

"Dissemination of Education for Knowledge, Science and Culture" - Shikshanmaharshi Dr. Bapuji Salunkhe Shri Swami Vivekanand Shikshan Sanstha's

## Vivekanand College, Kolhapur

(Autonomous).

Department of Physics Value Added Course on Basic Instrumentation in Physics 1<sup>st</sup> August 2023 to 30 October 2023

**Course Duration : 3 Months** 

**Course Coordinator** 

Dr. G. J. Navathe

Head

Dr. S. S. Latthe

Principal

Dr. S. Y. Hongekar

Shri Swami Vivekanand Shikshan Sanstha's Vivekanand College (Autonomous), Kolhapur. Department of Physics (2019-2020)

Syllabus for Value Added Course (Basic Instrumentation Course) Total Course hours: 30

Credit: 1

#### Unit: I

#### Least Count of Instruments:

Vernier caliper, Micrometer screw gauge, Sperometer, Meter scale, Spectrometer, Travelling microscope, Optical bench, Volt meter, Current meter, Galvanometer

#### Unit: II

#### **Study of Instruments:**

Traveling microscope, Spectrometer, Optical bench, Ballistic Galvanometer, Sextant instrument, Telescope,

#### Unit: III

#### Study of electronics and electricity:

Use of multimeter, Testing of Components, Use of CRO, Use of Audio frequency generator, To check the fuse, Continuity of wire.

#### Unit: IV

#### **Designing of electrical circuit:**

Calculation for values of resistance, capacitors, voltage etc. current components, circuit shouldering on chases, preparation of printed circuit borad (PCB).

Unit: V **Field Visit**  (7)

(8)

(7)

(8)

## "Dissemination of Education for Knowledge, Science and Culture" - Shikshanmaharshi Dr. Bapuji Salunkhe Shri Swami Vivekanand Shikshan Sanstha's Vivekanand College, Kolhapur (Empowered Autonomous). **Department of Physics Basic Instrumentation Course in Physics** Academic Year 2023-24 **Students List**

Sr. No.	Students Name	Mobile No.	Fee	Sign
1.	Biranje Sakshi Raju	8623046106	500/-	SR. Broonje
2.	Dadarne Gaurav Ajit	9146590797	500/-	G. Podarne
3.	Desai Surekha Tanaji	8208059495	500/-	sdesay
4.	Kognolikar Atharv Hariprasad	9637222424	500/-	DHK .
5.	Mude Tanishq Anil	8007909983	500/-	T.Mude
6.	Nishad Ritu Ramhari	9422495833	500/-	Rim
7.	Patil Riya Dattatray	9112924510	500/-	13. Autri
8.	Patnekar Sahil Chetan	7249777079	500/-	Sahil P
9.	Savtekar Ritesh Shekhar	9049261751	500/-	at the
10.	Ranmale Samruddhi Subhash	7276431136	500/-	Samuelli

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Shri Swami Vivekanand Shikshan Sanstha's

## Vivekanand College, Kolhapur (Empowered Autonomous).

## **Department of Physics**

## **Basic Instrumentation Course in Physics**

## Attendance Sheet

Sr. No.	Students Name	14/09/23	15/09/23	21/09/23	22/09/23	29/09/23	30/09/23	6/09/23	7/09/23
1.	Biranje Sakshi Raju	S.R. Bixonje	6.R. Boranje	S.A. Bizagie	5.R. Biogrije	SABRONIE	5 morale	SR Boonje	5R.BOODJ-
2.	Dadarne Gaurav Ajit	(Dadarre	G. Dadours	(Dador	G Dador	Dador	( Odan	(J. Dadarr	62 adore
3.	Desai Surekha Tanaji	Edescu	Edesal	Edesal	Edesaí	Edescui	Folesai	Edesai	
4.	Kognolikar Atharv Hariprasad	B1K -	BAK-	ATK.	DAK.	ALL	AHC	DHS-	DUC.
5.	Mude Tanishq Anil	T.Mude.	T.Mude	T.Mude	T. Mude	T. Mude.	T. Mude	T.Mude	T. Mude
6.	Nishad Ritu Ramhari	Pity	Citus	Rily	Right	Rith	Rive	april	2itu
7.	Patil Riya Dattatray	Repetil	Parfutil	Bipatil	Paratle	Paratil	Reputil	Bratil	TEADU
8.	Patnekar Sahil Chetan	Sahill	Schill	SahilP	SahilP	Sahil	Sahill	SahilP	Schill
9.	Savtekar Ritesh Shekhar	alt	enter	att	all	at	rat	rates	rate
10.	Ranmale Samruddhi Subhash	Sanurudhi	Sumredhi	Janudhi	Sanrudhi	Junnel	Samrudhi	Samual	Samrudh
11.						3			
12.				Sec.					Reg. and

Shri Swami Vivekanand Shikshan Sanstha's

## Vivekanand College, Kolhapur (Empowered Autonomous).

### **Department of Physics**

### **Basic Instrumentation Course in Physics**

## Attendance Sheet

Sr. No.	Students Name	10/08/23	11/08/23	17/08/23	18/08/23	24/08/23	25/08/23	08/09/23	09/09/23
1./	Biranje Sakshi Raju	5.R.Bizanje	S. B. Boonle	S.R. Stoonle	SREEMAN	S.R. Bisarys	S. R. Bronje	Sillebronje	6 R. Breanje
2.	Dadarne Gaurav Ajit	Gondarin	G. Dadar	G. Dadaars	& Dadwin	G. Dadour	Ep adau	(p. Dados	(P.D adante
3.	Desai Surekha Tanaji	Edesai	Edesai	Edesci	<u>Falesai</u>	Edesai	Edesai	Flasai	Edesai
4.	Kognolikar Atharv Hariprasad	Alk.	Atte -	park -	Att.	DIK.	Atte.	DK.	pik.
5.	Mude Tanishq Anil	T. Mude	T.Mude	T.Mude	T.Mude	T.Mude	T. Mude	T. Mude	T.Mude.
6.	Nishad Ritu Ramhari	Ritur	Zin	RIM	Que	Rim	Rity	Kity	Rim
7.	Patil Riya Dattatray	Brati	Paratil	Balatil	Bulatil	12 Patil	Bulltil	Bulatil	Bratil
8.	Patnekar Sahil Chetan	Soule	Sabil	Sanite	Sabil	Salaip	Sahilf	Sahip	Sanit
9.	Savtekar Ritesh Shekhar	Plate	Tall	- Alle		ratt	. at	Tab	atto
10.	Ranmale Samruddhi Subhash	Samerulli	Sanvedhi	Samrudhi	Janudhi	Januali	Samuell	Samrudh	Sonrudha
11.				and k					
12.			and the second						And Alexander

Roll No. 77.33	
	"Education for Knowledge, Science and Culture" -Shikshanmaharshi Dr. Bapuji Salunkhe ari Swami Vivekanand Shikshan Sanstha, Kolhapur
Vivekanand College, Kol	hapur (Autonomous)
	Department of Physics Value Added Course Examination
Bas	ic Instrumentation course in physics
Date: 14/10/2023	Total Marks: 20
Time:10:30 am to 11:30 a	am Charles Patrokar
Student's Name : Sani	1 Chetan Patnekor (20)
Student's Name : Gahil Student's Sign :	
Jr. Supervisor Sign:	
Q.1) Select correct alter	native (20)
1) In microphone	nverts into electrical energy
a)sound	b)light
c)laser energy	d) magnetic field
2) The 'S' energy levels are al	ways
a)double	b)triple
c)single	d)multiple
3) Doublet separation	with increase of atomic number
a)increases	b)decreases
O c)remain same	d)becomes zero
4) Principal quantum number	'n' defines the position of electron in
Ô∑ a)Shell	ط)Subshell
c)nucleus	d)outermost orbit
5) Normal Zeeman effect is o	observed when atom is placed infield
a)Weak magnetic	b)strong magnetic
c)weak electric	d)strong electric
6) Hamilton's principle is	
a) differential	b) integral
c) an algebraic	d) summation
7) The shortest distance betwee	een two points in a plane is along a passing through the two points
a) curve	b) normal to plane
c) straight line	d) circle
8) X-rays are the w	
a)electromagnetic	b)longitudinal
c)mechanical	d)elastic



9) Characteristic X-rays depend of	
a) target material	b) wavelength
c) frequency	d) energy of cathode rays
V	on of uranium is about
a)100 MeV	b)200 MeV
c)400 MeV	d) 150MeV
11)is the source of ste	
a)Nuclear fusion	b)Nuclear fission
c) chain reaction	d)heavy water
12) The Carbon-Nitrogen cycle of	contribution about percentage to the total solar energy
a)5 b)	25 c) 10 d) 20
N N	me in the fixed and the rotating system
a) velocity	b) linear acceleration
c) angular acceleration	d) momentum
14) The frequency of antisymme	etric mode is frequency of symmetric mode.
a) higher than	b)lower than
c) lowest than	d)zero
15)The trajectory of a particle en	ntering an electric field in a direction perpendicular to $\vec{E}$ is
a) straight line parallel to	$\vec{E}$ b) parabola
c)hyperbola	d)circle
16) If $\emptyset$ is scalar potential fund	ction then following equation represent Laplace's equation
a) $\nabla^2 \phi = 0$	$\nabla^2 \phi = \rho/\epsilon_0$
c) $\nabla \phi = 0$	d) $\nabla \phi = \rho/\epsilon_0$
17) Mathematical formulation of	of empirical laws in electricity and magnetism are known as
a) Lagrangian's equation	
c) Lorent'sz equations	d) Newton's equations
	in accordance with the law of conservation of
$\lambda$ a) energy	b) momentum
c) charge	d)angular momentum
	unit volume of polarized medium is called
a) Displacement vector I	
c) Magnetization M	
A set of the	d) Electric intensity vector E
to the total current I	uital law the line integral of magnetic induction B around closed path is equal enclosed by the closed path
a) twice	
c) $\mu_0/2$ times	$b$ $\mu_0$ times
-> For 2 cititop	d) $\mu_0/4$ times



Roll No. 7725	"Education for Knowledge, Science and Culture" -Shikshanmaharshi Dr. Bapuji Salunkhe ri Swami Vivekanand Shikshan Sanstha, Kolhapur hapur (Autonomous) Department of Physics
	Value Added Course Examination
Date: 14/10/2023	ic Instrumentation course in physics Total Marks: 20 m <u>Shekhar Savitckar</u>
Student's Sign :	The second se
Jr. Supervisor Sign:	fell
Q.1) Select correct altern	
1) In microphonecon	
asound	b)light
c)laser energy	d) magnetic field
2) The 'S' energy levels are alw	
a)double	b)triple
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4) Principal quantum number 'r	a' defines the position of electron in
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5) Normal Zeeman effect is ob-	served when atom is placed infield
a)Weak magnetic	b)strong magnetic
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6) Hamilton's principle is	principle
differential	b) integral
c) an algebraic	d) summation
7) The shortest distance between	n two points in a plane is along a passing through the two points
a) curve	b) normal to plane
straight line	d) circle
8) X-rays are the way	ves
electromagnetic	b)longitudinal
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9) Characteristic X-rays depend on		
a) target material	b) wavelen	gth
c) frequency	d) energy of cathoo	de rays
10) The energy released per fission of ur	anium is about	
a)100 MeV	<u>ل)</u> 200 MeV	r
c)400 MeV	d) 150MeV	· · · · · · · · · · · · · · · · · · ·
11)is the source of stellar ener	·gy	
a)Nuclear fusion	b)Nuclear f	fission
🛇 🏂 c) chain reaction	d)heavy wa	iter
12) The Carbon-Nitrogen cycle contribu	tion about perce	entage to the total solar energy
a)5 b) 25	c) 10	Vd)-20
13) of a particle is same in the	ne fixed and the rotating sy	stem
a) velocity	b) linear acceleration	
c) angular acceleration	d) momentum	
14) The frequency of antisymmetric mo	de is frequency of	f symmetric mode.
a) higher than	b)lower than	
e) lowest than	d)zero	
15)The trajectory of a particle entering a	n electric field in a direction	on perpendicular to $\vec{E}$ is
a) straight line parallel to $\vec{E}$	-b) parabola	
c)hyperbola	d)circle	
16) If $\emptyset$ is scalar potential function the	en following equation repre	sent Laplace's equation
$a) \nabla^2 \phi = 0$	b) $\nabla^2 \phi = \rho/\epsilon_0$	
c) $\nabla \phi = 0$	d) $\nabla \phi = \rho/\epsilon_0$	
17) Mathematical formulation of empiri	ical laws in electricity and	magnetism are known as
a) Lagrangian's equations	ь) Maxwell's equation	ons
c) Lorent'sz equations	d) Newton's equatio	ns
18)The equation of continuity is in account	rdance with the law of con	servation of
a) energy	b) momentu	m
c) charge	(d)angular m	omentum
19) Electric dipole moment per unit volu	ime of polarized medium i	s called
a) Displacement vector D	b) Polarizati	on vector P
<del>دع)</del> Magnetization M	d) Electric i	ntensity vector E
20) According to Ampere's circuital law	the line integral of magne	tic induction B around closed path is equal
to the total current I enclosed	d by the closed path.	
twice	νδ) μ <sub>0</sub> times	
c) $\mu_0/2$ times	d) $\mu_0/4$ time	25

Roll No. 7758	
"E	ducation for Knowledge, Science and Culture'' -Shikshanmaharshi Dr. Bapuji Salunkhe wami Vivekanand Shikshan Sanstha, Kolhapur
Vivekanand College, Kolhaj	our (Autonomous)
V	Department of Physics Talue Added Course Examination
	Instrumentation course in physics $(12/20)$
Date: 14/10/2023 Time:10:30 am to 11:30 am	Total Marks: 20 Ianiprasad Kognolikar
Student's Sign : _ Atk	
Jr. Supervisor Sign:	Junit
Q.1) Select correct alternat	
1) In microphoneconver	ts into electrical energy
ajsound	b)light
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La)double	b)triple
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(a) differential	b) integral
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c)mechanical	

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c)-frequency	d) energy of cathode rays				
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A. a)Nuclear fusion	b)Nuclear fission				
c) chain reaction	d)heavy water				
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$\checkmark$ c) lowest than	d)zero				
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16) If $\emptyset$ is scalar potential function the	nen following equation represent Laplace's equation				
$a)\nabla^2 \phi = 0$	b) $\nabla^2 \phi = \rho/\epsilon_0$ d) $\nabla \phi = \rho/\epsilon_0$				
$ \bigcirc \checkmark \qquad \begin{array}{c} a) \nabla^2 \phi = 0 \\ c) \nabla \phi = 0 \end{array} $	d) $\nabla \phi = \rho/\epsilon_0$				
17) Mathematical formulation of empiri	irical laws in electricity and magnetism are known as				
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c) charge	<u>d)angula</u> r momentum				
19) Electric dipole moment per unit vol	lume of polarized medium is called				
a) Displacement vector D	b) Polarization vector P				
$\sim$ $\sim$ c) Magnetization M	d) Electric intensity vector E				
20) According to Ampere's circuital law	w the line integral of magnetic induction B around closed path is equal				
to the total current I enclose	ed by the closed path.				
a) twice	b) $\mu_0$ times				
$O(c) \mu \sigma/2$ times	d) $\mu_0/4$ times				





Shri Swami Vivekanand Shikshan Sanstha's **Vivekanand College, Kolhapur (Empowered Autonomous)** Affiliated to Shivaji University NAAC accredited "A" College with potential excellence ISO 9001 2015



# Department of Physics CERTIFICATE

This is to certify that Mr/Mrs/Miss Mr. Savtekar Ritesh Shekhar of Class B.Sc. II

has completed value added course in "Basic Instrumentation Course in Physics" conducted by Department of Physics, Vivekanand College, Kolhapur (Empowered Autonomous), Maharashtra, India during academic year 2023-24.

Grandha

Co-ordinator (Dr. G. J. Navathe)

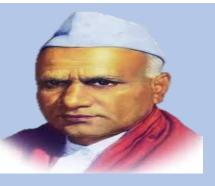


IQAC Coordinator (Dr. Shruti Joshi)

Principal (Dr. R. R. Kumbhar)



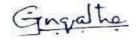
Shri Swami Vivekanand Shikshan Sanstha's **Vivekanand College, Kolhapur (Empowered Autonomous)** Affiliated to Shivaji University NAAC accredited "A" College with potential excellence ISO 9001 2015



# Department of Physics CERTIFICATE

This is to certify that Mr/Mrs/Miss Mr. Patnekar Sahil Chetan of Class B.Sc. II

has completed value added course in "Basic Instrumentation Course in Physics" conducted by Department of Physics, Vivekanand College, Kolhapur (Empowered Autonomous), Maharashtra, India during academic year 2023-24.



Co-ordinator (Dr. G. J. Navathe)

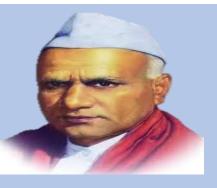


IQAC Coordinator (Dr. Shruti Joshi)

Principal (Dr. R. R. Kumbhar)



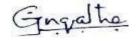
Shri Swami Vivekanand Shikshan Sanstha's Vivekanand College, Kolhapur (Empowered Autonomous) Affiliated to Shivaji University NAAC accredited "A" College with potential excellence ISO 9001 2015



# Department of Physics CERTIFICATE

This is to certify that Mr/Mrs/Miss Mr. Kognolikar Athary Hariprasad of Class B.Sc. II

has completed value added course in "Basic Instrumentation Course in Physics" conducted by Department of Physics, Vivekanand College, Kolhapur (Empowered Autonomous), Maharashtra, India during academic year 2023-24.



Co-ordinator (Dr. G. J. Navathe)



IQAC Coordinator (Dr. Shruti Joshi)

Principal (Dr. R. R. Kumbhar)