Rayat Shikshan Sanstha's

D. P. Bhosale College, Koregaon

Department of Mathematics

Notice

Date - 09 / 01 / 2021

All the Students of B.Sc. III are here by informed that the Department of Mathematics has organized the Student's Seminar on Wednesday, 14th January, 2021. All the Students should present at 12:15 p.m. in the department of Mathematics.

D. P. BHOSALE COLLEGE KOREGAON

Salunkhe

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

Rayat Shikshan Sanstha's

D. P. Bhosale College, Koregaon

Department of Mathematics

Student's Seminar (2020-21)

Brief Report

Department of Mathematics organized Student's Seminar for overall development of the students, in the academic year 2020-21 on Wednesday, 14th January, 2021. The Main objective of this activity is to improve logical thinking, teaching skills and personality development among the students.

The 07 students are participated in this activity. Students represent seminar on various topics such as, Theorem on Triangle Inequality, Definition of functional and its theorem, Necessary condition for f(z) to be analytic, Complex Analysis, Definition of Quotient Space and its examples, Definition of Metric Space and its examples, Definition of Linear Independence and its examples.

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Department of Mathematics

Student's Seminar (2020-21)

Sr. No.	Roll No.	Name of the Student	Seminar Topic
1	38209	Bodke Amruta Chandrakant	Theorem on Triangle inequality
2	38210	Dhole Dipti Narhari	Definition of functional and its theorem
3	38211	Gaikwad Mrudula Raju	Necessary condition for f(z) to be analytic
4	38212	Ghorpade Priyanka Raju	Complex Analysis
5	38213	Ghorpade Priyanka Vinayak	Definition of Quotient space and its examples
6	38214	More Dipali Tukaram	Definition of Metric space and its examples r Space
7	38215	Phadtare Vaishnavi Nitin	Definition of Linear Independence and its examples

Head
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Student's Seminar (2020-21)

Rayat Shikshan Sanstha's,

D.P.Bhosale College Koregaon

Department Of Mathematics

Seminar Activity

Name of the Student: Bodake Amruta chandrakant

Roll No. : 38209 **Date:** 14/01/2021

Paper No.: (Linear Algebra) XIV **Class:** BSC III

Topic: vector space & Linear Transformation. **Signature of student:** A.B. Bodake.

Synopsis: Triangle inequality

Theorem: Let V be the inner product space then $||u+v|| \leq ||u|| + ||v||$; $\forall u,v \in V$

proof - Let V be an inner product space & $u, v \in V$

Here, we have to prove that

$||u+v|| \leq ||u|| + ||v||$

Consider, L.H.S $= ||u+v||^2$

& prove R.H.S $= ||u||^2 + ||v||^2$

L.H.S = R.H.S.

Hence, the proved.

Reference Books: S. Friedberg. A. Insel & L. spense. Linear Algebra, prentice Hall of India 2014 4th Edition.

Marks Obtained: 9/10

Sign of Teacher: [signature]

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Department Of Mathematics

Seminar Activity

Name of the Student: Dhole Dipti Narhare

Roll No. : 38210 **Date:** 17-1-2021

Paper No.: 14 (linear Algebra) **Class:** BSc III

Topic: Vector space & linear transformation **Signature of student:** Dhole

Synopsis:

Linear functional : A linear transformation $T : V \to W$ is called linear operator of V where as a L.T. $T : V \to F$ is called linear functional.

Theorem : Let T, T_1, T_2, T_3 be linear operators on V & let $I : V \to V$ be the identity map.

$I(v) = v$; $v \in V$ then

i) $IT = TI = T$

ii) $T(T_1 + T_2) = TT_1 + TT_2$

iii) $\alpha(T_1 T_2) = (\alpha T_1) T_2 = T_1(\alpha T_2)$

iv) $T_1(T_2 \cdot T_3) = (T_1 T_2) T_3$

Proof :

by using scaler multiplication and product of linear transformation.

Reference Books: J.N. Sharma, Mathematical Analysis.

Marks Obtained: 8/10

Sign of Teacher: Aaluncu

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Department Of Mathematics

Seminar Activity

Name of the Student: Gaikwad Mrudula Raju

Roll No. : 38211

Date: 14/01/2021

Paper No.: 15 (Complex Analysis)

Class: T.Y. B.Sc.

Topic: Analytic Function and Complex Integration

Signature of student: Gaikwad

Synopsis:

The necessary condition for $f(z)$ to be Analytic :-

Theorem :-

If a function $f(z) = u(x,y) + iv(x,y)$ is differentiable at any point ; $z = x+iy$, then partial derivatives u_x, u_y, v_x, v_y should exists and satisfies the equation, $u_x = v_y$, $u_y = -v_x$.

Proof :-

Let $w = f(z) = u(x,y) + iv(x,y)$

then $\Delta z = \Delta x + i\Delta y$

Since, the function is differentiable at any point z.

∴ The limit given by,

$$\lim_{\Delta z \to 0} \frac{\Delta f}{\Delta z}$$

Reference Books: Lars V. Ahlfors, Complex Analysis, MC Graw-Hill Education ; 3rd edition.

Marks Obtained: 9/10

Sign of Teacher: Adlunkle

Rayat Shikshan Sanstha's,

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Department Of Mathematics

Seminar Activity

Name of the Student: Ghorpade Priyanka Raju

Roll No. : 4613 **Date:** 17-1-2021

Paper No.: DSE-F11 **Class:** B.Sc.III

Topic: Complex Analysis

Synopsis:

- Complex Analysis Importance
- What is a complex number
  The number $a+ib$, a and b are real number & $i^2=-1$ is called complex Number.
- The Algebra of complex Numbers
- The addition, substraction and multiplication of complex Number.
- Graphical representation of complex Number
- Euler's formula -
  $\cos\theta + i\sin\theta$

Reference Books: Complex Variables and Applications, James Ward Brown & Ruel V. Churchill

Marks Obtained: 9/10

Sign of Teacher: [signature]

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Department Of Mathematics

Seminar Activity

Name of the Student: Ghorpade Priyanka Vinayak

Roll No. : 38213 **Date:** 14/11/2021

Paper No.: 14 (Linear Algebra) **Class:** Ty-BSC

Topic: Vector space & Linear transformation **Signature of student:** Ghorpade

Synopsis:

Quetiont space - let, V(F) be a vector sub-space of V then set of all coset W in V Defined as,

$$\frac{V}{W}\{W+x \mid x \in V\}$$

From a vector space under the operation and addition & scalar multiplication defined as 1) $(W+x)+(W+y) = W(x+y)$

2) $\alpha(W+x) = W+\alpha x$

Example -

1) Show that $W = \{z_1, z_2, z_3 \mid z_1+z_2=0\}$ is sub space of $C^3(C)$

Soln $\longrightarrow$

Reference Books: ~~Notebook, Class notes~~ Lipschutz S., Linear Algebra

Marks Obtained: 8/10

Sign of Teacher: Aelunke

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Department Of Mathematics

Seminar Activity

Name of the Student: More Dipali Tukaram

Roll No. : 38214

Date: 14/01/21

Paper No.: 13 (Metric Space)

Class: B.Sc. III

Topic: Limit and Continuous Function of Metric Space.

Signature of student: D.T.More.

Synopsis:

Metric 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 contained in $[0, \infty]$ i.e. $\rho : M \times M \to [0, \infty]$

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 metric for M then the ordered pair $\langle M, \rho \rangle$ is called metric space.

Example -

Show that the function ρ defined by $\rho(x, y) = |x-y|$ $\forall x, y \in R$ then show that $\langle R, \rho \rangle$ is metric space

Solution →

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

Marks Obtained: 9/10

Sign of Teacher: Aaluncy