Rayat Shikshan Sanstha's

D. P. Bhosale College, Koregaon

Department of Mathematics

Notice

Date - 09 / 03 / 2023

All the Students of B.Sc. III are here by informed that the Department of Mathematics has organized the Student's Seminar on Monday, 13th March, 2023. All the Students should present at 03:15 p.m. in the department of Mathematics.

D. P. BHOSALE COLLEGE KOREGAON

Head
Department of Mathematics
D. P. Bhosale College, Koregaon

Rayat Shikshan Sanstha's

D. P. Bhosale College, Koregaon

Department of Mathematics

Student's Seminar (2022-23)

Brief Report

Department of Mathematics organized Student's Seminar for overall round development of the students, in the academic year 2022-23 on Monday, 13th March, 2023. The Main objective of this activity is to improve logical thinking, teaching skills and personality development among the students.

The 10 students are participated in this activity. Students represent seminar on various topics such as, definition and examples of Definition of Cauchy Sequence and its theorem, Metric Space, Linear Transformation, Optimization Techniques, Logic, Periodic Function, Number System, Linear Independence.

D. P. BHOSALE COLLEGE KOREGAON

Head
Department of Mathematics
D. P. Bhosale College, Koregaon

Rayat Shikshan Sanstha's

D. P. Bhosale College, Koregaon

Department of Mathematics

Student's Seminar (2022-23)

Sr. No.	Roll No.	Name of the Student	Seminar Topic
1	222535	Miss. Bhintade Ritu Raju	Definition of Cauchy Sequence and its theorem
2	222536	Miss. Botalji Neha Vikas	Definition and Examples on Metric Space
3	222537	Miss. Kadam Vaishanavi Santosh	Linear Transformation
4	222538	Miss. Khatal Yogini Hanmant	Optimization Technique
5	222539	Miss. Mahadik Varsha Raju	Linear independent vector Space
6	222540	Miss. Namdas Madhura Dattatray	Logic
7	222541	Miss. Pawar Nilam Bhimrav	Periodic Function of period T
8	222542	Miss. Pawar Pragati Dhanaji	Number System
9	222543	Miss. Rathod Pooja Silu	Linear Transformation
10	222544	Miss. Torane Punam Audumbar	Exact Differential Equation

D. P. BHOSALE COLLEGE KOREGAON

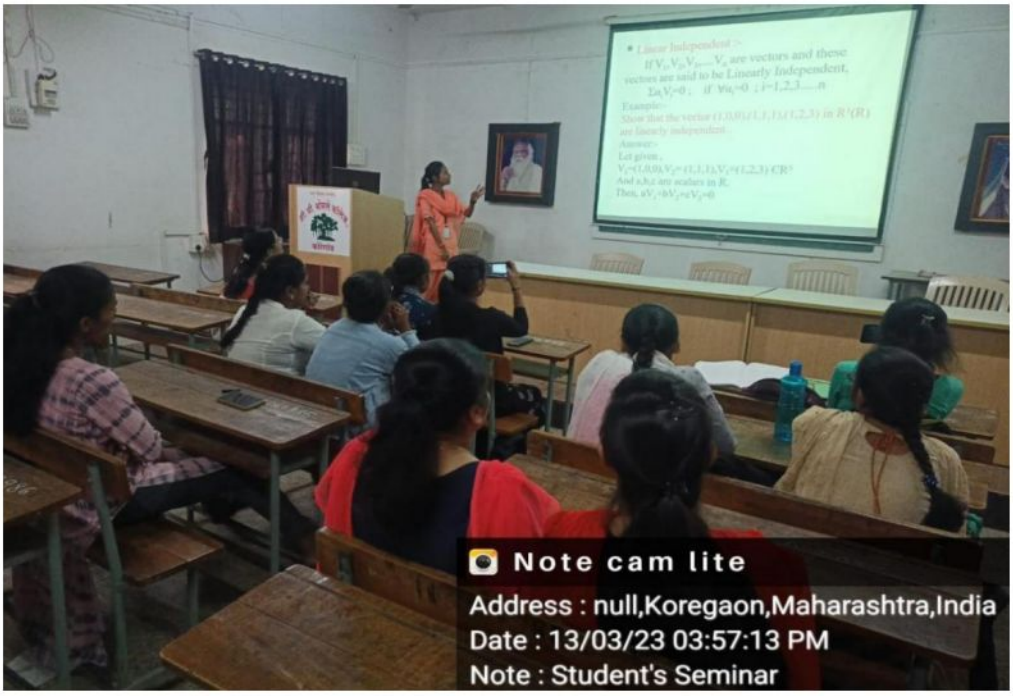
Head
Department of Mathematics
D. P. Bhosale College, Koregaon

Rayat Shikshan Sanstha's

D.P. Bhosale College, Koregaon

Department of Mathematics

Student's Seminar (2022-23)



Rayat Shikshan Sanstha's

D.P. Bhosale College, Koregaon

Department of Mathematics

Student's Seminar (2022-23)

Rayat Shikshan Sanstha's

D.P. Bhosale College, Koregaon

Department of Mathematics

Student's Seminar (2022-23)

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Bhintade Ritu Raju

Roll No. : 222535 **Date:** 19/09/2023

Paper No.: Metric space. **Class:** BSc III

Topic: Definition of cauchy sequence & it's theorem. **Signature of student:** Bhintade

Synopsis: Cauchy sequence -

Let, $\langle M, S \rangle$ be a metric space. let $\{S_n\}_{n=1}^{\infty}$ be a sequence of points in M we say that, The sequence $\{S_n\}_{n=1}^{\infty}$ is the cauchy sequence If given $\epsilon > 0$; $N \in I$ such that.

$S(S_m, S_n) < \epsilon$; for $m, n \geq N$

Theorem -

prove that, Every convergent sequence in any metric space is a cauchy sequence.

proof -

Reference Books: R.R. Goldberg, Methods of Real Analysis.

Marks Obtained:

Sign of Teacher:

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Botalji Neha Vikas

Roll No. : 222536 **Date:** 18/03/2023

Paper No.: 13 **Class:** BSc-III

Topic: Matrix space **Signature of student:** Botalji

Synopsis: Defination of Matrix space —

let M be any non-empty set. A matrix for M is a function ρ with a domain $M \times M$ and range is cantained if $[0, \infty]$ that is,

$\rho : M \times M \longrightarrow [0, \infty]$ such that,

i) $\rho(x, x) = 0$, $\forall\ x \in M$,

ii) $\rho(x, y) \geq 0$, $\forall\ x, y \in M$

iii) $\rho(x, y) = \rho(y, x)$; $\forall\ x, y \in M$

iv) $\rho(x, y) \leq \rho(x, z) + \rho(z, y)$; $\forall\ x, y, z \in M$

If ρ is Matrix for M then the order pair $\langle M, \rho \rangle$ is called Matrix space.

Example :— Show that the function ρ define by $\rho(x, y) = |x - y|$ $\forall\ x, y \in R$ then show that $\langle R, \rho \rangle$ is matrix space.

Proof explained.

Reference Books: T. M. Apostol, Mathematical Analysis, Narosa publishing House. (2017).

Marks Obtained:

Sign of Teacher:

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Kadam Vaishanavi santosh

Roll No. : 222537 **Date:** 13-03-2023

Paper No.: XIV **Class:** BSC-III

Topic: Linear transformation **Signature of student:** Skadam

Synopsis:

definition of linear transformation

Let U and V be the two vector spaces of same field then linear transformation of $T:U \to V$ is said to be linear transformation of Homomorphism.

example - For a field F consider the vector space F^2 and F^3. Define a mapping $T: F^3 \to F^2$ such that $T(\alpha, \beta, \gamma) = (\alpha, \beta)$ then show that T is linear transformation.

Solution - To prove that following properties.

a> $T(x+y) = T(x) + T(y)$: $x, y \in V$

b> $T(\alpha . x) = \alpha . T(x)$: $x \in V$ and $\alpha \in F$

Hence, T is linear transformation.

Reference Books: Holfman K. and Kunze R., linear Algebra. Pantice Hall of india, 1978.

Marks Obtained:

Sign of Teacher:

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Khatal Yogini Hanmant

Roll No. : 222538 **Date:** 13/03/2023

Paper No.: 11 **Class:** B.SC III

Topic: North west corner rule. **Signature of student:** Khatal

Synopsis:

North west method.

It is a simple and effective method to obtain an initial basic feasible solution.

Steps ;-

Example ;-

ware house / Factories	W_1	W_2	W_3	W_4	Demand
F_1	19	30	30	10	7
F_2	10	30	40	60	9
F_3	40	8	17	20	18
Supply	5	8	7	14	$\Sigma = 34$

Reference Books: Mohan, C. and Deep, Kusum, Optimization Techniques New Age, 2009.

Marks Obtained:

Sign of Teacher:

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Mahadik Varsha Raju

Roll No. : 222539

Date: 18/08/2023

Paper No.: 14

Class: BSC III

Topic: Lineaely Independent.

Signature of student: Vmahadik

Synopsis: Lineaely Independent-

Let V(F) be a vectoe space the element $v_1, v_2, v_3 \ldots v_n$ aee not lineaely dependent. i.e lineaely independent.

$\Rightarrow \sum_{i=1}^{n} a_i v_i = 0$, $a_i = 0$, $i = 1, 2, 3 \ldots n$.

then, $v_1, v_2 \ldots v_n$ aee called lineaely independent vectoe.

Example –

Shoow that the vectoe (1,0,0) (1,1,1) (1,2,3) in R3(R) aee linearly independent.

Hence

$a = b = c = 0$

i.e $a_i = 0$

given vector R3(R) is linearly independent.

Reference Books: Holfmank. and Kunze R. Lineae algebra Prince Hall OF India 1978.

Marks Obtained:

Sign of Teacher:

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Namdas Madhura Dattatray

Roll No. : 222540 **Date:** 13/03/2023

Paper No.: 16 **Class:** B.Sc III

Topic: Logic **Signature of student:** Namdas.

Synopsis:

- Logic - Logic is a system based on proposition.
- Statement
  1] Atomic statement
  2] Compound statement.
    Logical connectivities
      i] Negation (Not)
      ii] Conjunction (and)
      iii] Disjuation (or)
      iv] Implification / conditional (If - then)
      v] Biconditional (If and only if)
    Examples -
- Tautology & Contradiction
  Example -
- Logical equivalence -
- Converse, Inverse & Contrapositive -

Reference Books: 1] Kenneth H. Rosen Discrete Mathematics and its Applications, Mc Graw Hill, 2002.

Marks Obtained:

Sign of Teacher:

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Pawar Nilam Bhimrav

Roll No. : 222541 **Date:** 13/03/2023

Paper No.: 12 **Class:** BSC-III

Topic: Periodic Function of Period T **Signature of student:** NBPawar.

Synopsis:

Statement- If F(t) is Periodic Function of Period T then

$$L\{F(t)\} = \frac{1}{1-e^{-st}} \int_0^T e^{-st} F(t)\, dt.$$

Proof :- We know that,

$$L\{f(t)\} = \int_0^T e^{-st} F(t)\, dt + \int_T^{2T} e^{-st} F(t) dt + \int_{2T}^{3T} e^{-st} F(t) dt + \dots\dots$$

we Prove,

$$= \frac{1}{1-e^{-sT}} \int_0^T e^{-st} F(t)\, dt \quad \left(\because \frac{1}{1-a} = 1+a^2+a^3+\dots\right)$$

Reference Books: Dr. S. Shrenadh, Integral Transform, S. Chand Prakashan.

Marks Obtained:

Sign of Teacher:

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Pawar Pragati Dhangi

Roll No. : 222542

Paper No.: 16

Topic: Number System

Date: 13-03-2023

Class: BSc III

Signature of student: Pawar

Synopsis:

- Number System :
  Number system are the technique to represent numbers in the computer system.

- Computer supports following number system :
  1) Binary number system
  2) Octal number System
  3) Decimal number system
  4) Hexadecimal number System

- Conversions :
  1) Decimal to binary
  2) Binary to Decimal

Reference Books: A. B. P Rao and R. V. Inamdar, A Graduate text in computer mathematics, SUMS [1991]

Marks Obtained:

Sign of Teacher:

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Rathod Pooja Sita

Roll No. : 222543 **Date:** 13/03/2023

Paper No.: ~~XIV~~ **Class:** B.Sc III

Topic: Linear algebra **Signature of student:**

Synopsis:

Defination of linear transformation :-

Let U and V be a two vector space of same field, then transformation $T: V \to U$ is said to be linear transformation of homomorphism if, 1. $T(x+y) = T(x) + T(y)$, $x, y \in V$

2. $T(a.x) = aT(x)$, $x \in V$ and $a \in F$

Theorem :- If $T: V \to U$ is a homomorphism, then show that,

(i) $T(0) = 0$ (ii) $T(-x) = T(x)$

Proof :- Let $T: V \to U$ be a linear transformation Now, to prove that, (i) $T(0) = 0$

(ii) Now, to prove that,

$T(-x) = -T(x)$

Hence, the proof.

Reference Books: Holfman K. and kunze R. linear Algebra Prentice Hall of India, 1978.

Marks Obtained:

Sign of Teacher:

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Torane Punam Audumbar

Roll No. : 222544 **Date:** 13/03/2023

Paper No.: XV **Class:** BSc III

Topic: Exact Differential equation Method. **Signature of student:** Torane

Synopsis:

If $f(z) = u+iv$ is an analytic function. where u & v are conjugate functions. being given one of these $u(x,y)$ to determine the other $v(x,y)$

$$dv = \frac{\partial v}{\partial x}dx + \frac{\partial v}{\partial y}dy$$ using this eqn weget M & N

$$dv = Mdx + Ndy$$

$$\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$$

$$v = \int_{y=c} M\,dx + \int (\text{terms in 'N' not containing } x)\,dy + c$$

Proof explained.

Reference Books: Lars V Ahlfors, complex analysis, McGraw-Hill Education's 3 edition (January', 1979)

Marks Obtained:

Sign of Teacher: