

**Vivekanand College, Kolhapur. (Autonomous)**  
**Department of Physics**  
**Internal Examination Notice**  
**2021-22**

Date: 10 May 2022

~~2022~~

All students of class B.Sc. I, B.Sc. II and B.Sc. III are hereby noticed that the second term internal evaluation examination is scheduled as per following time table.

Nature of question paper:

**For B.Sc. I :** Long answer question (Any two from given four questions) for 20 marks

Short answer question (Any four from given six questions) for 20 marks

**For B.Sc. II :** Long answer question (Any one from given two questions) for 10 marks

Short answer question (Any two from given four questions) for 10 marks

**For B.Sc. II (Astro) :** Long answer question (Any one from given two questions) for 10 marks

Short answer question (Any two from given four questions) for 10 marks

**Internal Evaluation Examination 2021-22.**  
**SEM II, SEM IV and SEM VI**  
**Time Table**

Sr. No.	Class	Paper	Date	Time
1.	B.Sc. I	Paper II	22/05/2022	11:00 am to 12:30 pm
2.	B.Sc. II	Paper IV	22/05/2022	11:00 am to 12:00 pm
3.	B.Sc. II (Astrophysics)	Paper II	25/05/2022	04:00 pm to 05:00 pm

  
HOD



"Education for Knowledge, Science and Culture"

-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

**Vivekanand College, Kolhapur (Autonomous).**

**Department of Physics**

B.Sc. Part-I SEM II Internal Examination (2021-22)

Electricity, Magnetism and Electromagnetic Theory

(Paper code: DSC-1001B) Paper II

Date :

Day :

Total Marks: 30

Time :-

**Q.1) Attempt the following**

**A) Choose the correct alternative**

(5)

1. Electric flux due to electric field  $E$  passing through the surface area  $S$  is given as -----

(a)  $\phi = \frac{E}{S}$

(b)  $\phi = E \times S$

(c)  $\phi = E \cdot S$

(d)  $\phi = E - S$

2. Figure of merit of ballistic galvanometer is measured in -----.

(a)  $\mu A/mm$

(b)  $mm/\mu A$

(c)  $cm/\mu V$

(d)  $mm.\mu V$

3. The At resonance in series LCR circuit the circuit is -----.

(a) Purely resistive

(b) Purely inductive

(c) Purely capacitive

(d) purely reactive

4. The A potential due to point charge at a distance  $r$  from it is proportional to ----

(a)  $r$

(b)  $1/r$

(c)  $r^2$

(d)  $1/r^2$

5. According Norton's theorem, the entire network can be replaced by a single current source  $I_N$  -----

(a) In series with a single resistance  $R_{TH}$

(b) In parallel with a resistance  $R_N$

(c) In series with initial source  $V$

(d) In parallel with initial source  $V$

6. The factor  $j$  rotates a vector through ----

(a)  $\pi$

(b)  $\frac{\pi}{2}$

(c)  $2\pi$

(d)  $\frac{3\pi}{2}$

7. According to Thevenin's theorem, the entire network can be replaced by single voltage  $V_{TH}$ -----.

(a) In series with a single resistance  $R_{TH}$

(b) In series with current  $I_N$

(c) In series with initial source  $V$



(d) In parallel with single resistance  $R_{111}$

8. The total number of electric field line passing a given area in a unit time is known as

- (a) electric field (b) electric flux  
(c) electric potential (d) electric charge

9. If  $F$  is the force acting on test charge  $q_0$  electric field intensity  $E$  would be given by -----

- (a)  $E = F - q_0$  (b)  $E = F/q_0$   
(c)  $CE = F + q_0$  (d)  $E = q_0/F$

10. Voltage sensitivity is measured in -----,

- (a)  $\mu V/mm$  (b)  $mm/\mu V$   
(c)  $cm/\mu V$  (d)  $mm.\mu V$

**Q.2 Attempt any ONE**

**(10)**

- 1) Derive an expression for the energy stored per unit volume in magnetic field.
- 2) What is Maxwell's correction for Ampere's circuital law?

**Q.3 Attempt any TWO**

**(10)**

- 1) Explain Kirchhoff's first law.
- 2) Explain mutual inductance and derive Newmann's formula
- 3) Define the curl of a vector field. Obtain an expression for it.



Shri Swami Vivekanand Shikshan Sanstha's

## Vivekanand College, Kolhapur

(Autonomous)

Department of Physics

Internal exam (2021-22)

B.Sc.I Sem II

Date:- 22/05/2022

### Attendance Sheet

Roll No.	Name Of Student	Signature
6851	Adure Sakshi Madhukar	Sakshi
6852	Burambale Kartik Nandkumar	Burambale
6853	Chavan Aishwarya Sanjay	Chavan
6854	Chavan Vaishnavi Ganesh	Chavan
6855	Chougale Anuja Anil	Chougale
6856	Dhavale Pratik Vijay	Dhavale
6857	Dongare Rushi Chandrakant	Dongare
6858	Ekashinge Sourabh Amar	Ekashinge
6859	Fernandes Riya Inas	Fernandes
6860	Gaikwad Samita Babaso	Samita
6861	Gavali Shubham Anil	Gavali
6862	Gavase Sahil Sanjay	Sahil
6863	Gawade Shweta Sanjay	Gawade
6864	Ghatage Shivani Shivaji	Shivani
6865	Gudle Pallavi Bhujgonda	Gudle
6866	Gujare Om Parshuram	Gujare
6867	Gujare Omkar Parshuram	Gujare
6868	Gurav Kunal Damodar	Gurav
6869	Gurav Reva Sunil	Reva
6870	Hasbe Sadd Sanjay	Hasbe
6872	Jadhav Prasad Maruti	Prasad
6873	Jadhav Sandesh Daji	Sandesh
6874	Jamadar Karishma Khudbuddin	Karishma
6875	Kamble Rutik Vitthal	Rutik
6876	Karake Sayyam Deshbhushan	Karake
6877	Karne Dipali Ramesh	Karne
6878	Kashid Namrata Maruti	N. M. K.
6880	Khilare Rutik Sunil	Rutik
6881	Khot Ganesh Vitthal	Ganesh
6882	Khot Soham Ananda	Soham
6883	Kokate Akash Arjuna	Akash
6885	Koruche Pratiksha Dipak	Pratiksha



6887	Magadum Anuja Balaso	Anuja
6888	Malavi Sanika Yuvaraj	Malavi
6889	Mane Prachi Narendra	Mane
6890	Mane Siddhi Bipinkumar	Siddhi
6891	Metkari Sourabh Dadaso	Metkari
6892	Mohite Srusthi Pandharinath	Mohite
6893	Morbale Aditya Sanjay	Morbale
6894	More Omkar Nandkumar	More
6895	More Shivani Pandurang	More
6896	Mujawar Ammar Mukhtar	Mujawar
6898	Parit Vaishnavi Sudesh	Parit
6899	Pathan Misam Ashfak	Pathan
6900	Patil Abhishek Ananda	Patil
6901	Patil Diksha P	Patil
6902	Patil Hardik Dilip	Patil
6905	Patil Tejaswini Shahajirao	Patil
6906	Patil Vaishnavi Gorksha	Patil
6907	Pawar Priyanka Mansingq	Pawar
6909	Rathi Shreya Sanjay	Rathi
6910	Shelar Omkar Sardar	Shelar
6912	Shinde Atharva Dattatray	Shinde
6913	Shinde Avdhut Dattatray	Shinde
6914	Shinde Neha Rajesh	Shinde
6915	Shinde Pallavi Savanta	Shinde
6916	Shinde Pranav Sarjerao	Shinde
6917	Shingare Sanskruti Sanjay	Shingare
6918	Singh Sadhana Sanjay	Singh
6920	Vhanmane Shubham Abaso	Vhanmane
6921	Anchi Siddharth Vikas	Anchi
6922	Atigre Sarthak Sujit	Atigre
6923	Bagwan Ahmed Jameer	Bagwan
6924	Bhojkar Sanika Satish	Bhojkar
6925	Bidkar Rasika Krushnath	Bidkar
6926	Buchade Vivek Vasant	Buchade
6927	Chavan Aditya Shrikrishna	Chavan
6928	Chavan Pratik Shivaji	Chavan
6929	Chavan Snehal Bhikaji	Chavan
6930	Chougule Rohit Anand	Chougule
6931	Dangar Noor Sanauulla	Dangar
6932	Desai Pratik Mahesh	Desai
6933	Desai Sejal Anil	Desai
6934	Dhumal Keshav Gajanan	K. Dhumal
6935	Drakshe Pruthvi Prakash	P.D.P.
6936	Fakir Soheli Salim	Fakir
6937	Gadkari Sourav Sharad	Gadkari
6938	Ghadage Pruthviraj Pandurang	Ghadage
6939	Ghatge Shruti Sanjay	Ghatge



6940	Jadhav Ananya Netaji	<del>Wadhwa</del>
6941	Jadhav Prerana Suresh	<del>Jadhav</del>
6942	Jambhekar Akash Sunil	AS Jambhkar
6943	Kadam Darshan Prabhakar	(K)
6946	Kamble Anjali Pradeep	Kamble
6947	Kamble Priyanka Ashok	Kamble
6948	Kolge Rushikesh Abasaheb	(K)
6949	Koli Prajakta Mahesh	Foli
6950	Kulkarni Sanika Sachin	Sanika
6951	Kumbhar Trupti Arvind	Kumbhar
6954	Nalawade Yash Raju	Nalawade
6955	Patil Aryan Hanmant	Patil
6956	Patil Dipti Dilip	Dipti
6957	Patil Pruthviraj Ravindra	Patil
6958	Patil Shreyas Balwant	Patil
6959	Patil Shreyash Sandip	Patil
6960	Patil Sudarshan Rajaram	Patil
6961	Pawar Shubham Sudhir	Pawar
6962	Pendhari Samir Bakash	S. B. P.
6963	Powar Shridhar Ashok	Powar
6964	Randive Atharav Vikram	Randive
6965	Randive Shivtej Prashant	Shivtej
6966	Savekar Kasturi Deepak	Kasturi
6967	Shaikh Adnan Mohammadyasin	Shaikh
6968	Shinde Ajit Baban	Shinde
6969	Shinde Shivam Firoj	Shinde
6970	Swami Yash Anil	Swami
6971	Terani Akshata Sanjay	Akshata
6972	Vadar Snehal Raju	Snehal
6973	Zugar Prem Santosh	Zugar
6974	Aware Malhari Rameshwar	M. R. A.
6975	Barale Pooja Jyotiram	Barale
6976	Bhogane Ankita Appasaheb	Bhogane
6977	Bhosale Prerana Sanjeev	Bhosale
6978	Chavan Archana Mahadev	Chavan
6979	Chetake Asmita Krushnat	Chetake
6980	Chopade Ashish David	Chopade
6981	Chopade Prachi Manoj	Prachi
6982	Chothe Sakshi Nandakumar	Sakshi
6983	Chougale Aditya Narayan	Chougale
6984	Chougale Pratiksha Jaysing	Chougale
6985	Chougale Sakshi Yuvraj	Chougale
6986	Chougale Snehal Gopal	Snehal
6988	Demanna Shreyashree Shantinath	Demanna
6990	Dhanavade Divya Ramesh	Dhanavade
6992	Dubey Sakshi Rajkumar	Dubey
6993	Dudhgaonkar Yash Mukund	Y. Dudhgaonkar



6994	Gavade Ankita Ramchandra	<del>AT</del>
6995	Gavali Nikita Sarjerao	Narali
6996	Gore Indraja Vitthal	<del>Gore</del>
6997	Gosavi Pradnya Sakharam	Gosavi
6998	Gurav Akanksha Anil	Gurav
6999	Gurav Smita Rajendra	Gurav
7000	Ingale Parth Uday	Ingale
7001	Jadhav Jyoti Hanumant	Jadhav
7002	Jadhav Sanika Vijay	Jadhav
7003	Jadhav Tejas Sujay	Tejas
7004	Joshi Ritesh Narasu	Rishi
7005	Kalkutki Shubham Sanjay	Shubham
7006	Kamble Abhishek Kishor	Kamble
7007	Kamble Anushka Amar	Deepali
7008	Kamble Deepali Ravindra	(D)
7009	Kamble Devdas Ananda	Kamble
7010	Kamble Prathmesh Shrirang	Kamble
7012	Kamble Rohan Bhagwan	Rohan
7013	Kamble Shrushti Prakash	<del>K</del>
7014	Kamble Shrutika Sunil	Kamble
7016	Kapase Raturaj Ravindra	Kapase
7018	Katake Sayali Kiran	Sayali
7020	Kharade Kedar Sanjay	Kedar
7021	Khot Shrutika Sambhaji	<del>Khot</del>
7022	Kodnaik Abhishek Lenin	(K)
7023	Koli Mayur Lahu	Koli
7024	Koli Nikita Uttam	Nkoti
7025	Koli Sakshi Sushant	Koli
7026	Koli Trupti Sanjay	Trupti
7027	Koregave Sammed Mahavir	Sammed
7028	Koundade Aditya Tanaji	(K)
7029	Kuchakoravi Asmita Anil	Kuchakoravi
7030	Kumbhar Gouri Shrirang	Kumbhar
7031	Kumbhar Rasika Annaso	(K)
7032	Kumbhar Sanika Sanjay	Sanika
7033	Kumbhar Shruti Ramchandra	Kumbhar
7034	Kumbhar Shweta Prakash	(K)
7036	Lohar Shubham Bhaskar	Shubham
7037	Lokhande Yash Amol	Lokhande
7038	Lonkar Pradnya Dnyanoba	Lonkar
7039	Mahadik Disha Kailas	Mahadik
7040	Malavi Janhavi Prakash	Malavi
7041	Mane Aman Pralhad	Aman
7042	Mane Anuradha Avinash	Anane
7043	Mane Ganesh Shivaji	Mane
7044	Mane Shweta Dattatray	Mane
7045	Matwal Mohdsai Rafik	Matwal



6994	Gavade Ankita Ramchandra	<del>AD</del>
6995	Gavali Nikita Sarjerao	Narali
6996	Gore Indraje Vitthal	<del>Gore</del>
6997	Gosavi Pradnya Sakharam	Gosavi
6998	Gurav Akanksha Anil	Gurav
6999	Gurav Smita Rajendra	Gurav
7000	Ingale Parth Uday	Ingale
7001	Jadhav Jyoti Hanumant	Jadhav
7002	Jadhav Sanika Vijay	Jadhav
7003	Jadhav Tejas Sujay	Tejas
7004	Joshi Ritesh Narasu	Rishi
7005	Kalkutki Shubham Sanjay	Shubham
7006	Kamble Abhishek Kishor	Kamble
7007	Kamble Anushka Amar	Deepali
7008	Kamble Deepali Ravindra	AD
7009	Kamble Devdas Ananda	Kamble
7010	Kamble Prathmesh Shrirang	Kamble
7012	Kamble Rohan Bhagwan	Rohan
7013	Kamble Shrushti Prakash	Kamble
7014	Kamble Shrutika Sunil	Kamble
7016	Kapase Raturaj Ravindra	Kapase
7018	Katake Sayali Kiran	Sayali
7020	Kharade Kedar Sanjay	Kedar
7021	Khot Shrutika Sambhaji	Khot
7022	Kodnaik Abhishek Lenin	AD
7023	Koli Mayur Lahu	Koli
7024	Koli Nikita Uttam	Nkoti
7025	Koli Sakshi Sushant	Koli
7026	Koli Trupti Sanjay	Trupti
7027	Koregave Sammed Mahavir	Sammed
7028	Koundade Aditya Tanaji	AD
7029	Kuchakoravi Asmita Anil	Akuchakoravi
7030	Kumbhar Gouri Shrirang	Kumbhar
7031	Kumbhar Rasika Annaso	AD
7032	Kumbhar Sanika Sanjay	Sanika
7033	Kumbhar Shruti Ramchandra	Kumbhar
7034	Kumbhar Shweta Prakash	AD
7036	Lohar Shubham Bhaskar	Shubham
7037	Lokhande Yash Amol	Lokhande
7038	Lonkar Pradnya Dnyanoba	Lonkar
7039	Mahadik Disha Kailas	Mahadik
7040	Malavi Janhavi Prakash	Malavi
7041	Mane Aman Pralhad	Aman
7042	Mane Anuradha Avinash	Anane
7043	Mane Ganesh Shivaji	Mane
7044	Mane Shweta Dattatray	Mane
7045	Matwal Mohdsai Rafik	Matwale





7046	Miraje Manoj Arunkumar	MP
7047	Mohite Avadhoot Vijayanand	Amohite
7048	More Sayali Sandeep	More
7049	Mujumdar Sanika Prasad	Sayali
7050	Muthe Aditya Dnyaneshwar	Amuthe
7051	Nadaf Suzan Sadik	Nadaf
7052	Nagaonkar Akash Uday	Nagaonkar
7054	Pakhali Abusufiyan Salim	Pakhli
7055	Parit Sanika Ramchandra	Parit
7056	Pathrut Ganesh Bhimrao	Ganesh
7058	Patil Dhanshree Madhusudhan	Patil
7059	Patil Janhavi Jagdish	Patil
7060	Patil Neeraj Deepak	N.D. Patil
7061	Patil Pranoti Bahubali	Patil
7062	Patil Purva Jaysing	P.T. Patil
7063	Patil Rushikesh Balaso	Patil
7065	Patil Sanika Bhivaji	Patil
7066	Patil Sayali Sarjerao	Sayali
7067	Patil Snehal Yalgonda	Patil
7069	Patil Tejas Sunil	Patil
7070	Patil Vaishnavi Vikramsinh	Patil
7071	Pawar Galaxy Sunil	Pawar
7072	Pirai Kartiki Baban	Pirai
7073	Powar Avantika Balaso	Powar
7074	Puribuva Namrata Ganesh	Puribuva
7075	Rajge Vaishali Dhanaji	Rajge
7076	Rajput Yadnya Dhanrajsingh	Rajput
7077	Rathod Sonali Ramsh	Rathod
7078	Redekar Gayatri Madan	Redekar
7079	Redekar Siddhika Madan	Redekar
7080	Renadive Parshwa Rakesh	Renadive
7081	Rokade Patil Anant Prakash	Anants
7082	Sadolkar Soham Satish	Sadolkar
7083	Sanadi Javed Imam	Javed
7084	Savairam Arpita Sanjay	Savairam
7085	Shaikh Naeem Mahamadhanif	Shaikh
7086	Shinde Adityaraj Sachin	Ashinde
7087	Shinde Samiksha Maruti	Samiksha
7088	Shinde Shruti Ravindra	Shinde
7089	Suryawanshi Sneha Suryakant	Sneha
7090	Thorat Aishwarya Bhaskar	Thorat
7091	Thorat Isha Manohar	Isha
7092	Tope Gayatri Chandrakant	Tope
7093	Vhannure Abhishek Krushna	Vhannure
7094	Wadar Rushikesh Vijay	Wadar
7095	Attar Musaeb Zakir	Attar
7097	Birje Rutuja Jaywant	R.J. Birje



7046	Miraje Manoj Arunkumar	MAR
7047	Mohite Avadhoot Vijayanand	Mohite
7048	More Sayali Sandeep	More
7049	Mujumdar Sanika Prasad	Sayali
7050	Muthe Aditya Dnyaneshwar	Muthe
7051	Nadaf Suzan Sadik	Nadaf
7052	Nagaonkar Akash Uday	Nagaonkar
7054	Pakhali Abusufiyan Salim	Pakhali
7055	Parit Sanika Ramchandra	Parit
7056	Pathrut Ganesh Bhimrao	Ganesh
7058	Patil Dhanshree Madhusudhan	Patil
7059	Patil Janhavi Jagdish	Patil
7060	Patil Neeraj Deepak	N.D. Patil
7061	Patil Pranoti Bahubali	Patil
7062	Patil Purva Jaysing	P.J. Patil
7063	Patil Rushikesh Balaso	Patil
7065	Patil Sanika Bhivaji	Patil
7066	Patil Sayali Sarjerao	Sayali
7067	Patil Snehal Yalgonda	Snehal
7069	Patil Tejas Sunil	Patil
7070	Patil Vaishnavi Vikramsinh	Patil
7071	Pawar Galaxy Sunil	Pawar
7072	Pirai Kartiki Baban	Pirai
7073	Powar Avantika Balaso	Powar
7074	Puribuva Namrata Ganesh	Puribuva
7075	Rajge Vaishali Dhanaji	Rajge
7076	Rajput Yadnya Dhanrajsingh	Rajput
7077	Rathod Sonali Ramsh	Rathod
7078	Redekar Gayatri Madan	Redekar
7079	Redekar Siddhika Madan	Redekar
7080	Renadive Parshwa Rakesh	Renadive
7081	Rokade Patil Anant Prakash	Anant
7082	Sadolkar Soham Satish	Sadolkar
7083	Sanadi Javed Imam	Sanadi
7084	Savairam Arpita Sanjay	Savairam
7085	Shaikh Naeem Mahamadhanif	Shaikh
7086	Shinde Adityaraj Sachin	A. Shinde
7087	Shinde Samiksha Maruti	Samiksha
7088	Shinde Shruti Ravindra	Shinde
7089	Suryawanshi Sneha Suryakant	Sneha
7090	Thorat Aishwarya Bhaskar	Thorat
7091	Thorat Isha Manohar	Isha
7092	Tope Gayatri Chandrakant	Tope
7093	Vhannure Abhishek Krushna	Vhannure
7094	Wadar Rushikesh Vijay	Wadar
7095	Attar Musaeb Zakir	Attar
7097	Birje Rutuja Jaywant	R.J. Birje



7098	Birnale Sanket Dilip	<del>Friende</del>
7099	Chindage Vaishnavi Rangrao	<del>Chindage</del>
7100	Gaikwad Divya Arvind	<del>Divya</del>
7101	Jadhav Prachi Sanjay	<del>Jadhav</del>
7102	Kamble Arpita Laxman	<del>Kamble</del>
7103	Kamble Payal Varun	<del>Payal</del>
7104	Khopade Vaishnavi Prakash	<del>Vk</del>
7105	Koneri Priya Shivling	<del>Koneri</del>
7106	Korgaonkar Sakshi Shivraj	<del>Korgaonkar</del>
7107	Kumbhar Supriya Krishnat	<del>Supriya</del>
7108	Mali Pradnya Arun	<del>Pm</del>
7109	Nandudkar Pradnya Nandkumar	<del>Pradnya</del>
7110	Nikam Harshavardhan Ashok	<del>Nikam</del>
7111	Patil Mrunali Maruti	<del>Patil</del>
7112	Patil Shivam Vinaykumar	<del>Patil</del>
7113	Patil Shruti Sandip	<del>Patil</del>
7114	Patil Trupti Vijay	<del>T.V. Patil</del>
7115	Sathe Samiksha Sarjerao	<del>Sathe</del>
7116	Shinde Shloka Shripati	<del>Shinde</del>
7117	Sutar Sushant Vilas	<del>Sutar</del>
7118	Tanugade Gauri Bhauso	<del>Tanugade</del>
7119	Berad Rohit Bhalchandra	<del>R.B.B</del>
7120	Bhapkar Sai Santosh	<del>Bhapkar</del>
7121	Bhosake Aditya Ajit	<del>Bhosake</del>
7122	Bhosale Asleshiya Dhanawant	<del>A.D.B.</del>
7123	Chougule Siddhesh Suresh	<del>Chougule</del>
7124	Jadhav Rajdeep Uday	<del>Rajdeep</del>
7125	Jadhav Rutuja Sunil	<del>Rutuja</del>
7126	Kadam Prem Babasaheb	<del>Kadam</del>
7127	Kagude Darshan Sanjay	<del>Kagude</del>
7128	Kamble Parag Manesh	<del>Kamble</del>
7129	Khetal Shailesh Vitthal	<del>S.V. Khetal</del>
7130	Khodbale Harshada Suresh	<del>Khodbale</del>
7131	Maner Mohammed Taqee Mohammed Shafi	<del>Maner</del>
7132	Modak Mussaddique Firoz	<del>Modak</del>
7133	Nadaf Pinjari Sana Nabilal	<del>Nadaf</del>
7134	Panhalkar Sanket Dattatray	<del>Panhalkar</del>
7135	Patil Akshata Ashok	<del>Akshata</del>
7136	Patil Athrav Shivaji	<del>Patil</del>
7137	Patil Omkar Sanjay	<del>Omkar</del>
7138	Patil Parth Pravin	<del>Patil</del>
7139	Patil Pratik Suresh	<del>Patil</del>
7140	Patil Sakshi Rangrao	<del>Patil</del>
7141	Patil Sanika Ananda	<del>Patil</del>
7142	Patil Sayali Sampat	<del>Patil</del>
7143	Patil Shakti Prakash	<del>Shakti</del>
7144	Patil Shubham Hanardhan	<del>Shubham</del>



7145	Patil Vaishnavi Kalgonda	Vaishnavi
7146	Patil Vaishnavi Krishnat	Patil
7147	Patil Vipul Ashok	Patil
7148	Pawar Vaishnavi Subhash	Kumar
7149	Rathod Snehal Ramesh	Snehal
7150	Savaratkar Onkar Haribhau	Savaratkar
7151	Shinde Aary Anil	Aary
7153	Sutar Shraddha Nagesh	Sutar
7154	Upadhye Suyash Bahubali	Suyash
7155	Vadar Kiran Rajendra	Vadar
7156	Waware Shivanjali Sanjay	Waware

Internal Examiner.....

*[Handwritten Signature]*



" ज्ञान, विज्ञान आणि सुरांरकार यांसाठी शिक्षण प्रसार "

-शिक्षणमहर्षी डॉ. बापूजी साळुंखे

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

# VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

## SUPPLIMENT

Signature  
of  
Supervisor

Suppliment No. :

25

Roll No. : 6857

Subject : Electricity and Magnetism

Test / Tutorial No. : Internal Exam

Class : B.Sc-I

Div. :

Q1.

A C.  $E \cdot S = \phi$

1.

2. a.  $\mu A/mm$

3. a. purely resistive

4. b.  $\frac{1}{r}$

5. b. In parallel with resistance  $R_H$

6. b.  $\frac{\pi}{2}$

7. a. In Series with a single resistance  $R_H$

8. b. electric flux

9. b.  $E = F$   
90

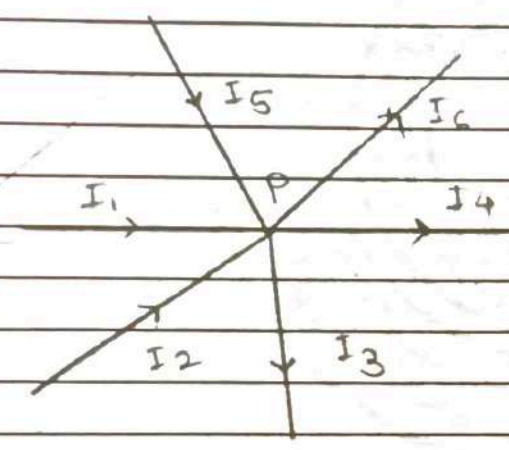


10. a. 11V  
mm

Q3.

1. Kirchhoff's current law -

The algebraic sum of currents entering and leaving any point in circuit must equal zero. It may be restated as, algebraic sum of current into any point of the circuit must equal the algebraic sum of currents out of that point.

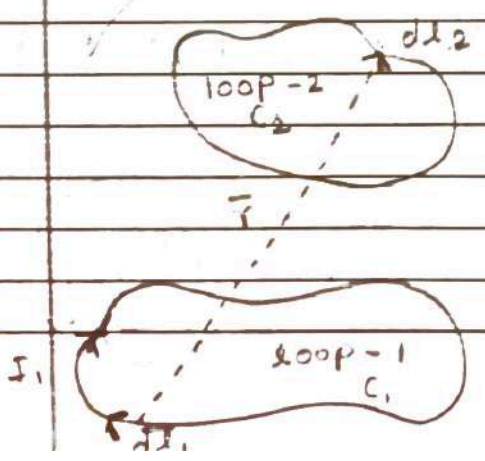


The sign convention for current is

Consider all currents into a branch point as positive and all current directed away from that point as negative.

$$\therefore I_1 + I_2 - I_3 - I_4 + I_5 - I_6 = 0$$

2. Mutual Inductance (M) of two coils



If we have two coils at rest. A steady current  $I_1$  through loop-1 produces a magnetic induction  $\vec{B}_1$  at loop-2 at distance



where  $\vec{B}_1$  is given by Biot and Savart's law

$$\therefore \vec{B}_1 = \frac{\mu_0 I_1}{4\pi} \oint_{C_1} \frac{d\vec{l}_1 \times \vec{r}}{r^3}$$

$\therefore$  flux through loop-2 is given by.

$$\therefore \phi_2 = \int_{S_2} \vec{B}_1 \cdot d\vec{S}_2$$

$\therefore \vec{B}_1 = \nabla \times \vec{A}_1$ , where  $\vec{A}_1$  is vector magnetic potential

$$\therefore \vec{A}_1 = \frac{\mu_0 I_1}{4\pi} \oint_{C_1} \frac{d\vec{l}_1}{r}$$

$$\therefore \phi_2 = \int_{S_2} (\nabla \times \vec{A}_1) \cdot d\vec{S}_2$$

$$= \oint_{C_2} \vec{A}_1 \cdot d\vec{l}_2 \quad \dots \text{by stoke theorem}$$

$$\therefore \phi_2 = \oint_{C_2} \frac{\mu_0 I_1}{4\pi} \oint_{C_1} \frac{d\vec{l}_1 \cdot d\vec{l}_2}{r}$$

$$= \frac{\mu_0 I_1}{4\pi} \oint_{C_1} \oint_{C_2} \frac{d\vec{l}_1 \cdot d\vec{l}_2}{r}$$

$$= M_{21} I_1$$

$$\therefore M_{21} = \frac{\mu_0}{4\pi} \oint_{C_1} \oint_{C_2} \frac{d\vec{l}_1 \cdot d\vec{l}_2}{r} \quad \text{--- (2)}$$

Eq<sup>n</sup> (2) known as Neumann formula.



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# VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

## SUPPLIMENT

Signature  
of  
Supervisor

Subject : *Electricity and Magnetism*

Test / Tutorial No. : *Internal exam*

Div. :

Suppliment No. : 19

Roll No. : 6870

Class : B.Sc I

Q.1

A

1. c)  $E \cdot S = \Phi$

2. a)  $\mu A/mm$

3. a) purely resistive

4. b)  $\frac{1}{r}$

5. b) In parallel with resistance  $R_A$

6. a)  $\pi$

7. a) In series with a single resistance  $R_{TH}$

8. b) electric flux

9. b)  $E = \frac{F}{q_0}$

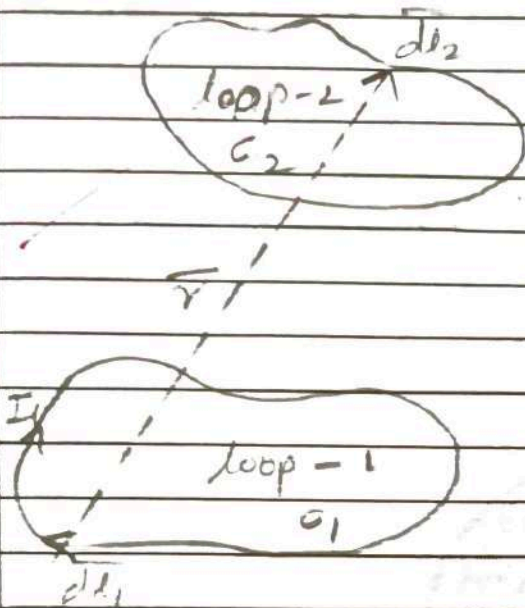
a) b) a)  $\frac{\mu V}{mm}$





2.3

2) Mutual Inductance (M) of two coils.



If we have two coils at rest. A steady current  $I_1$  through loop-1 produces a magnetic induction  $\vec{B}_1$ , at loop-2 at distance  $(r)$  where,  $\vec{B}_1$  is given by Biot and Savart's law

$$\therefore \vec{B}_1 = \frac{\mu_0 I_1}{4\pi} \oint_C \frac{d\vec{l}_1 \times \vec{r}}{r^3}$$

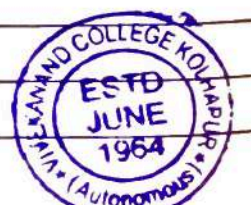
$\therefore$  Flux through loop-2 is given by

$$\therefore \Phi_2 = \int_{S_2} \vec{B}_1 \cdot d\vec{s}_2$$

$$\therefore \vec{B}_1 = \nabla \times \vec{A}_1$$

where,  $\vec{A}_1$ , is vector magnetic potential

$$\therefore \vec{A}_1 = \frac{\mu_0 I_1}{4\pi} \oint_C \frac{d\vec{l}_1}{r}$$



$$\therefore d_2 = \int_{S_2} (\nabla \times \vec{A}_1) \cdot d\vec{S}_2$$

$$= \oint_{C_2} \vec{A}_1 \cdot d\vec{l}_2 \dots \dots \dots \text{by Stokes-theorem}$$

$$\therefore d_2 = \oint_{C_2} \frac{\mu_0 I_1}{4\pi} \oint_{C_1} \frac{dl_1}{r}$$

$$= \frac{\mu_0 I_1}{4\pi} \oint_{C_1} \oint_{C_2} \frac{dl_1 \cdot dl_2}{r}$$

$$= M_{21} I_1$$

$$\therefore M_{21} = \frac{\mu_0}{4\pi} \oint_{C_1} \oint_{C_2} \frac{dl_1 \cdot dl_2}{r} \quad \text{--- (2)}$$

Eq<sup>n</sup> (2) known as Neumann formula.

