DEPARTMENT OF PHYSICS
AGENDA OF THE MEETING

1.1   Welcome address by the chair.

1.2   Details of choice based credit system.

1.3   Discussion and Distribution of Common Core Syllabus.

1.4   Marks allotted for Internal and end Semester exam

1.5   Discussion on Question Paper Pattern of Semester exam of Internal Exam and End Semester Exam

1.6   Discussion on Scheme of Practical Question paper.

1.7   Panel of Examiners

1.8   Any other matter.

1.9   Vote of Thanks

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
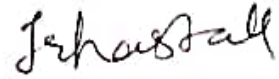## (AUTONOMOUS)
BOARD OF STUDIES
DEPARTMENT OF PHYSICS

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Smt. Jyoti Hastak
Principal
Head - Department of Physics
Hindi Mahavidyalaya
Nallakunta, Hyderabad.

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Osmania University, Hyderabad.

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Members of BOS
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Department of Physics
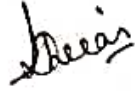Osmania University
Hyderabad.

2. Mrs. K. Kirana
Asst. Prof. - Department of Physics
Osmania University
Hyderabad.

3. Mr. G. Ganesh
Lecturer - Department of Physics
Hindi Mahavidyalaya

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
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COMPOSITION OF THE BOARD OF STUDIES IN AN AUTONOMOUS COLLEGE

I. **Composition: Department of Physics**

1. Head of the department concerned (Chairperson)
   Smt. Jyoti Hastak – Department of Physics

2. The entire faculty of each specialization.
   Smt. Jyoti Hastak

3. One expert to be nominated by the vice-chancellor from a panel of five recommended by the College Principal.
   1. Prof. J. Siva Kumar , Chairman, BOS, Department of Physics

4. Two experts in the subject from outside the college to be nominated by the Academic Council.
   1. Prof. G. Prasad, Department of Physics, Osmania University, Hyderabad.
   2. Mrs. K. Kirana , Asst. Prof – Department of Physics, Osmania University, Hyderabad.

Experts from outside the College whenever special courses of studies are to be formulated-To be nominated.

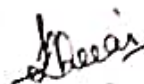(a) Other members or staff of the same faculty.
   1. Sri G. Ganesh, Lecturer, Department of Physics, Hindi Mahavidyalaya Hyderabad.

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	Board of Studies in Physics		Arts, Com...
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1.3   Discussion and Distribution of Common Core Syllabus.

      I.   Members were informed by the chair that Department of Physics, Hindi Mahavidyalaya is following common core syllabus prescribed by Osmania University.

     Syllabus copy for both the semesters is enclosed.

     Syllabus was approved by the Members of BOS.

1.4   Marks allotted for Internal and end Semester exam will be followed as per O.U. (Will be subjected to change as prescribed by osmania University)

1.5   Discussion on Question Paper Pattern of Semester exam of Internal Exam and End Semester

   1. It was informed by the department that in each Semester Two Internal exams will be conducted for 15 marks and 5 marks will be allotted for assignment. Average of marks of these two internal exams will be taken.

   2. Semester exam will be conducted as per the Almanac which will be provided by the exam branch. Internal exam duration will be 30 Mts. and Semester exam duration will be of 3 hrs.

   3. Scheme of Question paper for Semester I and Semester II was discussed. Theory paper for each Semester will have 2 sections.

     i) Section A contains 8 short Questions out of which 4 questions are to be answered,

       (4 questions X 5 marks=20 Marks)

     ii) Section B contains 4 Essay type Questions with internal choice.

       (4 questions x 15 marks=60 Marks)

Pattern of Question Paper was approved by Members of BOS.

1.6   Discussion on Scheme of Practical Question paper.

     It was decided in BOS meeting that 50 Marks Practical Exam of 3 hrs duration will be held in each Semester and the Scheme of Practical question paper was approved by the Members of BOS.

1.7   Panel of Examiners

The panel of examiners was approved by the members.

List is enclosed.

1.8   Any other matter.

Question Paper Pattern is subjected to change as prescribed by Osmania University in the later stages.

1.9   Vote of Thanks

Meeting concluded with the Vote of Thanks by Smt. Jyoti Hastak.

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. 1st Year Physics
Semester – 1
Paper I: Mechanics

Code:

Instruction	
Theory Classes	4 Hrs/Week
Practical Classes	3 Hrs/Week
Credit for Theory	4 Credits
Credit for Practical	1 Credit
Duration of Semester Examination	3 Hrs
Duration of Internal Examination	30 Min
Semester Examination Marks	80 Marks
Internal Examination Marks	20 Marks(15+5)

Unit – I

1. Vector Analysis (12)

Scalar and vector fields, gradient of a scalar field and its physical significance. Divergence and curl of a vector field and related problems. Vector integration, line, surface and volume integrals. Stokes, Gauss and Greens theorems- simple applications.

Unit – II

2. Mechanics of Particles (12)

Laws of motion, motion of variable mass system, motion of a rocket, multi-stage rocket, conservation of energy and momentum. Collisions in two and three dimensions, concept of impact parameter, scattering cross-section, Rutherford Scattering.

3. Mechanics of rigid bodies (12)

Definition of Rigid body, rotational kinematic relations, equation of motion for a rotating body, angular momentum and inertial tensor. Euler's equation, precession of a top, Gyroscope.

Unit – III

4. Central Forces (12)

Central forces – definition and examples, conservative nature of central forces, conservative force as a negative gradient of potential energy, equation of motion under a central force, gravitational potential and gravitational field, motion under inverse square law, derivation of Kepler's laws, Coriolis force and its expressions.

Unit – IV

5. Special theory of relativity (12)

Galilean relativity, absolute frames, Michelson-Morley experiment, Postulates of special theory of relativity. Lorentz transformation, time dilation, length contraction, addition of velocities, mass-energy relation. Concept of four vector formalism.

NOTE: Problems should be solved at the end of every chapter of all units.

Textbooks

1. First Year Physics - Telugu Academy.
2. Fundamentals of Physics. Halliday/Resnick/Walker Wiley India Edition 2007.
3. Berkeley Physics Course. Vol.1, Mechanics by C. Kittel, W. Knight, M.A. Ruderman - Tata-McGraw hill Company Edition 2008.
4. Introduction to Physics for Scientists and Engineers. F.J. Ruche. McGraw Hill.
5. Special Theory of Relativity – Robert Resnick
6. Mechanics by G. Prasad & T. Bheemashankaram, Himalaya Publishing House.

Reference Books

1. Mechanics. Hans & Puri. TMH Publications.
2. Engineering Physics. R.K. Gaur & S.L. Gupta. Dhanpat Rai Publications.
3. J.C. Upadhyay - Mechanics.
4. Sears and Zemansky's University Physics by Hugh D. Young, Roger A. Freedman Pearson Education Eleventh Edition.
5. P.K. Srivastava - Mechanics, New Age International.

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. 1st Year Physics
Semester – I
Practical Paper - I

Code: 3 Hrs / Week
Instruction   3 Hrs
Duration of Exam   50 Marks
Marks for Exam   36 Hrs
Laboratory Course

1. Study of a compound pendulum determination of 'g' and 'k'.
2. Y' by uniform Bending
3. Y by Non-uniform Bending.
4. Moment of Inertia of a fly wheel.
5. Measurement of errors –simple Pendulum.
6. 'Rigidity moduli by torsion Pendulum.
7. Determine surface tension of a liquid through capillary rise mehod.
8. Determination of Surface Tension of a liquid by different methods.
9. Determine of Viscosity of a fluid.
10. Calculation of slope and intercept of a $Y= mX +C$ by theoretical method

Note: Minimum of eight experiments should be performed. Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Text and reference books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (Pragati Prakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
4. "Practical Physics" R.K Shukla, Anchal Srivastava

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. 1st Year Physics
Semester – II
Paper-II- Waves and Oscillations

Code:

Instruction	
Theory Classes	4 Hrs/Week
Practical Classes	3 Hrs/Week
Credit for Theory	4 Credits
Credit for Practical	1 Credit
Duration of Semester Examination	3 Hrs
Duration of Internal Examination	30 Min
Semester Examination Marks	80 Marks
Internal Examination Marks	20 Marks(15+5)

Unit – I
1. Fundamentals of vibrations(12)

Simple harmonic oscillator, and solution of the differential equation– Physical characteristics of SHM, torsion pendulum, - Application Torsion Pendulun – To determine rigidity Modulus. Compound pendulum, measurement of 'g', combination of two mutually perpendicular simple harmonic vibrations of same frequency and different frequencies, Lissajous figures.

Unit – II
2. Damped and forced oscillations (12)

Damped harmonic oscillator, solution of the differential equation of damped oscillator. Energy considerations, comparison with undamped harmonic oscillator, logarithmic decrement, relaxation time, quality factor, differential equation of forced oscillator and its solution, amplitude resonance, velocity resonance. Coupled Oscillators.

Unit – III
3. Vibrating Strings (12)

Transverse wave propagation along a stretched string, general solution of wave equation and its significance, modes of vibration of, stretched string clamped at ends, overtones, energy transport, transverse impedance.

Unit – IV
4. Vibrations of bars(12)

Longitudinal vibrations in bars- wave equation and its general solution. Special cases (i) bar fixed at both ends ii) bar fixed at the mid point iii) bar free at both ends iv) bar fixed at one end. Transverse vibrations in a bar- wave equation and its general solution. Boundary conditions, clamped free bar, free-free bar, bar supported at both ends, Tuning fork.

NOTE: Problems should be solved at the end of every chapter of all units.

Textbooks

1. First Year Physics - Telugu Academy.
2. Fundamentals of Physics. Halliday/Resnick/Walker Wiley India Edition 2007.
3. Berkeley Physics Course. Vol.1, Mechanics by C. Kittel, W. Knight, M.A. Ruderman - Tata-McGraw hill Company Edition 2008.
4. Introduction to Physics for Scientists and Engineers. F.J. Ruche. McGraw Hill.
5. Vibrations & Waves by S.P.Puri
6. Vibrations & Waves by A.P. French

Reference Books

1. Mechanics. Hans & Puri. TMH Publications.
2. Engineering Physics. R.K. Gaur & S.L. Gupta. Dhanpat Rai Publications.
3. J.C. Upadhyay - Mechanics.
4. Sears and Zemansky's University Physics by Hugh D. Young, Roger A. Freedman Pearson Education Eleventh Edition.
5. P.K. Srivastava - Mechanics, New Age International.

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. 1st Year Physics
Semester – II
Practical Paper- II

Code:

Instruction	3 Hrs / Week
Duration of Exam	3 Hrs
Marks for Exam	50 Marks
Laboratory Course	36 Hrs

Waves and Oscillations

1. Study of damping of an oscillating disc in Air and Water logarithmic decrement.
2. Study of Oscillations under Bifilar suspension.
3. Study of oscillations of a mass under different combination of springs.
4. Verification of Laws of a stretched string (Three Laws).
5. Determination of frequency of a Bar-Melde's experiment.
6. Observation of Lissajous figures from CRO.
7. Volume Resonator –determination of frequency of a tuning fork.
8. Velocity of Transverse wave along a stretched string.
9. Study of damping of a bar pendulum
10. Study of coupled oscillator.

Note: Minimum of eight experiments should be performed.Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Text and reference books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).

2. S.P. Singh, "Advanced Practical Physics" (Pragati Prakashan, Meerut).
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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc Physics I Year
Semester – I & II
Paper - I
Theory Question Paper Pattern

Time: 3 hrs   Max. Marks: 80

SECTION A

I Write any Four of the following (Short Questions)   4 X 5 =20 Marks

1. A Question from Unit I
2. A Question from Unit I
3. A Question from Unit II
4. A Question from Unit II
5. A Question from Unit III
6. A Question from Unit III
7. A Question from Unit IV
8. A Question from Unit IV

SECTION B

II Answer all the Questions (Essay Questions) .   4 X 15 =60 Marks

9 (a) A Question from Unit I
           (OR)
   (b) A Question from Unit I

10 .(a). A Question from Unit II
           (OR)
   (b). A Question from Unit II

11 (a) A Question from Unit III
           (OR)
   (b) A Question from Unit III

10

12 (a) A Question from Unit IV

(OR)

(b) A Question from Unit IV

Note: Question Paper Pattern is subjected to change as prescribed by Osmania University in the later stages.

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HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc. 1st Year Physics
Semester –I & II
Paper – I

Practical Model Question Paper

Time : 3 hrs　　　　　　　　　　　　　　　Max. Marks : 50

1	1 Practical Question	30 Marks
2.	Record	10 Marks
3.	Viva	10 Marks

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Physics Department

Panel of Examiners

S.No.	Name and Designation	Mobile No.
1	Dr. Sreedevi Head, Department of Physics, New Science College, Ameerpet, Hyd.	9701893891
2	Dr. Sarala Sr. Faculty, Department of Physics, St. Ann's Degree College for Women, Mehdipatnam, Hyd.	9440750244
3	Ms. P. Sakuntala, Head, Department of Physics, R.B.V.R.R. Women's Degree College, Narayanguda, Hyd.	

Practical
sem-II

Saralatys@mail.com

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