Student Seminar for the Academic Year 2021-22

The Department of Mathematics conducted Student Seminars in the Acade
22. The details are given below.

| SI.No | Roll No | Name of the <br> Student | Name of the <br> Topic | Average <br> Feedback from <br> the Students |
| :---: | :---: | :---: | :---: | :---: |
| 01 | 210330674681006 | J.Neha | Euler's Theorem | Excellent |
| 02 | 210330674681011 | K.Sravani | Problem in <br> Partial <br> Derivatives | Excellent |
| 04 | 210330674681015 | N.Navaneetha | Problem in <br> Partial <br> Derivatives | Excellent |
| 05 | 210330674681019 | P.Rajeshwari | Problem in <br> Partial <br> Derivatives | Excellent |
| 06 | 210330674411010 | K.Swathi | Problem on <br> Euler's Theorem | Excellent |
| 07 | 210330674411002 | Ch.Jayalatha | Problem on <br> Euler's Theorem | Excellent |
| 08 | 210330674681003 | C.Chandra Shekar | Problem in <br> Partial <br> Derivatives | Good |
| 10 | 210330674681021 | Savitha Kumari | Problem in | Good |
| 09 | 210330674411005 | J.Ganesh | Problem on Total <br> Derivation | Good |


|  |  |  | Partial Derivation |  |
| :---: | :---: | :---: | :---: | :---: |
| 11 | 210330674681017 | P.Bharagavi | Problem on <br> Euler's Theorem | Good |
| 12 | 20033067441005 | P.Akhila | Cauchy's <br> Theorem | Good |
| 13 | 20033067468001 | A.Sravani | Cauchy's <br> Theorem | Good |
| 14 | 20033067441004 | K.Nandini | Rolle's Theorem | Excellent |
| 15 | 20033067441002 | D.Mounika | Algebra on <br> Sequences | Good |



2. If "H" is a homogenious function of $(x, y, z)$ of degree in' Prove that $x \frac{\partial H}{\partial x}+y \frac{\partial H}{\partial y}+z \frac{\partial H}{\partial z}=n H$
3. If $x^{3}+y^{3}=3 a x y$ find $\frac{d^{2} y}{d x^{2}}$ ?
4. If $u=\frac{x+y}{1-x y}, x=\operatorname{Tan}\left(2 r-s^{2}\right), y=\cot \left(r^{2} s\right)$ Then find $\frac{\partial u}{\partial s}$.
5. Find $\frac{d y}{d x}$ for given equation $\operatorname{Tan} x^{y}+y^{\cot x}=a$

SEM -III

1. $f:[a, b] \rightarrow R$ is continuous on $[a, b]$ closed internal $[a, b]$ Then ' $f$ ' is bounded of $[a, b]$
2. State and Prove Borel's Theorem

3Iff is continuous on $[a, b]$ and $f(a) \neq f(b)$ then $f$ takes at least one value between $f(a), f(b)$.
4. If $f$ is continuous on $[a, b]$ and $f(a), f(b)$ as opposite sign there exist $c \in(a, b)$ such that $f e c)=0$

SEM - $V$

1. Let $V(F)$ is a vector space $w$ is non-empty set of $V$. The necessary and sufficient conditions fer $w$ to the scobspace of $V$. If $a_{1} b$ of and $\alpha_{1} \beta \in \omega \Rightarrow$ $a \alpha+b \beta$ \& $\omega$.
2. $y$ is in the subspace of $R^{4}$. Find The column's of $A$ where $y=\left(\begin{array}{c}-4 \\ -8 \\ 6 \\ -5\end{array}\right), A=\left(\begin{array}{ccc}3 & -5 & -9 \\ 8 & 7 & -6 \\ -5 & -8 & 3 \\ 2 & -2 & -9\end{array}\right)$
3. Show that $w$ is in the subspace of $R^{4} \operatorname{Span}$ by $v_{1}, v_{2}$, $V_{3}$ where $\omega=\left(\begin{array}{c}2 \\ 4 \\ 11 \\ -10\end{array}\right), v_{1}=\left(\begin{array}{c}2 \\ -3 \\ 3 \\ 1\end{array}\right), v_{2}=\left(\begin{array}{c}-1 \\ 2 \\ 4 \\ 3\end{array}\right), v_{3}=\left(\begin{array}{c}-2 \\ 1 \\ -2 \\ 5\end{array}\right)$.

SEM -II

1. $M(x, y), N(x, y)$ are too real valued functions which has continuous first order partial derivatives on the domain then a neccessary and sufficient Condition for the differential equation $m d x+N d y=0$ to be exact is $\frac{\partial M}{\partial y}=\frac{\partial N}{\partial x}$
2. $M d x+N d y=0$ is a homogeneous differential equation and $m x+N y \neq 0$ then $\frac{1}{m x+N y}$ is an I.f of The differential equation.
3. Steve $\left(3 x y^{2}-y^{3}\right) d x-\left(2 x^{2} y-x y^{2}\right) d y=0$
4. If the equation $M d x+N d y=0$ is of the form $y f(x y) d x+x g(x y) d y=0$ and $m x-N y \neq 0$ then $\frac{1}{m_{x}-N y}$ is em $I \cdot F$ of $M d x+N d y=0$
5. Slove $(2 x y+1) y d x+\left(1+2 x y-x^{3} y^{3}\right) x d y=0$
E. Slove $\left(3 x y-2 a y^{2}\right) d x+\left(x^{2}-2 a x y\right) d y=0$

86

SEM - IV

1. Prove that a subgroup $t t$ of a group $a$ is a normal subgroup of a if $x H \bar{x}=H$ for every $x \in G$.
2. Define normal subgroup. Prove that every sub group of an abelian group is normal
3. Prove That a subgroup $H$ of a group $G$ is a normal subgroup iff every left coset of $t$ in $a$ es a right coset of $H$ in $G$.
4. Prove that a subgroup $t$ of a group $a_{i}$ is a normal Subgroup of $a$ eff the product of any two left or, right costs of $H$ in $C_{C}$ iss again left or right coset of $H$ in $a$.

SEM-VI

1. State and prove first shifting property
2. State and prove multiplication by $t^{n}$
3. If $f^{\prime}(t)$ be continuous and $L\{f(t)\}=\tilde{f}(s)$ Then $L\left\{f^{\prime}(t)\right\}=s \tilde{f}(s)-\tilde{f}(0)$.
4. If $L\{f(t)\}=\tilde{f}(s)$ then $L\left\{\frac{1}{t} f(t)\right\}=\int_{s}^{\infty} \tilde{f}(s) d s$ provided the integral exists.
5. Let $F(t)$ be a periodic function w. Th period. $T>0$ that is $f(u+T)=F(u), F(u+2 T)$ हुfuretc

$$
L\{F(t)\}=\int_{0}^{T} \frac{e^{-P t} f(t)}{1-e^{-p T}} d t
$$

## Quiz Competition

The Department of Mathematics celebrated National Mathematics Day in the occasion of Sri Srinivas Ramanujam Birthday Anniversary. In this occasion a Quiz Competition is conducted. It is based on Basic Mathemathics principles.

1. 1st Round: Basic Trigonometric Principles.
2. 2nd Round: Algebra
3. 3rd Round: Geometry
4. 4th Round: Derivations
5. 5th Round: Integration

Winner Team of the Program: P. Archana Team.
Runner Team of the Program: K. Sravani Team.
Feedback from the Students: Excellent Program

## 1st Round: Basic Trigonometric Principles.

1. $\operatorname{Sin} 2 A$ $\qquad$
2. $\operatorname{Tan}^{-1}(1)$ $\qquad$
3. The solution of $2 \sin x-1=0$ is $\qquad$
4. $\operatorname{Tan}(A+B)$ $\qquad$

## 2nd Round: Algebra

1. In the Field $\left(Z_{5},+_{5}, x_{5}\right)$ the number of self-inverse elements are $\qquad$
2. Let $(2 Z,+,$.$) is Commutative Ring, if 6 Z$ is an ideal of $2 Z$. The number of elements in $2 Z / 6 Z$ are
3. The number of generators $\left(Z_{10},+\right)$ is $\qquad$
4. The definition order of element ' $a$ '

## 3rd Round: Geometry

1. Parametric equation of a Circle is $\qquad$
2. Tangent condition in Sphere is $\qquad$
3. $X$-axis equations is $\qquad$
4. Perpendicular distance from point to plane $\qquad$

## 4th Round: Derivations

1. The Derivation of $e^{x} f(x)$ $\qquad$
2. The Derivation of $\operatorname{Sin}(\log x)$
3. The Derivation of $x^{2} \cdot \tan ^{-1} x$
4. The Derivation of $\left(1 / x^{2}\right)$ $\qquad$

## 5th Round: Integration

1. The Integration of $\operatorname{Sin} 2 x$
2. The Integration of $x^{2} \operatorname{Cos} x$
3. The Integration of $\log x$
4. The Integration of $1 / \sqrt{x}$



The Department of Mathematics organized a field trip for the students to get knowledge for real life. We visited "SR SUN POWER SOLAR PRIVATELIMITED", which is located at BOINPALLE village near MIDJIL Mandal. The Project constructed for domestic purposes. The Project provides 5 MW current daily. The Project technical assistants explain current production in the Plant. The Solar Power Project produces $\mathbf{1 5 , 0 0 0}$ units power daily. The generated power is supplies to JENCO.


On the same day we also visited PILLALAMARRI, which located in Mahabubnagar town. The Pillalamarri is $\mathbf{8 0 0}$ year old BANYAN tree. Pillalamarri is spread over 4 acres area. It had original main trunk and many pop roots which resemble like many trucks like its children. This ancient tree is currently in a delicate stage of health. The Pillalamarri is suffering from pest infestation and lack of water.


Poster Presentation

The students of
Department of Mathematics presented various posters in occasion of Sri Srinivas Ramanujam Birthday Anniversary. The details are below.



| SI.No | Roll No | Name of Student | Poster Details |
| :---: | :---: | :---: | :---: |
| 01 | 19033067441005 | V.Shailaja | Taxicab Number |
| 02 | 210330674681011 | K.Sravani | Taxicab Number 1729 |
| 03 | 210330674411004 | E.Sushmitha | Picture of Sri Srinivas Ramanujam |

## Details of Rangoli with Mathematical Shapes and Symbols Program

In the occasion of Sankranti Festival the department of Mathematics conducted Rangoli Context. The students should use Mathematical Shapes and Symbols only. The details are below

| SI.No | Roll No |
| :---: | :---: |
| 01 | V.Shailaja and her Teammates |
| 02 | K.Swathi and her Teammates |
| 03 | P.Akhila and her Teammates |
| 04 | K.Sravani and her Teammates |
| 05 | Savitha Kumari and her Teammates |




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Signature of the Faculty

