



S.G.V.C Vidya Prasarak Trust's



**M.G.V.C Arts, Commerce and  
Science College, Muddebihal**

**Department of Physics**

**ORGANISED  
SPECIAL GUEST LECTURE (MOU)  
ON**

**"NUCLEAR RADIATION, DETECTION TECHNIQUES  
AND APPLICATIONS"**



**Date: 30-07-2024**

**Time: 10.30am**

**PRINCIPAL,**  
M.G.V.C. Arts, Commerce & Science College  
MUDDEBIHAL-586212. Dist: Vijayapur.



S. G. V. C. Vidya Prasarak Trust's,

**Matoshri Gangamma Veerappa Chiniwar  
Arts, Commerce & Science College,**

**MUDEBIHAL-586212.** Dist. Vijayapur (Karnataka)

(Accredited with CGPA of 3.31 on seven point scale at 'A+' Grade)

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Ref. No. : .....

Date : .....

## NOTICE

Department of Physics organized Special Guest Lecture topic is "NUCLEAR RADIATION, DETECTION TECHNIQUES AND APPLICATIONS" by Megharaj B. Naik Government first grade college Muddebihal on 30.07.2024 at 10.30.am in Conference Hall. Hence all the teaching, non teaching staff members and students are here by informed to attend the function.

PRINCIPAL,

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MUDEBIHAL-586212, Dist: Vijayapur.



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Science College, Muddebihal**  
Department of Physics



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ON

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AND APPLICATIONS"**



Muddebihal, Karnataka, India  
849H+Q26, Muddebihal, BidarKund, Karnataka 586212, India  
Lat: 16.346185°  
Long: 76.128227°  
30/07/24 11:26 AM GMT +05:30



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DEPARTMENT OF PHYSICS  
ORGANISED  
SPECIAL GUEST LECTURE  
ON

**"NUCLEAR RADIATION, DETECTION TECHNIQUES AND APPLICATIONS"**

**REPORT**

DEPARTMENT OF PHYSICS organized Special Guest Lecture topic is "NUCLEAR RADIATION, DETECTION TECHNIQUES AND APPLICATIONS" by Megharaj B. Naik Government first grade college Muddebihal on 30.07.2024 at 10.30.am in Conference Hall. Prof. S.N. Poleshi, Principal presided over the function. Prof. M.I. Biradar, IQAC Coordinator, Prof. S.M. Nimbalegundi and all other teaching and non teaching staff members graced the occasion. Prof. A.I. Akki proposed vote of thanks.

**PRINCIPAL,**

M.G.V.C. Arts, Commerce & Science College  
MUDEBIHAL-586212. Dist: Vijayapur.



Block No. ....

Room No. ....

S. G. V. C. Vidya Prasarak Trust's,  
**MATOSHRI GANGAMMA VEERAPPA CHINIWAR**  
**ARTS, COMMERCE & SCIENCE COLLEGE, MUDDABIHAL.**

Subject : Physics P-II

Date : .....

Time : .....

Class : B.Sc - II SEM**ATTENDANCE REPORT**

Jr. Supervisor : .....

**DEGREE \_\_\_\_\_ SEMESTER EXAMINATION 202 - 202**

Roll No.	University Seat No.	Name of the Candidate	Signature
01.	UISNU2150		
02.	UISNU2150009	Nazmin . D . Bevingid	<u>Bevingid</u>
03.	UISNU2150042	Shivaleela . B . Bhajantri	<u>S. B. Bhajantri</u>
04.	UISNU2150063	Akshata . s . walibar	<u>Walibar</u>
05.	UISNU2150089	Nctravati . Rathod .	<u>N. N. Rathod .</u>
06.	" 044	Mubarak Teggi	<u>Teggi</u>
07.	068	Afaun Sagar	<u>Sagar</u>
08	UISNU2150015	Kaveri S Lamani	<u>Lamani</u>
09	UISNU2150037	Anusodha P Mulmani	<u>Mulmani</u>
10	<u>Rajiya</u> 010	Rajiyabanu . Bagwan	<u>R. B. Bagwan</u>
11	UISNU2150032	Bhavana Ganachari	<u>B. V. Ganachari</u>
12	UISNU2150059	Bhagyashree . G . Hadapad	<u>B. G. Hadapad</u>
13	UISNU2150053	Aishwarya Dodamani	<u>Dodamani</u>
14	UISNU2150026	Daneswari H . Talwar	<u>Talwar</u>
15	UISNU2150061	Ranjita Pattar	<u>R. K. Pattar</u>
16	UISNU2150016	Sangeeta A . Talwar	<u>Sangeeta</u>
17	UISNU2150073	Mahammad Yusuf Ushiol	<u>Ushiol</u>
18	UISNU2150018	Vishwanath yalawar	<u>Yalawar</u>
19	UISNU2150006	Satish . m . Biradar	<u>S. m . Biradar</u>
20	UISNU2150078	Manjunath Kewi	<u>Kewi</u>
21	UISNU2150021	Aishwarya . P . Kodabagi	<u>A. P. Kodabagi</u>
22	UISNU2150030	Cheranj . Bhajantri	<u>Bhajantri</u>
23	UISNU2150011	Vinay . C . Tegginamani	<u>Tegginamani</u>
24	UISNU2150076	Sanganabesappa . m . Harshad	<u>Harshad</u>
25	UISNU2150028	Manjunath . Upanal	<u>Upanal</u>
26.	UISNU2150080	Praveen Radiga	<u>Radiga</u>





Block No. ....

Room No. ....

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**MATOSHRI GANGAMMA VEERAPPA CHINIWAR**  
**ARTS, COMMERCE & SCIENCE COLLEGE, MUDEBIHAL.**

Subject : Physics

Date : .....

Time : .....

Class : B.Sc - IV SEM**ATTENDANCE REPORT**

Jr. Supervisor : .....

DEGREE \_\_\_\_\_ SEMESTER EXAMINATION 202 - 202

Roll No.	University Seat No.	Name of the Candidate	Signature
1	UISNU2250008	Saumya N. Dhawalagi	Saumya
2	UISNU2250034	yallamma. B. mulimani	Y. B. mulimani
3	UISNU2250032	Sushmita N. Sajjan	SSE
4	UISNU2250042	Mahalaxmi, S. Hadimani	M. S. Hadi
5	UISNU2250009	Mallamma B Mangaloor	M B Mangaloor
6	UISNU2250025	Sharada L. Nalawada	sharadg
7	UISNU2250020	Pallavi S Sajjan	P. S. Sajjan
8	UISNU2250041	Ambika P. Pujari	A. P. Pujari
9	UISNU2250002	Mallika B. Alakki	Mallika
10	UISNU2250022	Seema. P	Seema
11	UISNU2250053	Aishwarya G. patil	A. G. Patil
12	UISNU2250050	Laxmi A. Shivayogi	L. A. S.
13	UISNU2250056	Asharani J. chaudri	A. J. Chaudri
14	UISNU2250007	Sanakausar. M. Bagawan	S. M. Bagawan.
15	UISNU2250047	Sahana. R. Uganagol	S. R. Uganagol
16	UISNU2250013	Padmaja D. Jagagiradhar	Padmaja
17	UISNU2250010	M. D. Sameer. Bagawan	S. M. Bagawan
18	UISNU2250011	Mustak. Bagawan	M. A. Bagawan
19	UISNU2250011	Chandamma. B. patil	B. Patil
20	UISNU2250021	Subhadra. R. Dodamani	S. R. D.
21	UISNU2250015	Bhagyashree S. Chimmalagi	B. S.
22	UISNU2250003	Shweta. M. Patil	Shweta
23	UISNU2250017	Vijayalaxmi. P. Alandihal	V. P. Alandihal
24	UISNU2250001	Say. Kumar. P. Tangadigi	S. P. Tangadigi

### **What is Nuclear Radiation??**

- Nuclear radiation refers to emission of particles (like alpha, beta, gamma & neutrons
- From the nucleus of an atom during nuclear reaction or by an unstable element.
- Spontaneous emission of such particles is termed as Radioactivity.

### **Who discovered Radioactivity??**

- Antoine Henri Becquerel
- Worked with Uranium
- Noticed Phosphorescence caused film exposure after leaving Uranium in the Sun
- Noticed same thing happen on cloudy days

### **Who coined the word Radioactivity??**

- Marrie Curie with her husband Pierre, discovered Radium & coined the term Radioactive
- First woman to win two Nobel Prizes Pierre and Marrie Curie
- Extracted two previously unknown and highly radioactive elements from pitchblende named

### **Why Are Elements Radioactive??**

Unstable nucleus:

- Has excess energy
- Wants to go to ground state
- Becomes stable by emitting ionizing radiation
- What dose ionizing or ionization mean??

## Alpha Radiation

- Consists of 2 protons & 2 neutrons, nothing but a Helium nucleus
- Electric charge +2
- Deflected by electric & magnetic field, deflection indicates they are positively charged
- They can ionize air or gas through which they pass & comparatively much higher than beta gamma radiations
- They have low penetration power compared to all other radiation
- They affect photographic plate
- They cause fluorescence when they incident on certain substances like ZnS & Barium Platinocynide

## Beta Radiation

- They are nothing but fast-moving electrons or positrons with high kinetic energy, emitted from radioactive atomic nucleus
- Electric charge is -1
- Deflected by electric & magnetic field, deflection indicates they are negatively charged
- They have comparatively 100 times less ionizing power than alpha radiation
- They have high penetration power compared to alpha radiation but less compared to gamma
- They affect photographic plate
- They cause fluorescence when they incident on certain substances like ZnS & Barium Platinocynide

## **Gamma Radiation**

- Electric charge is zero & rest mass is zero
- They are not deflected by electric or magnetic fields
- They have least ionizing power compared to alpha & beta radiation
- They have highest penetration compared to alpha & beta radiation
- They affect photographic plate
- They cause fluorescence when they are incident on certain substances like ZnS & Barium Platinocynide

## **Detection techniques of Nuclear Radiation**

- Many instruments have been developed to detect radiation
- Based on knowledge of how radiation interacts with matter Excitation Ionization Radiation
- Charged particles cause ionization directly through Columbic interactions
- EM radiation produces ion pairs in matter Photoelectric effect Compton scattering Pair production
- Neutrons produce ions through secondary mechanisms

## **Nuclear radiation detection instruments**

- G. M counter
- Ionisation chamber
- Proportional counter
- Scintillators
- Semiconductor detectors

## Applications

- 1) Food irradiation (to increase the life of stored food)
- 2) Fruits & vegetables irradiation (to increase the ripening period of fruits & to avoid sprouting in vegetables)
- 3) Crop improvement by mutation technique (to increase yield, disease resistance, better nutrition)
- 4) Insect pest control by sterile insect technique.
- 5) Radiotherapy - used for treating cancer A