Vivekanand College, Kolhapur. (Autonomous)
Department of Physics
Internal Examination Notice
2018-19

Date: 21/01/2019

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 one from given two questions) for 10 marks

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

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

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

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

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

Internal Evaluation Examination 2018-19.
SEM II, SEM IV and SEM VI
Time Table

Sr. No.	Class	Paper	Date	Time
1.	B.Sc. I	Paper II	28/01/2019	11:00 am to 12:00 pm
2.	B.Sc. II	Paper IV	28/01/2019	11:00 am to 12:00 pm
3.	B.Sc. II (Astrophysics)	Paper II	29/01/2019	11:00 am to 12:00 pm
4.	B.Sc. III	Paper VII (section I)	30/01/2019	11:00 am to 12:00 pm
		Paper VII (section II)		01:00 am to 02:00 pm
		Paper VIII (section I)	31/01/2019	11:00 am to 12:00 pm
		Paper VIII (section II)		01:00 am to 02:00 pm

VIVEKANAND COLLEGE ESTD JUNE 1964 KOLHAPUR - 416003

HOD

Head of the
Department of Physics
Vivekanand College, Kolhapur

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Internal Examination 2018-19

B.Sc. I, SEM- II PHYSICS-DSC -1001 A

Electricity And Magnetism and Electromagnetic Theory I & II

Time: 30 Minutes **Marks: 20**

Q.2) Long answer questions (Attempt any ONE) **(10)**

1) Define divergence of a vector field. Obtain an expression for it. Explain the physical significance of the divergence of a vector field.
2) Establish the law of conservation of energy for electromagnetic field waves and explain the meaning of Poynting's vector.

Q.3) Short answer question (Attempt any Two) **(10)**

1) Explain the equation of continuity of current.
2) Write a note on Polarization.
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

B.Sc.I Sem II

Date:- 28/01/2019

Attendance Sheet

Roll No	Name Of The Students	Signature
7501	Admuthe Vishal Vijay	
7502	Bagwan Siddhika Jahidahmad	
7503	Bavache Dhananjay Kiran	
7504	Baygol Anil Parshuram	
7505	Benade Dhanashri Krushnat	
7506	Bhoi Shraddha Annasaheb	
7507	Bhosale Sudhanshu Prakash	
7508	Bhure Prachi Chhagan	
7509	Chaus Rijwan Shabbir	
7512	Bhosale Sohan Sanjay	
7514	Gadgil Jyoti Bajirao	
7515	Gaikwad Shradha Shankar	
7516	Gaikwad Apeksha Yashavant	
7517	Gangalmale Satpal Kerappa	
7518	Gavade Shivraj Vishnu	
7519	Gavali Santosh Vasudev	
7520	Ghatage Hrutik Avinash	
7521	Ghule Shashani Nitin	
7522	Gokhale Makarand Mohan	
7523	Gurav Rushikesh Balkrishna	
7524	Gurav Kedar Sadanand	
7525	Hundekari Vrushabh Sunil	
7527	Kadam Rushikesh Balasaheb	
7528	Kadam Rutuja Vitthal	
7529	Kadam Moreshwar Ramchandra	
7530	Kadam Gouri Dattatray	
7531	Kamble Pratiksha Ananda	
7533	Kamble Akshata Prafull	
7534	Kamble Rasika Anil	
7535	Kamble Rushikesh Mallappa	
7536	Kashid Kedar Mohan	
7537	Katkar Priyanka Indrajit	

VIVEKANAND COLLEGE KOLHAPUR
ESTD JUNE 1964
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7538	Kazi Tabasum Arif	
7539	Kesarkar Prajakta Rajaram	
7540	Khade Aakanksha Harishchandra	
7541	Khot Vaishnavi Nijappa	
7542	Khot Sakshi Suresh	
7543	Khot Soundarya Sanjay	
7544	Khot Omkar Ramchandra	
7545	Khot Sanmati Aannaso	
7546	Khot Shubhangi Krishnat	
7547	Kore Rutvik Deepak	
7548	Nalawade Pallavi Uday	
7549	Kumbhar Gaurav Dinkar	
7550	Londhe Shuvanee Bhimrao	
7551	Majgaonkar Shweta Pavan	
7552	Malavi Sayali Gautam	
7553	Masute Manasi Uday	
7554	Mhatugade Prajakata Sanjay	
7555	Mhetri Bhakti Sukumar	
7556	Mulla Samiya Isak	
7557	Mulla Yasmin Nasaruddin	
7558	Naikawadi Firdaus Anjum	
7559	Powar Rushikesh Bhagavat	
7560	Pachpund Vinayak Shahaji	
7561	Parit Komal Rajkumar	
7562	Parit Rutuja Bhagavan	
7563	Patil Akanksha Ashok	
7565	Patil Shraddha Pandurang	
7566	Patil Ulka Bhagwan	
7567	Patil Bhushan Rajaram	
7568	Patil Pavan Ranjit	
7569	Patil Pradnya Bhikaji	
7570	Patil Dhanashree Shankar	
7571	Pore Sainath Vijay	
7573	Powar Prajkta Dashrath	
7574	Pujari Priyanka Muttappa	
7575	Punde Trupti Ashok	
7576	Punde Shrushti Ashok	
7577	Punde Bhakti Ashok	
7578	Sagavakar Sushama Sarjerao	
7579	Sasane Aishwarya Bhagvan	
7580	Sase Sapana Bharat	
7581	Satpute Suraj Tukaram	
7582	Shaikh Yasin Samad	
7584	Shinde Mayuri Arjun	
7585	Shinde Swapnil Sardar	
7586	Shinge Alisha Jagannath	
7587	Shinge Dnyanesh Prabhakar	

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7588	Survanshi Shubhangi Sardar	
7589	Sutar Namrata Dashrath	
7590	Swami Athrav Gajanan	
7591	Swami Shivani Subhash	
7592	Thokale Rushikesh Dhanaji	
7593	Ulape Anuja Arun	
7594	Upadhye Suyog Sagar	
7595	Vibhute Rutuja Santosh	
7596	Wadeyar Anirudh Krshna	
7597	Wadkar Rushikesh Dhondiram	
7598	Yamgar Rakesh Pandurang	
7599	Ajarekar Prathamesh Bhaskar	
7600	Bachche Aomkar Prakash	
7601	Bedagkar Gauri Rahul	
7602	Bhalbar Digvijay Sushant	
7603	Chandrekar Bhushan Vinodkumar	
7604	Chavan Ramchandra Ashok	
7605	Chougale Tejaswini Bajirao	
7606	Chougule Snehal Anil	
7607	Chougule Abhinandan Mahaveer	
7608	Dayama Abhishek Ashok	
7609	Desai Sandesh Haridas	
7610	Desai Vikram Jayaram	
7611	Desai Ashwini Amarsinh	
7612	Dharaniya Jitendra Govindram	
7613	Dhonukshe Vinayak Dhanaji	
7615	Gawade Vinayak Arjun	
7616	Gharale Karan Manohar	
7617	Ghorpade Sunil Uttam	
7618	Gole Gaurav Rajaram	
7619	Golanddaj Mishab Pravej	
7620	Hiremath Seema Sharnayya	
7621	Jadhav Nikhil Sandeep	
7622	Jadhav Sanket Bajirao	
7623	Jadhav Rohit Namdev	
7624	Kadam Sainath Subhash	
7625	Kalgutkar Aakash Rajendra	
7626	Kamble Ashish Sunil	
7627	Kamble Nikhil Shashikant	
7628	Kamble Amol Bhikaji	
7629	Kamble Shivani Shankar	
7631	Kanade Priyanka Swatantryakumar	
7632	Khandekar Sandip Sukumar	
7633	Khandekar Pooja Sanjay	
7634	Khatangale Shubhangi Prakash	
7635	Khot Akash Balaso	
7636	Khude Gouri Angad	

7637	Koravi Dhiraj Keraba	
7638	Kudalkar Prajakta Shivaji	
7639	Kulkarni Trupti Ravindra	
7640	Lad Avadhut Shivaji	
7641	Latthe Sammed Rajendra	
7642	Lohar Sarjerao Ananda	
7643	Lohar Rohan Tanaji	
7644	Magar Shwetali Subhash	
7645	Magdum Aniket Sambhaji	
7646	Mahajan Yash Vikas	
7647	Mali Anurag Pundlik	
7648	Mankapure Parveen Mehamud	
7649	Methe Kishori Prakash	
7650	More Shubham Laxman	
7651	Mukanawar Mahesh Gangadhar	
7652	Mulani Subiha Husen	
7653	Mulla Moin Shoukat	
7654	Nadaf Wasim Shahjan	
7655	Nimbalkar Vishwjeet Vitthal	
7656	Padaval Vaibhav Sadashiv	
7657	Padwal Pratiksha Babasaheb	
7658	Pathan Ansar Ashapak	
7659	Patil Mandar Dnyandeo	
7660	Patil Rutuja Bharat	
7661	Patil Omkar Sanjay	
7663	Patil Jayanti Janaba	
7664	Patil Rajat Jaywant	
7665	Patil Anuja Dattajirao	
7666	Patil Saurabh Ashok	
7667	Patil Sanyogita Sanjay	
7668	Patil Vijayraj Maruti	
7669	Patil Akanksha Ashok	
7670	Patil Sujay Subhash	
7671	Patil Snehal Namdev	
7672	Patil Shilpa Shivaji	
7673	Patil Shubham Dileep	
7674	Patil Omkar Dhanaji	
7675	Patil Sankalp Vishvanath	
7676	Patil Omkar Keshav	
7677	Patil Aakansha Bhimarao	
7678	Patil Divya Ramesh	
7679	Patil Omkar Janaba	
7680	Pawar Aakash Anandrao	
7681	Phonde Vaishnavi Dinkar	
7682	Pirai Omkar Baban	
7683	Powar Mayuri Pandurang	
7684	Powar Harshdeep Deepak	

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7685	Rane Rohit Ramdas	
7686	Sawant Aarti Ashok	
7687	Sayyad Alsaba Javed	
7688	Shelar Avinash Sanjay	
7689	Shinagare Bharat Shivaji	
7690	Singh Rohit Sanjay	
7691	Sonkamble Rohan Raju	
7692	Sutar Deepak Vishvanath	
7693	Ulape Nisha Palhad	
7694	Ulape Manali Dattatray	
7695	Valunj Amarja Digambar	
7696	Velhal Vyankatesh Hemant	
7697	Yadav Durga Vaijanath	
7698	Bagwan Bebihafsa Rafik	
7699	Bansavade Omkar Devdas	
7700	Bendke Mukta Vikas	
7701	Bhandari Pratiksha Kiran	
7702	Bhatale Sachin Sakharam	
7703	Bhosale Sneha Arun	
7704	Carvalho Alex Motes	
7705	Chavan Satish Rangrao	
7706	Chokakkar Viraj Vijay	
7707	Choudhary Ruchita Pralhadray	
7708	Chougale Priyanka Bajirao	
7709	Chougale Rohit Rajendra	
7711	Dabholkar Pratik Vijay	
7712	Dalavi Pandurang Narayan	
7713	Devardekar Unmesha Sunil	
7714	Ekal Prathamesh Shivanand	
7715	Gadade Jeeavan Ankush	
7716	Gaikwad Amrita Prakash	
7717	Gavali Mansi Sunil	
7718	Ghorpade Dattatray Vishnu	
7719	Gotkhinde Shrutika Bharat	
7720	Jadhav Digvijay Suresh	
7721	Jangam Shivkrupa Pramod	
7722	Kamble Mrunali Ramesh	
7723	Kamble Snehal Balaso	
7724	Kamble Digvijay Pandurang	
7725	Kamble Pratiraj Prakash	
7727	Karale Shubham Mansing	
7728	Kasar Siddhant Shashikant	
7729	Kashidkar Kishor Balaso	
7730	Kasture Yashdeep Anand	
7731	Khambe Manisha Madhukar	
7732	Khatkale Prashant Prakash	
7734	Kodag Sneha Shivaji	

7735	Koli Sayali Santosh	
7737	Kumbhar Akshay Dadaso	
7738	Kumbhar Pratiksha Appaso	
7739	Londhe Pradnya Ashok	
7740	Marathe Kunal Sandeep	
7741	Mardane Pratiksha Shrikant	
7742	Mote Ramesh Annappa	
7743	Mullani Kashish Sameer	
7744	Nagarji Rahim Nurmahamad	
7745	Nhavi Shivanand Balesh	
7746	Nikam Sneha Bajarang	
7747	Nirmalkar Mayuri Chandrakant	
7748	Paladiya Priyanka Shantilal	
7749	Patharut Shubham Shrikant	
7750	Patil Sourabh Suhas	
7751	Patil Shivani Dilip	
7752	Patil Afanan Ashafak	
7753	Patil Akanksha Dhanaji	
7754	Patil Nishigandha Shahaji	
7755	Patil Rutuja Bhanudas	
7756	Patil Akshata Ravindra	
7757	Patil Nandini Sunil	
7758	Patil Rushikesh Eknath	
7759	Patil Rushikesh Vishwas	
7760	Patil Shivali Balaso	
7761	Patil Tejal Tanaji	
7762	Patil Saurabh Dinkar	
7764	Patil Mayuri Tukaram	
7765	Pawar Pratiksha Ramesh	
7766	Pawar Sumit Sanjay	
7767	Powar Supriya Madhukar	
7768	Powar Vaishnavi Shankar	
7769	Powar Kareena Sunil	
7770	Raghani Ritik Dinesh	
7771	Ramsing Bhagyashri Shamrao	
7772	Rathod Pramod Ramesh	
7773	Sabale Abhishek Dattatray	
7774	Sajnikar Divya Netaji	
7775	Sankpal Prajakta Bajirao	
7776	Sardesai Rutuja Rahul	
7777	Savant Komal Anil	
7778	Sharma Ankita Raviraj	
7779	Shinde Rutuja Sunil	
7780	Shinde Prajakta Ramchandra	
7782	Shinde Dhanashri Dadaso	
7783	Shinde Neha Dattatray	
7784	Shinde Abhishek Vilas	

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7785	Shinde Abhijeet Vilas	
7786	Shinde Manisha Appasaheb	
7787	Shirale Sayali Rajendra	
7788	Suryvanshi Smital Jaysingrao	
7789	Talekar Prathmesh Sambhaji	
7790	Tandale Purva Shirish	
7791	Ubale Akanksha Kumar	
7792	Vadgave Sakshi Shamsundar	
7859	Jangate Ajit Sukumar	
7860	Kadam Archiet Chandrakant	
7861	Kamble Tejashri Sambhaji	
7862	Kamble Rahul Deepak	
7863	Koundade Shubham Ravindra	
7864	Mahajan Sakshi Anil	
7865	Patil Shivam Baliram	
7866	Patil Rohan Ashok	
7867	Patil Shubham Sanjaykumar	
7868	Patil Sammed Rajgonda	
7869	Patil Pooja Ravalu	
7870	Patil Vaishnavi Dashrath	
7871	Pawar Aishwarya Chandrakant	
7872	Powar Prashant Vishal	
7873	Salunkhe Kalyani Sanjay	
7874	Sawant Bhakti Arun	
7875	Shaikh Muskan Mohiddin	
7877	Shinde Pratik Chandrakant	
7878	Sutar Vishwajeet Ganesh	
7879	Yadav Saiprasad Shrinivas	
7880	Yamgarnikar Snehal Nitin	
7881	Baganikar Sanket Suhas	
7882	Chougale Niranjanee Nandkumar	
7883	Chougale Shubham Pandurang	
7884	Ghotane Sagar Umesh	
7885	Hande Rutuja Raju	
7886	Hegade Vaishnavi Kiran	
7887	Kamble Prajakta Sundar	
7888	Kamble Yash Balu	
7889	Kamble Shubhangi Prakash	
7890	Karoshi Spurthi Mallikarjun	
7891	Kharade Nisha Narayan	
7893	Nille Aishwarya Sachin	
7894	Nimbalkar Manasi Arun	
7895	Pathare Akshata Nitin	
7896	Patil Snehal Vilas	
7897	Patil Amruta Amar	
7898	Patil Shivam Rajendra	
7899	Patil Vinod Vijay	

7900	Patil Gautam Yashwantrao	
7901	Sasne Rutvik Sambhaji	
7902	Shete Aditi Sunil	
7904	Todkar Sharvari Sanjay	
7905	Urane Rachana Raju	
7906	Valvi Rajendra Ravidas	
7907	Yadav Rutuja Deepak	
7908	Patil Shritej Subhash	
7909	Patil Abhishek Sanjay	
7910	Sasawade Shivani Bhikaji	
7911	Gurav Rutuja Ravindra	
7912	Sawant Swati Ajit	
7914	Gurav Akshay Sambhaji	
7915	Kumbhar Pranoti Sunil	
7916	Patil Nisha Bharat	
7917	Magdum Harshvardhan Rajkumar	
7918	Kesarkar Abhishek Narsingrao	
7919	Patil Sohan Ramesh	
7920	Kalugade Sourabh Ravindra	
7921	Adkurkar Supriya Balu	
7922	Sawant Rohini Vitthal	
7923	More Rutuja Bajirao	
7924	Chavan Siddhi Milind	
7925	Amate Punam Vitthal	
7926	Bharmal Pritam Prabhakar	

VIVEKANAND COLLEGE KOLHAPUR (Autonomous) ESTD JUNE 1964

Internal Examinar.....

(Dr. M.M. Karanjkar)

।। ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार ।।
– शिक्षणमहर्षी डॉ. बापूजी साळुंखे 34061
Shri Swami Vivekanand Shikshan Sanstha Kolhapur's
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor

Suppliment No. : 16/20

Roll No. : 7525

Class : B. Sc. I, Sem - II

Subject : Electricity & magnetism

Test / Tutorial No. : Internal Exam

Div. :

Q2.

2. polarization -

when dielectric is placed in an electric field, its molecules become polarised in the direction of the field dipole moment acquired per unit volume of the dielectric. Substance in the direction of the external field is defined as polarization and denoted by P.

If $\vec{P}$ is electric dipole moment of each individual molecule in the direction of polarizing field $\vec{E}$ and n is no. of molecules per unit volume of the substance. (4)

3. In vector calculus the curl also known as rotor is vector operator that describes the infinitesimal circulation of vector field in three dimensional space. The curl at point in the field is represented by vector whose length and direction denote the magnitude and axis of maximum circulation (2)

Q 1.

2. Consider rectangular dielectric block filling the space between the plates of condenser, when condenser is charged to q, uniform electric field of intensity E is produced between the plates.

$$\therefore q' = q\left[1 - \frac{1}{K}\right]$$

$$\therefore q = \frac{q}{K} + q'$$

$$\therefore \frac{q}{A} = \frac{q}{KA} + \frac{q'}{A}$$

$$\therefore \frac{q}{A} = \varepsilon_0 \cdot \frac{q}{\varepsilon_0 KA} + \frac{q'}{A}$$

$$\therefore \frac{q}{\varepsilon_0 KA} = E$$

$\therefore \frac{q'}{A}$ = Surface density of polorization charges.

$\therefore \frac{q'}{A} = \sigma_P = P =$ polarization

$$\therefore \frac{q}{A} = \varepsilon_0 E + P \quad \text{---} \quad (1)$$

The quantity $(\varepsilon_0 E + P)$ is called dielectric displacement denoted by D

$$\therefore D = \varepsilon_0 E + P \quad \text{——(2)}$$

$\therefore$ P is vector in the dirⁿ of E and hence D also is a vector in direction of E

$$\bar{D} = \varepsilon_0 \bar{E} + \bar{P} \quad \text{——(3)}.$$

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।। ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार ।।
– शिक्षणमहर्षी डॉ. बापूजी साळुंखे
34059
Shri Swami Vivekanand Shikshan Sanstha Kolhapur's
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

-18
20

Signature of Supervisor

Suppliment No. :
Roll No. : 7533
Class : B Sc-I, sem-II

Subject : Electricity & magnetism
Test / Tutorial No. : Internal exam
Div. :

Q.2)

2) Polarization-

When a dielectric is placed in an electric field, its molecules become polarised in the direction of the field. The total electric field dipole moment acquired per unit volume of the dielectric substance in the direction of the external (polarising) field is defined as the polarization and is denoted by P. It is vector quantity and is in the direction of the polarising field $\vec{E}$. Its S.I unit is coulomb/meter^2. (C/m^2).

If $\vec{p}$ is the electric dipole moment of each individual molecule in the direction of the polarising field $\vec{E}$ and n is the number of molecules per unit volume of the substance, then $\vec{P} = n\vec{p}$. The charge polarity and 2l is the distance between the poles of an electric dipole.

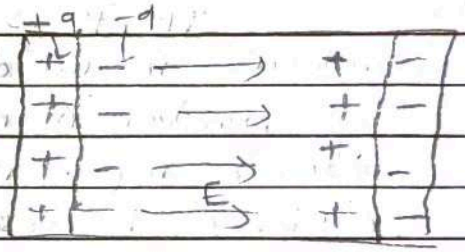
Q.2>

3> In vector calculus, the curl also known as rotor, is a vector operator that describes the infinitesimal circulation of a vector field in three-dimensional space. The curl at a point in the field is represented by a vector whose length and direction denote the magnitude and axis of the maximum circulation. The curl of a field is normally defined as the circulation density at each point of the field.

4> A vector field whose curl is zero is called irrotational. The curl is form of a differentiation for vector fields. The corresponding form of the fundamental theorem of Stokes theorem.

Q.1>

2> Consider a rectangular dielectric block filling the space between the plates of a condenser. When the condenser is charged to q, uniform electric field of intensity E is produced between the plates. If A is the area of each plate and K is the dielectric constant of the block then.



$$q' = q\left(1 - \frac{1}{k}\right)$$

$$q = \frac{q}{k} + q'$$

$$\frac{q}{A} = \frac{q}{kA} + \frac{q'}{A}$$

$$\frac{q}{A} = \varepsilon_0 \cdot \frac{q}{\varepsilon_0 kA} + \frac{q'}{A}$$

But $\frac{q}{\varepsilon_0 kA} = E$

$\frac{q'}{A}$ = Surface density of polarization charges,

Hence, $\frac{q'}{A} = \sigma_p = P$ = Polarization.

$$\therefore \frac{q}{A} = \varepsilon_0 E + P \quad \text{---} (1)$$

The quantity $(\varepsilon_0 E + P)$ is called the electric displacement and is denoted by D.

$$\therefore D = \varepsilon_0 E + P \quad \text{---} (2)$$

P is a vector in the direction of E hence D also is a vector in the direction of E. Hence.

$$\vec{D} = \varepsilon_0 \vec{E} + \vec{P} \quad \text{---} (3)$$

Since eqn (2) & (3) we see $D = q/A$, the electric displacement D is due to the charge q given to the condenser. This charge is called free charge. Thus D is due to the free charge only.

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