priyanka Rambabu      | Fluorescence Hybridization Tech.    | Priyanka     |
| 17.    | Jadhav Athrava Maruti       | far western                         | Athrava      |
| 18.    | Jadhav Karishma Dnyandeo    | Polynucleotide Kinase enzyme        | Karishma     |
| 19.    | Jadhav Vaishnavi Navnath    | construction of genomic DNA         | Vaishnavi    |
| 20.    | Jagtap Mangesh Mahesh       | radioactive & non-radioactive Probe | Mangesh      |
| 21.    | Jagtap Tanavi Chandrakant   | protein Purification.               | Tanavi       |
| 22.    | Jagtap Vaishnavi Bhanudas   | Blunt end ligation                  | Vaishnavi    |
| 23.    | Javalkar Akash Anil         | Ti & Ri vector                      | Aakash       |
| 24.    | Kadam Omkar Kishor          | Nick translation & random priming   | Omkar        |
| 25.    | Kadam Shweta Anil           | protein tagging                     | Shweta       |
| 26.    | Kalal Nikita Ashok          | cDNA library                        | Nikita       |
| 27.    | Kale Vijayanand Shivram     | phage display system                | Vijayanand   |
| 28.    | Kamble Aniket Rajesh        | DNA helicase Assay                  | Aniket       |
| 29.    | Kamble Rutuja Sunil         | Baculovirus                         | Rutuja       |
| 30.    | Katkar Maithili Ganesh      | western blotting                    | Maithili     |

## Students PPT Presentation on Instrumentation and Biophysics

### Notice + Attendance



Pune District Education Association's  
Annasaheb Magar College, Hadapsar, Pune-411028.

Department of Microbiology M.Sc.-I Microbiology  
Attendance 2021-22

#### Notice

**Subject: Instrumentation and biophysics**

**Name of the teacher: Ms. Jagtap P.D**

All M.Sc-I Students are here by informed that their Presentations will take on 19/05/2022.

Submission of Presentations should be done on the respective date and time only. No representation will be conducted.

| Sr.No. | Name of the students        | Name of the topic                  | sign      |
|--------|-----------------------------|------------------------------------|-----------|
| 1.     | Atole Sourav Mohan          | Gas Chromatography                 | Atole     |
| 2.     | Bhalerao Rohit Rajesh       | FPLC                               | R.B.      |
| 3.     | Borkar Janhavi Avinash      | Tan. fragmentation                 | Borkar    |
| 4.     | Chaoudhari Pratiksha Maruti | Pulse field gel electrophoresis    | Pratiksha |
| 5.     | Chavan Amit Chaban          | Chromatography                     | Chavan    |
| 6.     | Chavan Vaibhav Jayvant      | Fast protein liquid Chromatography | Chavan    |
| 7.     | Choudhari Pranav Pandurang  | Van Deemter Equation               | Choudhari |
| 8.     | Dahatonde Puja Santosh      | capillary electrophoresis          | Dahatonde |
| 9.     | Dhole Sonali Ashok          | FTIR and Application               | Dhole     |
| 10.    | Dhumal Saurabh Manohar      | pulse field electrophoresis        | Dhumal    |
| 11.    | Gaikwad Pratiksha Sambhaji  | Infrared spectroscopy (absorption) | Gaikwad   |
| 12.    | Gaikwad Rutuja C.           | HPLC                               | Gaikwad   |
| 13.    | Gaikwad Shivani Rajesh      | supercritical fluid chro.          | Gaikwad   |
| 14.    | Garud Asmita Balasaheb      | Advantage & disadvantage of FTIR   | Garud     |
| 15.    | Ghule Harshada Sandeep      | Mass Spectroscopy                  | Ghule     |
| 16.    | Gupta Priyanka Rambabu      | Pulse field gel electrophoresis    | Gupta     |
| 17.    | Jadhav Athrava Maruti       | partition coefficient              | Jadhav    |
| 18.    | Jadhav Karishma Dnyandeo    | capillary electrophoresis          | Jadhav    |
| 19.    | Jadhav Vaishnavi Navnath    | Infrared Spectroscopy              | Vaishnavi |
| 20.    | Jagtap Mangesh Mahesh       | Ionization and Mass spectroscopy   | Jagtap    |
| 21.    | Jagtap Tanavi Chandrakant   | Tan fragmentation                  | Jagtap    |
| 22.    | Jagtap Vaishnavi Bhanudas   | Immunelectrophoresis               | Jagtap    |
| 23.    | Javalkar Akash Anil         | Chromatography & resolution        | Javalkar  |
| 24.    | Kadam Omkar Kishor          | ultra filtration                   | Kadam     |
| 25.    | Kadam Shweta Anil           | GC-MS                              | Kadam     |
| 26.    | Kalal Nikita Ashok          | immuno electrophoresis             | Nikita    |
| 27.    | Kale Vijayanand Shivram     | reverse phase chro.                | Kale      |
| 28.    | Kamble Aniket Rajesh        | van deemter equation               | Kamble    |
| 29.    | Kamble Rutuja Sunil         | Supercritical fluid chromatography | Kamble    |
| 30.    | Katkar Maithili Ganesh      | Interpretation of chromatogram     | Katkar    |

## Sample of Student's PPT 1



**SPECTROSCOPY**

Made by:  
Shikha Niharika Anil Fomer

**What is spectroscopy?**

The branch of science concerned with the investigation and measurement of spectra produced when matter interacts with or emits electromagnetic radiation.

In simpler terms, spectroscopy is the precise study of color as generalized from visible light to all bands of the electromagnetic spectrum.

Historically, spectroscopy originated as the study of the wavelength dependence of the absorption by gas phase matter of visible light dispersed by a prism.

**Types Of Spectroscopy**

- 1) UV Visible Spectroscopy
- 2) Fluorescence spectroscopy
- 3) Infrared spectroscopy
- 4) Mass spectroscopy



## Student's PPT 1

### UV Visible Spectroscopy

The Principle of UV-Visible Spectroscopy is based on the absorption of ultraviolet light or visible light by chemical compounds, which results in the production of distinct spectra.

When matter absorbs ultraviolet radiation, the electrons present in it undergo excitation. This causes them to jump from a ground state (an energy state with a relatively small amount of energy associated with it) to an excited state (an energy state with a relatively large amount of energy associated with it).

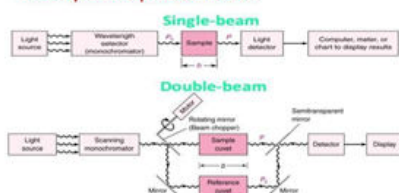
### Beer Lambert Law

When a beam of monochromatic light is made incident on a solution that contains a substance that absorbs the monochromatic light, the rate at which the intensity of the beam decreases along the thickness of the solution is directly proportional to the concentration of the absorbing substance in the solution and is also directly proportional to the intensity of the incident monochromatic radiation.

As per the Beer-Lambert law, the greater the number of absorbing molecules (that have the ability to absorb light of a specific wavelength), the greater the extent of absorption of the radiation.

### Instrumentation of UV Visible Spectrophotometer

#### The Spectrophotometer



### Application of UV Visible Spectroscopy

- 1) In different fields, such as astronomy, molecular biology, chemistry and biochemistry, spectrophotometers are commonly used. Specific applications include measuring the concentration of substances such as protein, DNA or RNA, bacterial cell formation, and enzymatic reactions.
- 2) UV spectrophotometers measure the visible regions of ultraviolet light and can provide valuable information, as well as detect any impurities, about the levels of active ingredients present in pharmaceutical compounds.
- 3) A common technique for quantitative analysis of analytes in QA / QC, analytical research and government regulatory laboratories is UV-Visible spectrophotometry.

### Fluorescence Spectroscopy

Fluorescence spectroscopy (also known as fluorimetry or spectrofluorometry) is a type of electromagnetic spectroscopy that analyzes fluorescence from a sample.

It involves using a beam of light, usually ultraviolet light, that excites the electrons in molecules of certain compounds and causes them to emit light; typically, but not necessarily, visible light.

### Fluorescence resonance energy transfer (FRET)

Fluorescence resonance energy transfer (FRET) is a mechanism describing energy transfer between two light-sensitive molecules (chromophores).

A donor chromophore, initially in its electronic excited state, may transfer energy to an acceptor chromophore through nonradiative dipole-dipole coupling.

The efficiency of this energy transfer is inversely proportional to the sixth power of the distance between donor and acceptor, making FRET extremely sensitive to small changes in distance.

### Quantum Yield

The quantum yield of a system (such as a fluorescent molecule) is determined by the balance between the radiative and non-radiative transition rates within it.

$$\phi = \frac{\text{number of photons emitted}}{\text{number of photons absorbed}}$$

### Instrumentation of Fluorescence spectroscopy



## Student's PPT 1

### Quantum Yield

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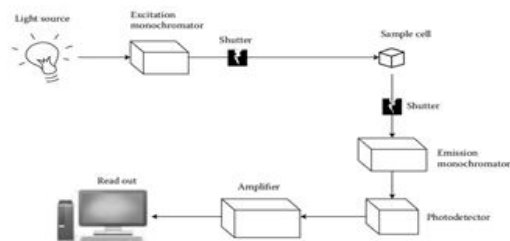
$$\phi = \frac{\text{number of photons emitted}}{\text{number of photons absorbed}}$$

The quantum yield can therefore be rewritten in terms of these rates.

$$\phi = \frac{k_f}{k_f + \sum k_{nr}}$$

The radiative transition rate ( $k_f$ ) denotes radiative (light emitting) processes such as fluorescence and phosphorescence whereas the sum of non-radiative rates ( $\sum k_{nr}$ ), includes processes such as internal conversion, intersystem crossing, and energy transfer.

### Instrumentation of Fluorescence spectroscopy



### Application of Fluorescence spectroscopy

- 1) In biosciences, one of the most frequent applications of fluorescence spectroscopy is the high precision quantification of DNA and RNA.
- 2) Another modern application is SMRT (single molecule real-time) DNA sequencing. In its ability to produce long-read single molecules with high accuracy.
- 3) Fluorescence spectroscopy is used in several industrial settings as a fast, non-invasive technique in the assessment of contamination. For example, it has been used to detect contaminating organic compounds in groundwater, after hydraulic fracturing for gas exploration.

- 4) An important chemical application of fluorescence spectroscopy can be found in the field of nanoparticle synthesis for potential medical uses, such as drug delivery.
- 5) In environmental monitoring, the technique also has wide application. One example is in the treatment of water surrounding landfill areas.
- 6) In agriculture, spectroscopic techniques are also widely applied for instance in the identification of different crop varieties. The laser-induced fluorescent emission technique (LIFS) is an excellent tool used to identify citrus seedling varieties.
- 7) Spectrofluorometric techniques are also used in the pharmaceutical field to analyze drugs. An example is the analysis of co-formulated tablets prescribed as cholesterol medication.

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**PRESENTATION TOPIC :  
 GAS CHROMATOGRAPHY**

### What is Gas Chromatography?



It is also known as...

**Gas-Liquid Chromatography (GLC)**

## Student's PPT 1

| GAS CHROMATOGRAPHY   |   |
|--|---|
| <p>❖ <b>Separation of gaseous &amp; volatile substances</b></p> <p>❖ Simple &amp; efficient in regard to separation</p> <p>GC consists of <b>GSC</b> (gas solid chromatography)<br/><b>GLC</b> (gas liquid chromatography)</p> <p><b>Gas</b> → <b>M.P</b><br/><b>Solid / Liquid</b> → <b>S.P</b></p> <p>GSC not used because of limited no. of<br/>S.P <b>GSC</b> principle is</p> <p><b>ADSORPTION GLC</b><br/>principle is <b>PARTITION</b></p>  | <h3>GAS CHROMATOGRAPHY</h3> <ul style="list-style-type: none"><li>• Gas chromatography (GC) is a widely used technique for separation &amp; analysis of gaseous &amp; volatile substances which are difficult to separate &amp; analyze.</li><li>• In performing gas chromatographic separation, the sample is vaporized &amp; injected onto the head of a chromatographic column.</li><li>• Elution is brought about by the flow of an inert gaseous mobile phase.</li><li>• In GC gas as a moving phase is passed through a column containing solid adsorbent or liquid adsorbent. Thus adsorption or partition is possible.</li><li>• <u>Based on stationary phase used in column, G.C is of 2 types :</u><br/>a. Gas solid chromatography (GSC) b. Gas liquid chromatography (GLC).</li></ul> |
| <p>a. <b>GSC</b> :      Mobile phase – gas<br/>                         Stationary phase – solid</p> <p>In GSC, when a carrier gas containing analytes is passed through a column containing solid Stationary phase, the analytes get adsorbed on to the solid Stationary phase &amp; the separation is due to differences in their adsorptive behavior.</p>   |   |
| <p>b. <b>GLC</b> :      Mobile phase – gas<br/>                         Stationary phase – liquid</p> <p>In GLC, when a carrier gas containing analytes is passed through a column containing liquid Stationary phase, the analytes get distributed themselves between the liquid Stationary phase &amp; the carrier gas phase according to their partition coefficients.</p> <ul style="list-style-type: none"><li>• In GLC, Stationary phase is liquid that is retained/coated on the surface of an inert solid by adsorption or chemical bonding.</li></ul> |   |