

SIR P. T. SCIENCE COLLEGE, MODASA

Affiliated with

Hem. North Gujarat University, PATAN

PHYSICS

DEPARTMENT

STAFF PROFILE

No.	Name	Joining Date	Qualification	Designation
1	Dr. R.H. Parmar	22-11-1993	M. Sc., Ph. D.	Asso. Prof. & Head
2	Dr. J. H. Prajapati	05-10-1995	M.Sc., B. Ed., Ph. D.	Asso. Prof.
3	Mr. G. L. Vekaria	11-07-2009	M. Sc., M. Phil., B. Ed	Assi. Prof.
4	Mr. H. A. Patel	25-09-2009	M.Sc., B. Ed.	Assi. Prof.
5	Miss Anika M Patel	22-07-2016	M.Sc.	Adhoc (Adhyapak)
6	Mr. K. M. Prajapati	15-06-1998	B. Sc.	Lab Assistant
7	Mr. S. M. Pandya	15-09-1987	10 + ITI	Electrician
8	Mr. K. G. Kadiya	15-06-1998	S.S.C.	Peon

STAFF PROFILE

1. Dr. R.H.PARMAR

(Head & Asso. Professor)

M.Sc.

1992- S.P. Uni. VV Nagar

Ph.D.

2003 - S.P. Uni. VV Nagar

Teaching Experience

25 Years(UG), 10Years (PG)

**Seminar/Workshop/
Conferences Attended**

8(from 2009) ,Total-22

**-Paper Presented in
International Symposium on
Nuclear Physics**

-BARC MUMBAI 2009

**-Paper presented in
International Conference on
Technology and**

-Visnagar (ICTM-2017)

.....Continue Dr. R.H.PARMAR

Member	Board of studies in Physics HNG Uni, Patan
Paper Published /Proceeding	03
Popular Lectures Delivered on “ <i>God Particle</i> ”	-- HNSB Science College Himmatnagar -2012 -- In Teacher’s Training Programme at sarsvati school, Modasa 2014 -- Science College Modasa 2012
Popular Lectures Delivered on “ <i>Gravitational Waves</i> ”	- Science College Modasa 2016

2. Dr. J. H. PRAJAPATI (Associate Professor)

M.Sc.	1994 H.N.G.Uni.,PATAN
B. Ed.	1995 H.N.G.Uni.,PATAN
Ph. D.	2007 - S.P. Uni. VV Nagar
UG Teaching Experience	22+ Years
PG Teaching Experience	Dept. of Physics HNGU Patan (2004-05 & 2008-09) M N Sci. College, Visnagar, (2005-06 to 2006-07)

.....Continue

Dr. J. H. PRAJAPATI

**Text Books for B Sc
Programme (HNGU Uni.)**

**09
(Bhautik Prakashan, Modasa)
05 in English Medium
04 in Gujarati Medium**

CO-Coordinator (NAAC)

**Sir P T Science College,
Modasa**

**NSS Programme officer
(National Service Scheme)**

**From 1997 to 2016,
Sir P T Science College,
Modasa**

**Worked as a NSS Advisory
Committee Member**

**2006-07 to 2008-09
H.N.G.Uni., PATAN**

**Life member of Indian
Association of Physics Teacher,
Kanpur (UP)**

Number: IAPT 9423 L 5777

.....Continue

Dr. J. H. PRAJAPATI

Conference/ Seminar/ Symposium/Workshop
Attended

05

❖ Participation In NSS Seminar/ Workshop

11

❖ Judge in Science Fair - School Level

04

❖ Worked as a Interview Expert in Various
Institutes (School and Colleges)

04

❖ Lectures Delivered in Various Places/
Institutions

06

...Continue Dr. J. H. PRAJAPATI

Community services

**Shibir Sanchalak of Uni Level NSS Shibir
3,4/02/2007 - Desaster Management Shibir
30,31 Jan. 2016 Youth Leadership Training Camp**

**Nodal Officer (NSS) , Arvalli District (From 2014-15...
(Svachcha Bharat Gramin Abhiyan)**

**Organize Several Annual NSS camp (7 Days or 10 Days) in
Adopted Villages as a Programme Officer.**

**Worked as Aravalli District Co-Ordinator of 150th Birth
Anniversary of Swami Vivekananda (2012-13) Event organize
- Samuhik Suryanamaskar, Bharat Jago Dod, Shobha Yatra**

- *First Prize winner in State Level NSS Day Celebration PPT presentation on “My NSS Unit and adopted Village” competition organized by Dept of Higher Education Dept., Government of Gujarat, on 22-24 Sept 2013.*
- *Act as a Team Manager of NSS Gujarat Team for 17TH NATIONAL YOUTH FESTIVAL (12-16 January-2012) at Mangalore (Karnataka) organized by Ministry of Youth Affairs & Sports, Gov of India.*
- *Second Prize Winner in KHEL MAHAKUMBH – 2013, (ABOVE 16 & UNDER 45)in YOGA at District Level, organized by Sports, Youth & Cultural Dept of Government of Gujarat.*
- *Act as an ADVISER for Gujarat Public Service Commission (GPSC) for Interview, post of of Lecturer, Physics for Govt. Polytechnic College, CLASS-II on 23-26 September 2016.*
- *Worked as a master yog Trainer on world Yog Day celebration from last 3 year. Give Training to school teacher and College Teacher.*

3. Mr. G. L.Vekaria (Assistant Professor)

B.Sc.	1989 - Saurashtra University
M.Sc.	1991 - Bhavnagar University
B. Ed.	1993 - Saurashtra University
M. Phil.	1999-Saurashtra University
UG Teaching Experience	24 Years
No. of seminar/ conference/ workshops Attended	56
No. of paper presented	12
Training & shibir	4

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Science Communicator

Promote Science Education in Schools, Colleges and Society by various activities

National Standard Examination's (NSE's)

Prof. In-charge of center GJ - 166

National Graduate Physics Examination (NGPE)

Prof. In-charge of center G 3627

Madhava Mathematics Competition

Sabarkantha and Aravalli district Coordinator

Ramanujan Ganit Spardha and Regional Mathematics Olympiad Competition

Sabarkantha and Aravalli district Coordinator

National Standard Examination's (NSE's)

Local Coordinator Kota (Rajasthan) 2012-14

Life member

- IAPT KANPUR

- Indian Photonic Society CUSSET Cochin

NMEICT(MHRD) TRAINING

- **Two-week ISTE Workshop on Control Systems IIT Khargpur, NME ICT (MHRD Govt. of India) December 2014.**
- **Two –Week ISTE STTP on Engineering Physics Conducted By IIT Bombay under the NMEICT(MHRD) At Rajkot 8 to 18 December 2015**

EC MEMBER

- **IAPT Regional Council -7 Gujarat. Jan.2010-1012**
- **Indian Association of Physics Teachers –India. Jan.2012-1015**
- **IAPT Regional Council -7 Gujarat. Jan.2016-1018**

MEMBER OF ~~AAA~~ PEER TEAM KCG ,GOVT. OF GUJARAT

ICT ONLINE TEACHING

<http://mazharlaliwala.wordpress.com/2011/11/11/gausss-law-by-prof-g-l-vekaria/>

<http://glv2008.blogspot.in/2011/11/atoms-are-composed-of-three-particles.html>

<http://glv2008.webs.com/>

NATIONAL LEVEL CONTRIBUTION

- Evaluator NSEP first screening test in selection of INDIAN TEAM for the 45th International Physics Olympiad organized in Asanta, Kazakistan July 2014.**
- Trainer the official INDIAN TEAM for Asian Physics Olympiad (APhO-2015)organized in Zhejiang University Hangzhou, China May 2015.**
- Trainer the official INDIAN TEAM for International Physics Olympiad (INPhO- 2015) organized in Mumbai June 2015.**

4. Mr. H. A. Patel (Assistant Professor)

B.Sc.

1987 - Guj. Uni. Ahmedabad

M.Sc.

1989 - Guj. Uni. Ahmedabad

B.Ed.

1990 - Guj. Uni. Patan

Teaching Experience

24 Years

Life member

IAPT

Incharge

Voter Registration &
Awareness Programme

Co-ordinator

NSE's Exam 2012-14

.....Continue

Mr. H. A. Patel

Computer Knowledge

CCC+PASS

No. of seminar/conference/workshops

Attended – 17

No. of paper presented & Published – 04

At JUIT University Uni. Simlala

XYZ\p

Training & shibirs - 4

XYZ\RESUME HAP.doc

5. Miss Anika Patel (Adhok)

International Young Scientist Conference May 8-8,2017

Department Output

Department started T. Y. B. Sc Physics in year 2015-16 on SELF-FINANCE Basis

- **PATEL KINAL** Obtained First position in the college in all subject with 9.0 Grad Point in year 2015-16.
Four more Students have also obtained above 8.5 Grade Point.
- **SHAIKH GOSIYA** Obtained First position in the college in all subject with 9.08 Grad Point and second position in HNGU in year 2016-17.

Result Sem – V & VI

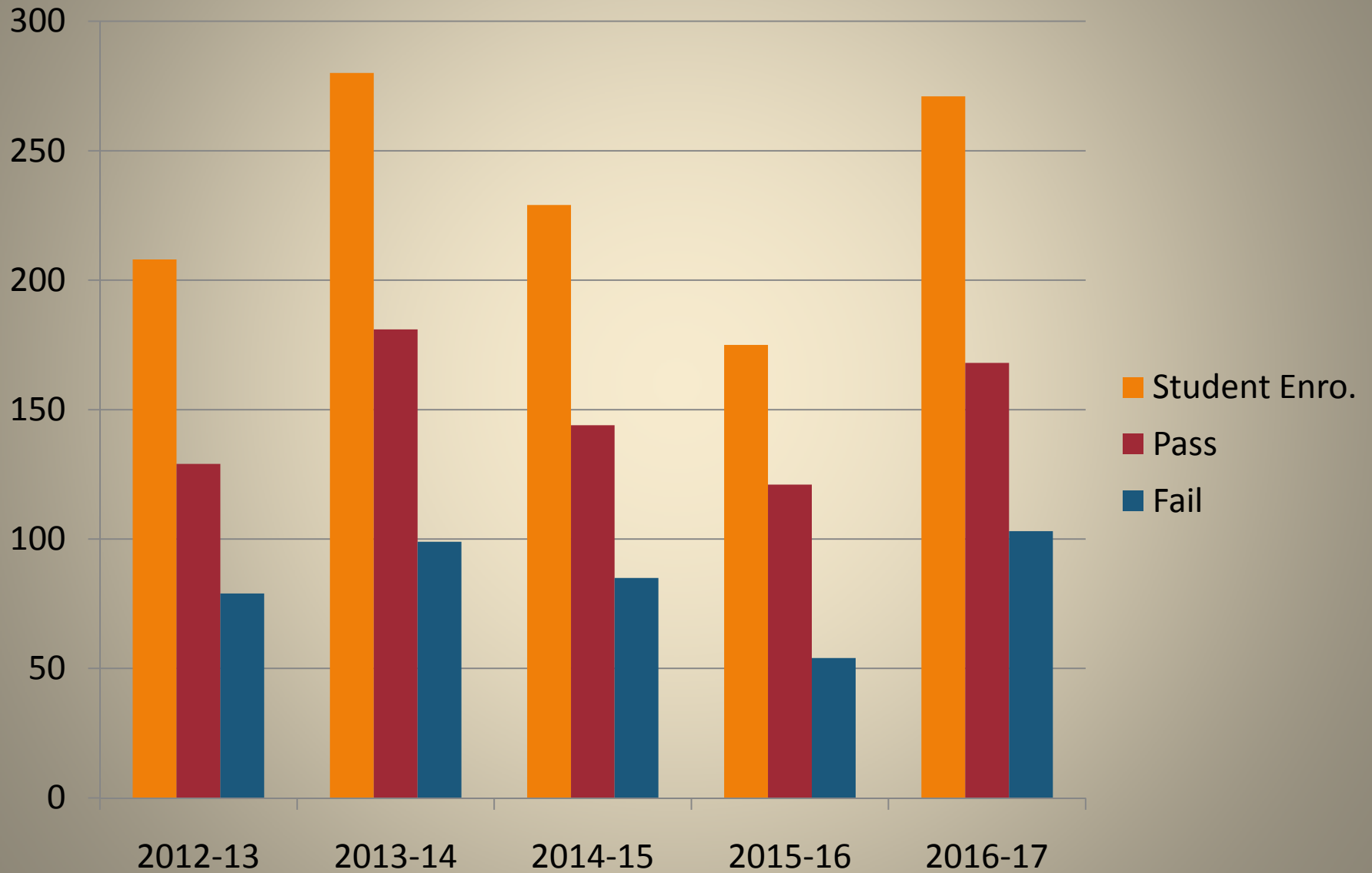
year	Students Strength	First Dist	First	Second	Pass	Fail	Result
2015-16	34	9	10	9	4	2	94.17 %
2016-17	20	7	5	4	0	4	75%

Sir P.T.Science College, Modasa
B.Sc.Sem. - 5th & 6th PHYSICS - 2015-16

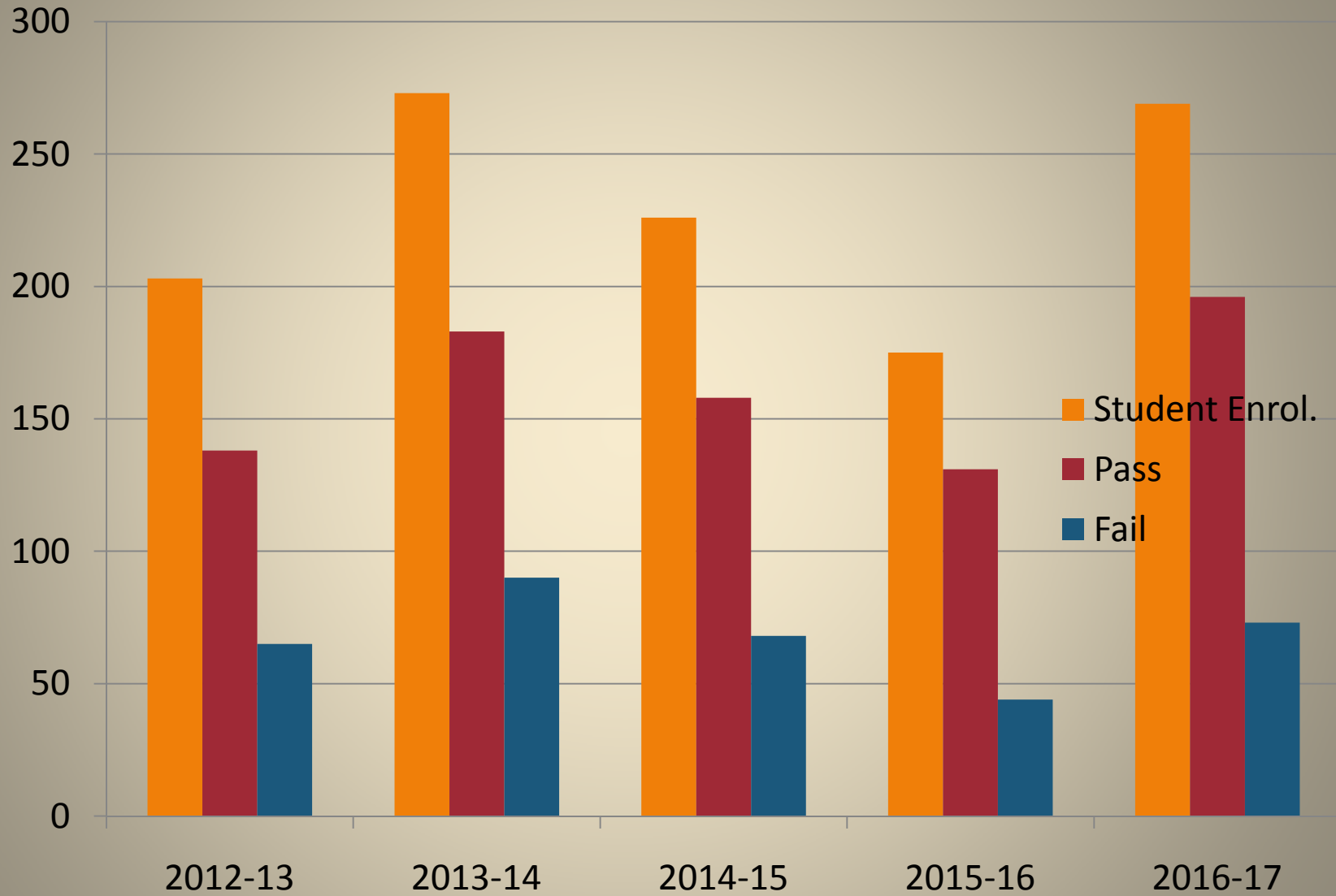


First Batch of B Sc Physics 2015-16

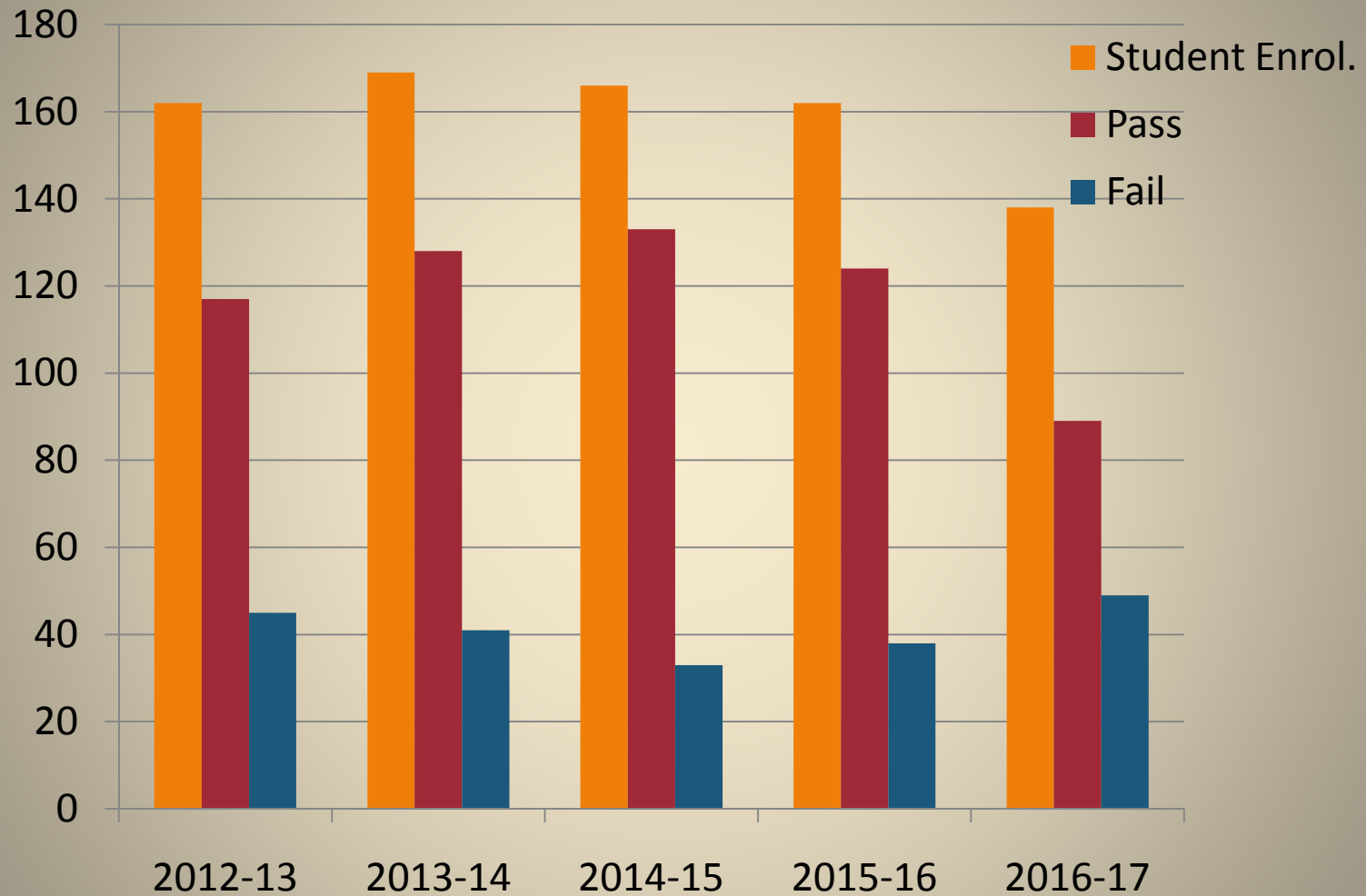
Result Sem - I



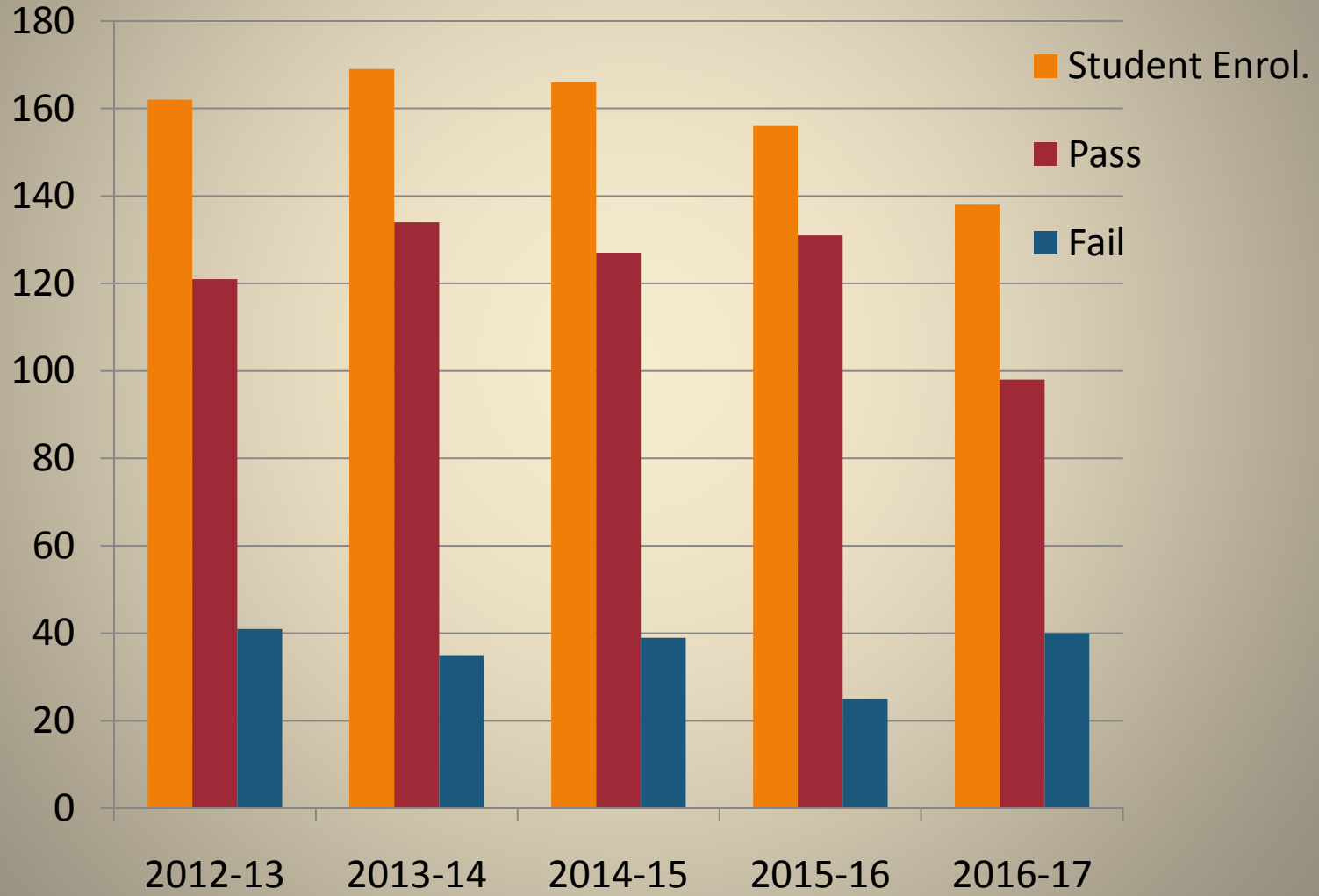
Result Sem - II



Result Sem - III



Result Sem - IV



Student Advanced Activities

Selected for Advanced B. Sc (Physics) Summer Programme – VASCSC Ahmedabad Duration 21 Days	-- Amita R Parmar May 2009 -- Hani R Patel May 2014 -- Rajan K Panchal 2015
State Level Seminar on Role of Physics In Medical Sciences Rajkot	-- Poster Presentation by 10 Students February 2015
Science Exhibition at Govt. Science College Gandhinagar March 2015	-- Haresh G Parmar -- Bhavesh J Parmar
99 th Indian Science Congress Bhubaneswar December 2011	-- Janak P Upadhyay With Prof. G L Vekaria
IAPT Sponsored Regional Level Poster Competition 2015	-- Poster Presentation by 20 Students
IAPT Sponsored Regional Level Poster Competition 2016	-- Poster Presentation by 23 Students and two students

Costly and Rarely Available Instruments Using In T.Y. B. Sc Physics Laboratory

G M Counter



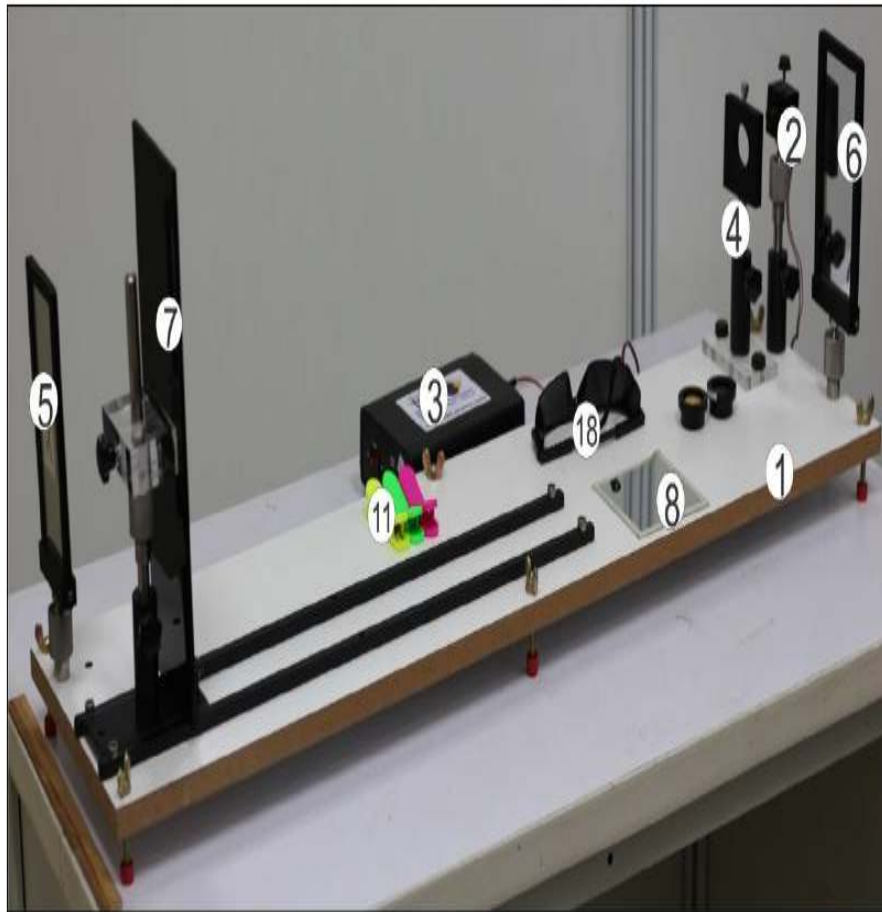
Michelson Interferometer



International Level Experiment Kit Provided by HBCSE TIFR MUMBAI

Care taker - Prof. G. L. Vekaria

Diffraction due to Helical Structure



Diffraction due to surface tension waves on water

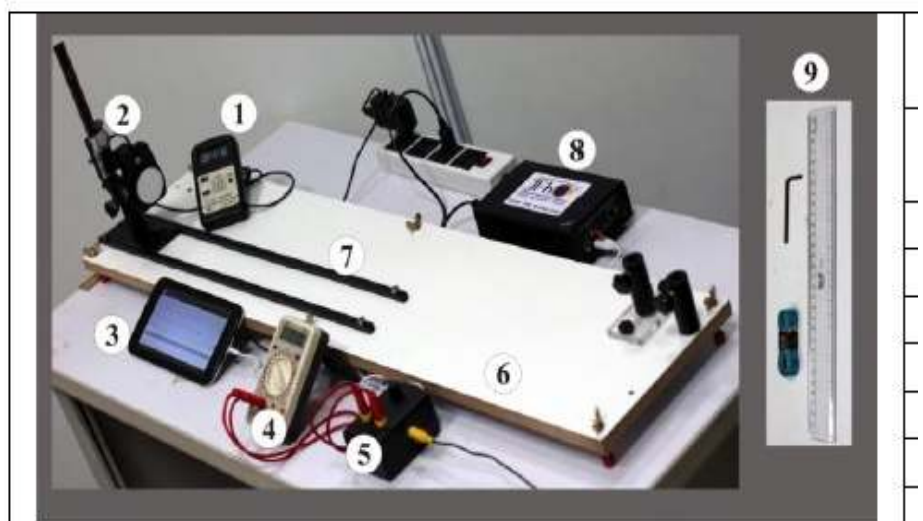


Figure 1: Wooden



होमी भाभा विज्ञान शिक्षा केन्द्र
HOMI BHABHA CENTRE FOR SCIENCE EDUCATION
TATA INSTITUTE OF FUNDAMENTAL RESEARCH
National Centre of the Government of India for Nuclear Science and Mathematics
V. N. Purav Marg, Mankhurd, Mumbai – 400 088.

Fax: 091-22-2556 6803
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☎ : + 91-22-2558 0036, 2555 5242
2556 7711 / 2555 4712

Ref.: HBCADMN/PROG/2.4 - IPhO/

March 21, 2016


To Whomsoever It May Concern

Homi Bhabha Centre for Science Education is a National Centre of the Tata Institute of Fundamental Research which is an autonomous research Institute fully funded by the Department of Atomic Energy, Government of India.

Homi Bhabha Centre for Science Education (HBCSE) had developed experimental kits for the International Physics Olympiad organised by HBCSE in July 2015. HBCSE is giving away these kits for purely educational purpose with no commercial intent. The insurance value of this consignment is Rs.10,000/-.

This is to certify that at the time of packing at our end, the experimental kit consisted of wooden bases, metallic stand, electronic and other measuring instruments. We have removed all the batteries at the time of packing and thus the experimental kit consists of no battery operated active electronic instruments.

This letter is for information. You may check or scan the boxes as per your requirements.


(M.D. Gaitonde)
Sr. Admn. Officer

HOMI BHABHA CENTRE FOR SCIENCE EDUCATION
Tata Institute of Fundamental Research
Near Anushakti Nagar Bus Depot
V.N. Purav Marg, Mankhurd
Mumbai-400 088. INDIA

To,
Prof. Girish Vekaria,
Sir P.T. Science college, Modasa
College Campus, Dist. Aravalli
At. Modasa 383315
Gujarat,
Ph: 02774246410, 09824424969



Leading the NSS Activity



Lecture Swami Vivekanand's Thoughts

At Manglore, National Youth Festival as a Team Manager of Guj NSS Team



Educational Tour – 6 February 2015

Visit to BIO-DIVERSITY TRAIN at Gandhinagar



Student Visit to Historical Place (Chittirgarh- Rajasthan)



Award Distribution & Poster Presentation Competition on National Science Day- February 2012



રાષ્ટ્રીય વિજ્ઞાન દિવસ નિમિત્તે ડૉ. કમલનયન જોશીપુરા વિદ્યાર્થીનીને સર્ટીફિકેટ અર્પણ કરે છે.



Popular Lecture On **Gravitational Waves**

by

Dr. R. H. Parmar, Head Physics Department Feb 2016



Wall Painting Activity by Physics Students



Talk of Astrophysicist **Dr. J. J. Raval** (President, Indian Planetary Society, Mumbai)



Inauguration of One Day Seminar on Scientific Awareness in Society





**SKY gazing Programme For School & College
Students February 2012**

Participated at National Level Essay and Quiz Competition 99 Science Congress KIIT Uni. Bhubaneswar





A motivational Visit : Ramkrishna Ashram Rajkot

**:Prize winners and :
Poster Presentation Feb.
– 2016
-Sem-VI College Rank
1st and 2nd -2016.**



Patro

- Dr. Arunbhai N Shah
President, The M. L. Gandhi Higher Education Society, Modasa
- Shri Mahendrabhai V Shah
Vice President, The M. L. Gandhi Higher Education Society, Modasa

Convener :

- Dr.S.D.Vediya
(I/c.Principal,Sir P.T.Sci.College,Modasa)

Organizing

- Dr. R. H. Parmar (HOD Physics , SPTSC, Modasa)

Advisors

- * Dr. B. S. Patel
(Principal, HNSB Sci. College, Himatnagar)
- * Dr. Samirbhai Parikh
(SSMP Sci. College, Talod)
- * Dr. Y.B. Dabgar
(Principal, RKVI Sci. College, Palanpur)
- Dr. Dinesh R. Fudani
(Chemistry)
Dr.Madhusudan S Jangid
- (Biology)
Prof. H A Patel
- (Physics)
Smt.V.R. Patel
- (Mathematics)
Smt.Monita Patel
- (Microbiology)

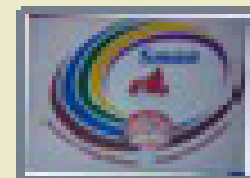
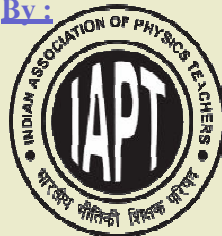
Local Organizing Committee:

Contac

Girish Vekaria
Physics Department, Sir P.T. science college, Modasa Dist –Aravalli MODASA 383315 (Gujarat)
Mob. 9824424969 Email :-
sirptscience127@gmail.com

Sponsored & Supported

By:



Regional Level Poster Competition On

“Innovation and Diversity of Science Subjects”

Jointly Organized

**By
Sir P. T. Science College, Modasa**

&

Smt. S. M. Panchal Sci. College, Talod

**The H. N. S. B. Sci. College,
Himatnagar**

R. R. Mehta Sci. College, Palanpur

Venue

**Sir P. T. Science College
College Campus, Dhansura
Road**

Modasa-383315

www.sirptsciencecollege.o

GG

Inter College Poster Competition 20 FEB. 2015

APPLICATION OF ULTRASONIC WAVES: ULTRASOUND IN MEDICAL IMAGING

Sevak Anand, Pranjapati Ronak
Sir P.T. Science College, Modak

Abstract

This article described application of Ultrasonic waves. Ultrasound relies on high frequency sounds to image the body and diagnose patients. Ultrasound or ultrasonography is a medical imaging technique that uses high frequency sound waves and their echoes. The technique is similar to the echolocation used by bats, whales and dolphins, as well as SONAR used by submarines.

Key words: - Ultrasonic waves, Ultrasound, Medical imaging

What is Ultrasound?

Ultrasound means high frequency sounds that are higher than the human ear can hear, i.e. 20,000 Hz. Ultrasound can't detect objects that are smaller than its wavelength and therefore higher frequencies of ultrasound are used. $\lambda = \frac{v}{f}$ where λ is wavelength, v is velocity and f is frequency.

Properties of ultrasound

Ultrasound relies on high frequency sounds to image the body and diagnose patients. Ultrasound are therefore longitudinal waves which cause particles to oscillate back and forth and produce a series of compressions and rarefactions.

- Using the following formula, it is possible to calculate the velocity, frequency, or wavelength of a wave if the other two values are known: $v = f \times \lambda$ where:
 - The velocity (v) is the speed of the wave. It is measured in m/s .
 - The frequency (f) is the number of times a particle oscillates per second. It is measured in Hz.
 - The wavelength (λ) is the distance between two compressions or rarefactions. It is measured in m.
- The amplitude is the distance a particle moves back and forth.
- Compressions are areas of the wave where particles are close together and there is high pressure. Rarefactions are areas of the wave where particles are far apart and there is low pressure.

How ultrasound is produced and detected?

Ultrasound is produced and detected using an ultrasonic transducer. Ultrasonic transducers are capable of sending an ultrasound and then the same transducer can detect the sound and convert it to an electrical signal to be displayed.

To produce an ultrasound, a piezoelectric material has an alternating voltage applied across it.

Types of Ultrasound



Different Types of Ultrasound

The ultrasound that we have described so far produces a two dimensional image, or "slice," of a three dimensional object (tissue, organ). Two other types of ultrasound are currently in use, 3D ultrasound imaging and Doppler ultrasound.

3D Ultrasound Imaging

New, ultrasonic machines capable of three-dimensional imaging have been developed. In these machines, several two-dimensional images are acquired by moving the probe across the body surface or creating focused probes. The two-dimensional scans are then combined by specialized computer software to form 3D images.



Doppler Ultrasound

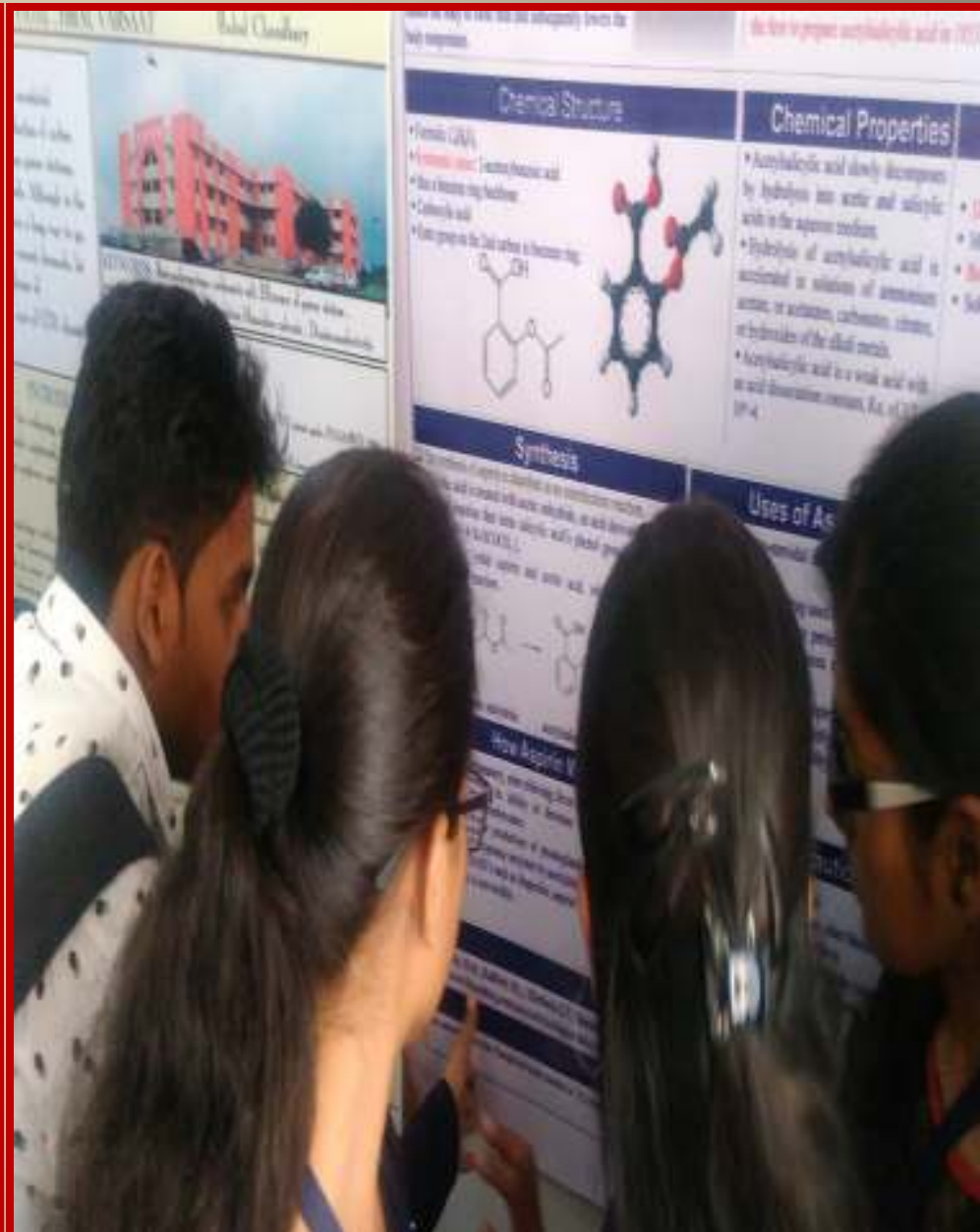
Doppler ultrasound is based upon the Doppler Effect. When the object reflecting the ultrasound waves is moving, it changes the frequency of the waves, creating a higher frequency if it is moving toward the probe and a lower frequency if it is moving away from the probe. When inside the body, it is changed objects (red blood cells) that reflect the wave. Doppler ultrasound measures the change in frequency of the waves to calculate flow from the object in motion. Doppler ultrasound has been used mainly to measure the flow of blood flow through the heart and major arteries.

Other Uses of Ultrasound

Ultrasound has been used in a variety of clinical settings, including obstetrics and gynecology, cardiology, and cancer diagnosis. The use of ultrasound in obstetrics is the most common. Ultrasound can also be used for other purposes such as cancer diagnosis and treatment.



Inter College Poster Competition



Innovative Experiment Performed at Bombay



**Lecture Series - Invited Talk by Prof.
Dr. A. R. Jani Physics Dept S P University
February 2012**



**Student appreciated By Dr. K. N Joshipura
Head of Physics Dept., S.P. University, VVN**



**Invited Talk on History of Satellite Technology by
Prof. Dr. R. J. Pathak
Head Physics Dept, Science College, Palanpur**



Lecture on Physics : Expert from Science College, Talod

Dr. K K Patel 2014



Prof. V S Patel 2016



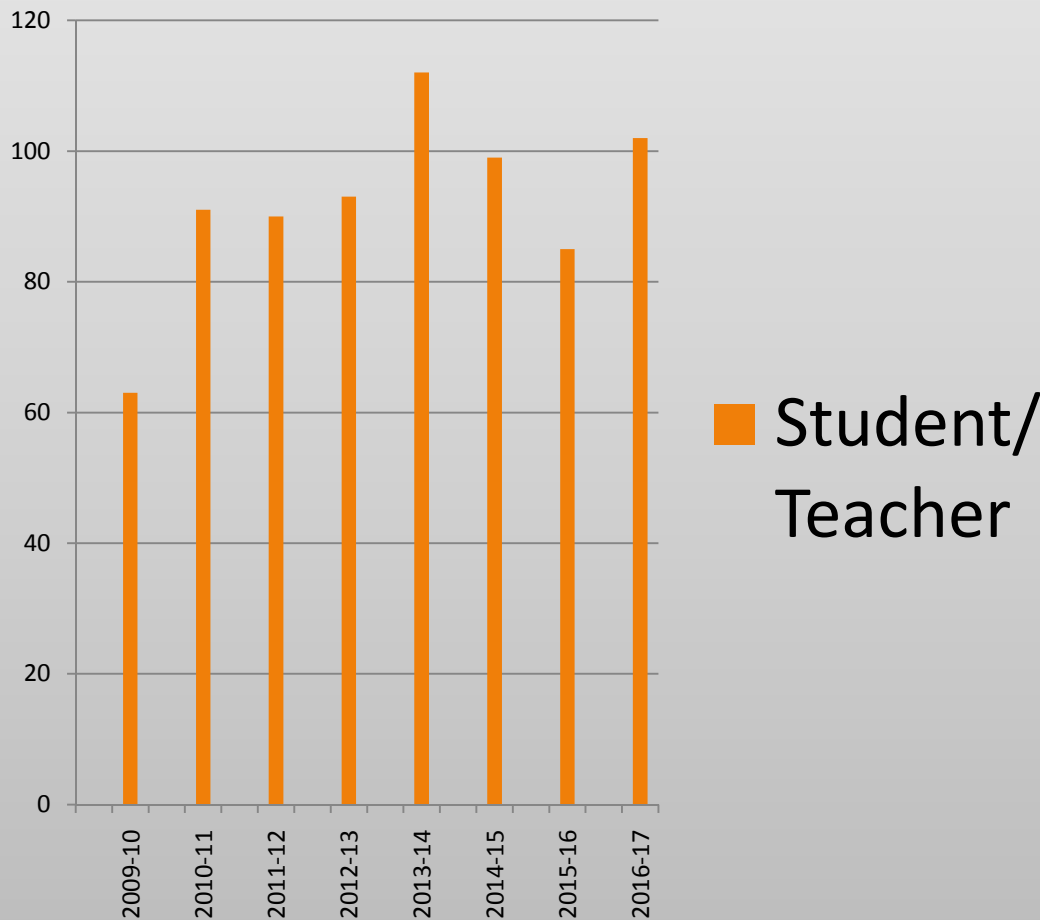
STRENGTH Of THE DEPARTMENT

- Department Enriched by UG , PG Experienced and Qualified Faculty members.
- Well Equipped laboratory for UG and PG students with dark room.
- Faculties offer Hobby Project, Assignment and Seminars to the student to involve them in current issue of physics.
- We provide Financial support to students to participate in seminar and workshops

WEAKNESS Of THE DEPARTMENT

- Department run with **LACK OF FACULTY** against student number.

Student/Teacher



Year	Student Enro.	Student/Teacher
2009-10	252	63
2010-11	365	91
2011-12	361	90
2012-13	370	93
2013-14	449	112
2014-15	395	99
2015-16	337	85
2016-17	409	102

FUTURE ACTION PLAN

- **To Enrich Lab adding more Instruments.**
- **Try to Convert Third Year Physics SFI Class to Grant-In-aid Class.**
- **To Develop Research lab for Physics.**

THANK YOU