S.V.L.N.S GOVERNEMNT DEGREE COLLEGE

BHEEMUNIPATNAM

Programme outcomes

Students graduating with a B.Sc/B.A/B.Com should be able to

PO1. Disciplinary Knowledge:

Capable of demonstrating comprehensive knowledge and understanding of different subjects such as Mathematics, Physics, Chemistry, Botany, Zoology, Computer Science, History, economics, Politics, Commerce etc., in undergraduate programme of study.

PO2. Critical Thinking:

Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, Handle scientific equipment and acquire the skills to analyze the experimental results.

PO3. Moral and Ethical Awareness:

Ability to embrace moral/ ethical values in conducting one's life, possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups. Imbibe the human values, professional ethics, and social values that will make him a citizen with social consciousness.

PO4. Communication Skills:

To demonstrate the communication skills, soft skills and professional skills.

PO5. Social Interaction:

Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group and act together as a group or a team in the interests of a common cause. Get exposure to social issues and social evils by participating in various community Development activities.

PO6.Environment and Sustainability:

Understand the issues of environmental contexts and sustainable development.

PO 7: Information and Digital Literacy: Capability to use ICT in a variety of learning situations. Demonstrate ability to access, evaluate and use a variety of relevant information sources; and use appropriate software for analysis of data.

PO 8. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio- technological changes. Critical sensibility to lived experiences, with self-awareness and reflexivity of both and society.

Programme specific outcomes

Students graduating with BSc (M.P.C) should be able to

PSO1. Demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of Physics and Chemistry.

PSO2. Demonstrate knowledge in key concepts and important theories and principles in the three core subjects (Mathematics, Physics and Chemistry) and can apply this knowledge to analyze a variety of physical and chemical phenomena.

PSO3. Use the knowledge gained to do measurements using the instruments and apparatus and can analyse the measurements to draw valid conclusions.

PSO4. Can compete in entrance examinations to enter in to PG courses and in competitive examinations to get employment.

Students graduating with BSc (B.Z.C) should be able to

PSO1. Demonstrate knowledge in key concepts and important theories and principles in the three core subjects (Botany, Zoology and Chemistry) and can apply this knowledge to analyse a variety of phenomena.

PSO2. Understand the process of evaluation, basic concepts of cell biology, Biotechnology, microbiology, developmental biology of plants, diversity of plants, applications of microorganisms etc., PSO3. Compete in entrance examinations to enter into PG courses and in competitive examinations to get good employment.

PSO4. Appreciate the interdisciplinary nature of chemistry and applications of principles of chemistry in biology.

B.A Programme Specific Outcomes (PSO)

After completion of BA (HEP) programme,

the students will be in a position to take informed decisions with regard to the following:

PSO1: Understand various terms and concepts of the subject with the help of examples from the real life.

PSO2: Understand the Historical facts and features.

PSO3: Gain knowledge about the principles and theories of Historical methods

PSO4: Gain knowledge of the History of the Andhra Pradesh.

PSO5: Acquire ability to understand the socio knowledge they gained in the class

Programme Specific Outcome (PSO): Programme- B.COM

PSO1: The students will be employable in functional areas like accounting, taxation, banking, insurance and corporate law.

PSO2: An attitude for working effectively and efficiently in a business environment. Learners will gain knowledge of various disciplines of Commerce, Business, Accounting, Economics, and Finance, Auditing and Marketing

PSO3: Students acquire skills to work as tax consultant, audit assistant and other financial supporting services.

PSO4: Students have choices to pursue professional courses such as CA, M.COM, MBA, CMA, ICWA, CS,etc

PSO5: Students are able to play roles of businessmen, entrepreneur, managers, consultant, which will help learners to possess knowledge and other soft skills and to react aptly when confronted with critical decision making.

Course I: Mechanics, Waves and Oscillations:

Course outcomes: On successful completion of this course, the students will be able to

- Understand Newton's laws of motion and motion of variable mass system and its application to rocket motion and the concepts of impact parameter, scattering cross section.
- Apply the rotational kinematic relations, the principle and working of gyroscope and it applications and the processional motion of a freely rotating symmetric top.
- Comprehend the general characteristics of central forces and the application of Kepler's laws to describe the motion of planets and satellite in circular orbit through the study of law of Gravitation.
- Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence.
- Examine phenomena of simple harmonic motion and the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator.
- Appreciate the formulation of the problem of coupled oscillations and solve them to obtain normal modes of oscillation and their frequencies in simple mechanical systems.
- Figure out the formation of harmonics and overtones in a stretched string and acquire the knowledge on Ultrasonic waves, their production and detection and their applications in different fields.

Practical Course 1: Mechanics, Waves and Oscillations:

- On successful completion of this practical course, the student will be able to
- Perform experiments on Properties of matter such as the determination of moduli of elasticity viz., young's modulus, Rigidity modulus of certain materials; Surface tension of water, Coefficient of viscosity of a liquid, Moment of inertia of some regular bodies by different methods and compare the experimental values with the standard values.
- Know how to determine the acceleration due to gravity at a place using Compound pendulum and Simple pendulum.
- Notice the difference between flat resonance and sharp resonance in case of volume resonator and sonometer experiments respectively.
- Verify the laws of transverse vibrations in a stretched string using sonometer and comment on the relation between frequency, length and tension of a stretched string under vibration.
- Demonstrate the formation of stationary waves on a string in Melde's string experiment.
- Observe the motion of coupled oscillators and normal modes.

Course-II: WAVE OPTICS:

- On successful completion of this course, the student will be able to:
- Understand the phenomenon of interference of light and its formation in (i) Lloyd's single mirror due to division of wave front and (ii) Thin films, Newton's rings and Michelson interferometer due to division of amplitude.
- Distinguish between Fresnel's diffraction and Fraunhoffer diffraction and observe the diffraction patterns in the case of single slit and the diffraction grating.
- Describe the construction and working of zone plate and make the comparison of zone plate with convex lens.
- Explain the various methods of production of plane, circularly and polarized light and their detection and the concept of optical activity.
- Comprehend the basic principle of laser, the working of He-Ne laser and Ruby lasers and their applications in different fields.
- Explain about the different aberrations in lenses and discuss the methods of minimizing them.
- Understand the basic principles of fibre optic communication and explore the field of Holography and Nonlinear optics and their applications.

Practical Course II: Wave Optics:

- On successful completion of this practical course the student will be able to,
- Gain hands-on experience of using various optical instruments like spectrometer, polarimeter and making finer measurements of wavelength of light using Newton Rings experiment, diffraction grating etc.
- Understand the principle of working of polarimeter and the measurement of specific rotatory power of sugar solution
- Know the techniques involved in measuring the resolving power of telescope and dispersive power of the material of the prism.
- Be familiar with the determination of refractive index of liquid by Boy's method and the determination of thickness of a thin wire by wedge method.

Course-III: HEAT AND THERMODYNAMICS:

On successful completion of this course, the student will be able to:

- ➢ Understand the basic aspects of kinetic theory of gases, Maxwell-Boltzman distribution law, equipartition of energies, mean free path of molecular collisions and the transport phenomenon in ideal gases
- ➢ Gain knowledge on the basic concepts of thermodynamics, the first and the second law of thermodynamics, the basic principles of refrigeration, the concept of entropy, the thermodynamic potentials and their physical interpretations.
- ➢ Understand the working of Carnot's ideal heat engine, Carnot cycle and its efficiency
- ➢ Develop critical understanding of concept of Thermodynamic potentials, the formulation of Maxwell's equations and its applications.
- ➢ Differentiate between principles and methods to produce low temperature and liquefy air and also understand the practical applications of substances at low temperatures.
- ➢ Examine the nature of black body radiations and the basic theories.

Practical Course-III: Heat and Thermodynamics:

On successful completion of this practical course, the student will be able to;

- ➢ Perform some basic experiments in thermal Physics, viz., determinations of Stefan's constant, coefficient of thermal conductivity, variation of thermo-emf of a thermocouple with temperature difference at its two junctions, calibration of a thermocouple and Specific heat of a liquid.

Course-IV: ELECTRICITY, MAGNETISM AND ELECTRONICS:

On successful completion of this course, the students will be able to:

➢ Understand the Gauss law and its application to obtain electric field in different cases and formulate the relationship between electric displacement vector, electric polarization, Susceptibility, Permittivity and Dielectric constant.
➢ Distinguish between the magnetic effect of electric current and electromagnetic induction and apply the related laws in appropriate circumstances.
➢ Understand Biot and Savart's law and Ampere's circuital law to describe and explain the generation of magnetic fields by electrical currents.
➢ Develop an understanding on the unification of electric and magnetic fields and Maxwell's equations governing electromagnetic waves.
➢ Phenomenon of resonance in LCR AC-circuits, sharpness of resonance, Q- factor, Power factor and the comparative study of series and parallel resonant circuits. ϖ Describe the operation of p-n junction diodes, zener diodes, light emitting diodes and transistors
➢ Understand the operation of basic logic gates and universal gates and their truth tables

Practical Course IV: Electricity, Magnetism and Electronics:

➢ On successful completion of this practical course the student will be able to;
➢ Measure the current sensitivity and figure of merit of a moving coil galvanometer
➢ Observe the resonance condition in LCR series and parallel circuit
➢ Learn how a sonometer can be used to determine the frequency of AC-supply.
➢ Observe the variation of magnetic field along the axis of a circular coil carrying current using Stewart and Gee's apparatus.
➢ Understand the operation of PN junction diode, Zener diode and a transistor and their V-I characteristics.
➢ Construct the basic logic gates, half adder and full adder and verify their truth tables. Further, the student will understand how NAND and NOR gates can be used as universal building blocks.

Course V: MODERN PHYSICS:

On successful completion of this course, the students will be able to:

➢ Develop an understanding on the concepts of Atomic and Modern Physics, basic elementary quantum mechanics and nuclear physics.
➢ Develop critical understanding of concept of Matter waves and Uncertainty principle.
➢ Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications.
➢ Examine the basic properties of nuclei, characteristics of nuclear forces, salient features of nuclear models and different nuclear radiation detectors.
➢ Classify Elementary particles based on their mass, charge, spin, half-life and interaction.
➢ Get familiarized with the nano materials, their unique properties and applications.
➢ Increase the awareness and appreciation of superconductors and their practical applications.

Practical Course V: Modern Physics:

On successful completion of this practical course, the student will be able to;

➢ Measure charge of an electron and e/m value of an electron by Thomson method.
➢ Understand how the Planck's constant can be determined using Photocell and LEDs.
➢ Study the absorption of α-rays and β-rays, Range of β-particles and the characteristics of GM counter
➢ Determine the Energy gap of a semiconductor using thermistor and junction diode.

S.V.L.N. S GOVERNMENT DEGREE COLLEGE

BHEEMUNIPATNAM

DEPARTMENT OF PHYSICS

Course 6A: OPTICAL INSTRUMENTS AND OPTOMETRY

Course outcomes:

Students at the successful completion of the course will be able to:

1. Understand the construction and working principles of various optical instruments used in daily life.

2. Acquire a critical knowledge on the various defects of eye and their correcting methods with suitable lenses.

3. Demonstrate skills of using biological microscope through hands on experience.

4. Understand the various techniques used in optometry and computer-based eye testing.

5. Comprehend the various applications of microscopes and telescopes.

Course 6A: Optical Instruments and Optometry – PRACTICAL SYLLABUS

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. List out, identify and handle various equipment like binoculars, telescopes and microscopes.

2. Learn the procedures of operation of various optical instruments.

3. Demonstrate skills on testing the power of lenses, improving the resolution of telescopes and microscopes.

4. Acquire skills in observing and measuring the power, focal length and different refractive errors of eye.

5. Perform some techniques related to testing the blood and other biological samples.

6. Understand the technique of operation of Computer eye testing and evaluation.

S.V.L.N. S GOVERNMENT DEGREE COLLEGE

BHEEMUNIPATNAM

DEPARTMENT OF PHYSICS

Course 7A: OPTICAL IMAGING AND PHOTOGRAPHY:

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the different types of cameras and camera lenses according to different purposes.

2. Identify and understand the focal length of the different types of lenses

3. Acquire a critical knowledge on natural and artificial sources of light and their application in photography.

4. Demonstrate skills of camera usage especially Digital Cameras.

5. Understand the various Image development and editing techniques.

6. Comprehend the concept of different types of common shooting techniques.

Course 7A: Optical Imaging and Photography – Practical (lab) work:

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. List out, identify and understand various image formation techniques including Eye.

2. Learn the procedures of using Analog and Digital cameras.

3. Demonstrate the focusing techniques of Analog and Digital cameras.

4. Acquire skills in the editing and development of photos and videos.

5. Perform some experimental skills related to images, videos using the equipment available in the lab or in a local studio.

S.V.L.N. S GOVERNMENT DEGREE COLLEGE

BHEEMUNIPATNAM

DEPARTMENT OF PHYSICS

Course 6B: LOW TEMPERATURE PHYSICS & REFRIGERATION:

Learning Outcomes:

Students after successful completion of the course will be able to

1. Identify various methods and techniques used to produce low temperatures in the Laboratory.

2. Acquire a critical knowledge on refrigeration and air conditioning.

3. Demonstrate skills of Refrigerators through hands on experience and learns about refrigeration components and their accessories.

4. Understand the classification, properties of refrigerants and their effects on environment.

5. Comprehend the applications of Low Temperature Physics and refrigeration.

Course 6B: Low Temperature Physics & Refrigeration – Practical (lab) work:

Learning Outcomes:

On completion of practical course, student shall be able to

1. List out, identify and handle equipment used in refrigeration and low temperature lab.

2. Learn the procedures of preparation of Freezing Mixtures.

3. Demonstrate skills on developing various Freezing mixtures and materials and their applications in agriculture, medicine and day to day life.

4. Acquire skills in observing and measuring various methodologies of very low temperatures

5. Perform some techniques related to Refrigeration and Freezing in daily life.

S.V.L.N. S GOVERNMENT DEGREE COLLEGE

BHEEMUNIPATNAM

DEPARTMENT OF PHYSICS

Course 7B: Solar Energy and Applications:

Learning Outcomes:

After successful completion of the course, the student will be able to:

1. Understand Sun structure, forms of energy coming from the Sun and its measurement.

2. Acquire a critical knowledge on the working of thermal and photovoltaic collectors.

3. Demonstrate skills related to callus culture through hands on experience

4. Understand testing procedures and fault analysis of thermal collectors and PV modules.

5. Comprehend applications of thermal collectors and PV modules.

Course 7B: Solar Energy and Applications – Practical (lab) work:

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. List out and identify various components of solar thermal collectors and systems, solar photovoltaic modules and systems.

2. Learn the procedures for measurement of direct, global and diffuse solar radiation, I - V characteristics and efficiency analysis of solar cells and modules.

3. Demonstrate skills acquired in evaluating the performance of solar cell / module in connecting them appropriately to get required power output.

4. Acquire skills in identification and elimination of the damaged panels without affecting the output power in a module / array.

5. Perform procedures and techniques related to general maintenance of solar thermal and photovoltaic modules.

S.V.L.N. S GOVERNMENT DEGREE COLLEGE

BHEEMUNIPATNAM

DEPARTMENT OF PHYSICS

Course 6C: APPLICATIONS OF ELECTRICITY & ELECTRONICS:

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify various components present in Electricity& Electronics Laboratory.

2. Acquire a critical knowledge of each component and its utility (like resistors, capacitors, inductors, power sources etc.).

3. Demonstrate skills of constructing simple electronic circuits consisting of basic circuit elements.

4. Understand the need & Functionality of various DC & AC Power sources.

5. Comprehend the design, applications and practices of various electrical & Electronic devices and also their trouble shooting.

Course 6C: Applications of Electricity & Electronics – PRACTICAL SYLLABUS:

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. List out, identify and handle various equipment in Electrical & Electronics laboratory.

2. Learn the procedures of designing simple electrical circuits.

3. Demonstrate skills on the utility of different electrical components and devices.

4. Acquire the skills regarding the operation, maintenance and troubleshooting of various Devices in the lab.

5. Understand the different applications of Electromagnetic induction.

S.V.L.N. S GOVERNMENT DEGREE COLLEGE

BHEEMUNIPATNAM

DEPARTMENT OF PHYSICS

Course 7C: ELECTRONIC INSTRUMENTATION:

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify various facilities required to set up a basic Instrumentation Laboratory.

2. Acquire a critical knowledge of various Electrical Instruments used in the Laboratory.

3. Demonstrate skills of using instruments like CRO, Function Generator, Multimeter etc. through hands on experience.

4. Understand the Principle and operation of different display devices used in the display systems and different transducers

5. Comprehend the applications of various biomedical instruments in daily life like B.P. meter, ECG, Pulse oximeter etc. and know the handling procedures with safety and security.

Course 7C: Electronic Instrumentation– PRACTICAL SYLLABUS

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. List out, identify and handle various equipment in Instrumentation Laboratory or Electronic Laboratory.

2. Learn the construction, operational principles of various instruments.

3. Demonstrate skills on handling, Maintenance & trouble shooting of different instruments used in the Labs.

4. Acquire skills in observing and measuring various electrical and electronic quantities.

5. Perform some techniques related to Biomedical Instrumentation and measurement of Certain physiological parameters like body temperature, B.P. and sugar levels etc.

Bloom's revised taxonomy
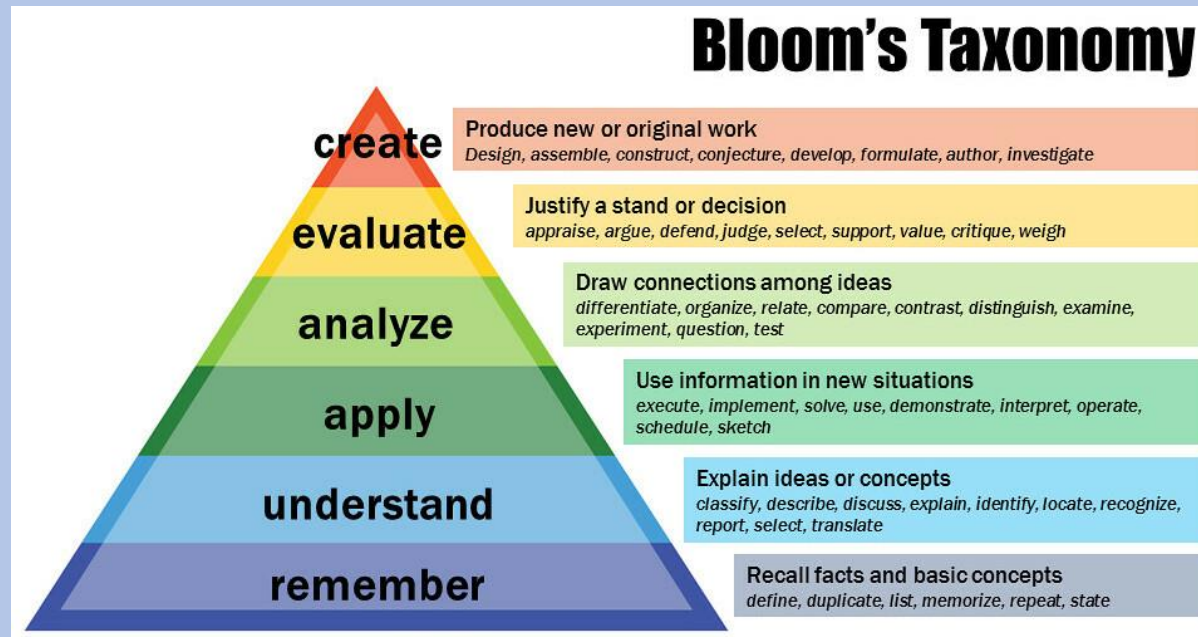
Cos of PHYSICS PAPER Course 1 mapped to blooms level

S.No	Course Outcomes	Knowledge Level
CO 1	Understand Newton's laws of motion and motion of variable mass system and its application to rocket motion and the concepts of impact parameter, scattering cross section.	L2 (UNDERSTAND)
CO 2	Apply the rotational kinematic relations, the principle and working of gyroscope and it applications and the processional motion of a freely rotating symmetric top	L3 APPLY
CO 3	Comprehend the general characteristics of central forces and the application of Kepler's laws to describe the motion of planets and satellite in circular orbit through the study of law of Gravitation	L2 (Understand)
CO 4	Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence	L2 (UNDERSTAND)
CO 5	Examine phenomena of simple harmonic motion and the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator	L1(Knowledge)
CO 6	Appreciate the formulation of the problem of coupled oscillations and solve them to obtain normal modes of oscillation and their frequencies in simple mechanical systems.	L4 (Analyse)
CO 7	Figure out the formation of harmonics and overtones in a stretched string and acquire the knowledge on Ultrasonic waves, their production and detection and their applications in different fields.	L5 (Evaluate)

Course I: Mechanics, Waves and Oscillations:

CO PO Matrix

S.No	Course Outcomes (CO)	POs	PSOs
CO 1	Understand Newton's laws of motion and motion of variable mass system and its application to rocket motion and the concepts of impact parameter, scattering cross section.	1,2,4,7,8	1,2,3,4
CO 2	Apply the rotational kinematic relations, the principle and working of gyroscope and it applications and the processional motion of a freely rotating symmetric top	1,2,4,7,8	1,2,3,4
CO 3	Comprehend the general characteristics of central forces and the application of Kepler's laws to describe the motion of planets and satellite in circular orbit through the study of law of Gravitation	1,2,4,6,7,8	1,2,3,4
CO 4	Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence	1,2,4,6,7,8	1,2,3,4
CO 5	Examine phenomena of simple harmonic motion and the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator	1,2,4,7,8	1,2,3,4
CO 6	Appreciate the formulation of the problem of coupled oscillations and solve them to obtain normal modes of oscillation and their frequencies in simple mechanical systems.	1,2,4,7,8	1,2,3,4
CO 7	Figure out the formation of harmonics and overtones in a stretched string and acquire the knowledge on Ultrasonic waves, their production and detection and their applications in different fields.	1,2,4,7,8	1,2,3,4

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	3	3		3			1	3
CO 2	3	2		2			2	2
CO 3	3	3		2		2	2	2
CO 4	3	3		3		2	2	3
CO 5	3	2		2			3	2
CO 6	3	3		3			3	2
CO 7	3	2		2			3	2
Ave	3	2.57		2.42		0.57	2.2	2.2

1. Low   2. Medium   3. High

CO PSO MATRIX

CO	PSO1	PSO2	PSO3	PSO4
CO 1: Understand Newton's laws of motion and motion of variable mass system and its application to rocket motion and the concepts of impact parameter, scattering cross section.	2	2	3	3
CO 2:Apply the rotational kinematic relations, the principle and working of gyroscope and it applications and the processional motion of a freely rotating symmetric top	2	2	3	2
CO 3:Comprehend the general characteristics of central forces and the application of Kepler's laws to describe the motion of planets and satellite in circular orbit through the study of law of Gravitation	3	2	2	3
CO 4:Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence	3	3	2	3
CO 5:Examine phenomena of simple harmonic motion and the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator	2	2	3	3
CO 6:Appreciate the formulation of the problem of coupled oscillations and solve them to obtain normal modes of oscillation and their frequencies in simple mechanical systems.	3	3	3	2
CO 7:Figure out the formation of harmonics and overtones in a stretched string and acquire the knowledge on Ultrasonic waves, their production and detection and their applications in different fields.	2	2	3	2
Ave	2.42	2.28	2.71	2.57

Computation of CO-PO/PSO Attainment

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
PHY P 1	3	3		2		1	2	2	2	2	3	3
WEIGHTED AVERAGE	3	2.57		2.42		0.57	2.2	2.2	2.42	2.28	2.71	2.57

Computation of CO Attainment Level

COs	Assessment Tool (Internal/External Exam)	Internal examination (IE) Attainment Level (AL)	External examination (EE) Attainment Level (AL)	Co attainment= (0.25 IE AL)+(0.75 EE AL)
CO1	MID 1	3	2	0.75+1.5 = 2.25
CO2	MID 1	2	2	0.5 + 1.5 = 2
CO3	MID 1	3	2	0.75 + 1.5= 2.25
CO4	MID 1	3	2	0.75 + 1.5 =2.25
CO5	MID 2	3	2	0.75+1.5=2.25
CO6	MID 2	1	2	0.25+1.5=1.75
CO7	MID 2	2	2	0.5+1.5=2
AVARAGE				2.107

Assessment methods

CO attainment Internal Exams (mid 1 and mid 2) IE 25 marks

External Exam (semester end exam) EE 75M

Computation for CO attainment: 25% of IE attainment + 75% of EE attainment

Attainment levels for EE

Level 1: between 35 and 49%

Level 2: between 50% and 65%

Level 3: more than 65%

Attainment levels for IE

Level 1: Marks below 10

Level 2: Marks between 10 and 15

Level 3: marks more than 15

POs Attainment

PO= (weighted average value of PO $\times$ CO Attainment average)/3

Computation of CO-PO/PSO Attainment

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
PHY P 1	3	3		2		1	2	2	2	2	3	3
WEIGHTED AVERAGE	3	2.57		2.42		0.57	2.2	2.2	2.42	2.28	2.71	2.57

PO ATTIANMENT

PO	ATTAINMENT LEVEL
PO 1	(3x2.107)/3 = 2.107
PO 2	(2.57x2.107)/3=1.804
PO 4	(2.42x2.107)/3= 1.699
PO 6	(0.57x2.107)/3= 0.4

PO 7	(2.2x2.107)/3= 1.54
PO 8	(2.2x2.107)/3= 1.54

PSO ATTAINMENT

PSO	ATTAINMENT LEVEL
PSO 1	(2.42x2.107)/3 = 1.699
PSO 2	(2.28x2.107)/3=1.601
PSO 4	(2.71x2.107)/3= 1.903
PSO 6	(2.57x2.107)/3= 1.80

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
PHY P 1	3	3		2		1	2	2	2	2	3	3
WEIGHTED AVERAGE	3	2.57		2.42		0.57	2.2	2.2	2.42	2.28	2.71	2.57
ATTAINMENT LEVEL	2.107	1.804		1.699		0.4	1.54	1.54	1.699	1.601	1.903	1.80

REVISED Bloom's Taxonomy Action Verbs

Definitions	I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
Bloom's Definition	Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.	Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.
Verbs	• Choose • Define • Find • How • Label • List • Match • Name • Omit • Recall • Relate • Select • Show • Spell • Tell • What • When • Where • Which • Who • Why	• Classify • Compare • Contrast • Demonstrate • Explain • Extend • Illustrate • Infer • Interpret • Outline • Relate • Rephrase • Show • Summarize • Translate	• Apply • Build • Choose • Construct • Develop • Experiment with • Identify • Interview • Make use of • Model • Organize • Plan • Select • Solve • Utilize	• Analyze • Assume • Categorize • Classify • Compare • Conclusion • Contrast • Discover • Dissect • Distinguish • Divide • Examine • Function • Inference • Inspect • List • Motive • Relationships • Simplify • Survey • Take part in • Test for • Theme	• Agree • Appraise • Assess • Award • Choose • Compare • Conclude • Criteria • Criticize • Decide • Deduct • Defend • Determine • Disprove • Estimate • Evaluate • Explain • Importance • Influence • Interpret • Judge • Justify • Mark • Measure • Opinion • Perceive • Prioritize • Prove • Rate • Recommend • Rule on • Select • Support • Value	• Adapt • Build • Change • Choose • Combine • Compile • Compose • Construct • Create • Delete • Design • Develop • Discuss • Elaborate • Estimate • Formulate • Happen • Imagine • Improve • Invent • Make up • Maximize • Minimize • Modify • Original • Originate • Plan • Predict • Propose • Solution • Solve • Suppose • Test • Theory

Anderson, L. W., & Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing, Abridged Edition. Boston, MA: Allyn and Bacon.

DEPARTMENT OF PHYSICS   **MID I EXAMINATION PHYSICS PAPER I**

(MAX.MARKS:20)

SECTION A

Answer any one of the following essay questions (1X5 =5M)

1. Explain the motion of a rocket and deduce expression for its final velocity?
2. State Kepler's laws of planetary motion and verify first law?
3. Deduce Lorentz transformation equations?

SECTION B

Answer any five of the following short answer questions (5X2 =10M)

1. Define impact parameter and scattering cross section?
2. Explain precession of equinoxes?
3. Show that central force is conservative force?
4. Write a short note on geo stationary satellite?
5. Define central force and write its characteristics?
6. Write and explain postulates of special theory of relativity?
7. What is length contraction and obtain expression for it?

SECTION C

Answer all following objective questions (10X1/2 =5M)

1. Curl of a conservative force is always……………………………
2. Kepler's first law is also known as………………………
3. The path of a planet around sun is……………………
4. 1amu is equivalent to ………………………..MeV
5. The rest mass of a particle is 10 grams, what is its mass when it is moving with a velocity of light C ……………………………………..
6. Moving objects look shorter in length (thinner) than stationary objects, this is due to ……………………………………………
7. The square of time period of a planet is proportional to……………………….
   (a) Cube of length of semi major axis (b) Square of semi minor axis

   (c) Square of major axis (d) None of the above

8. The angular momentum of a body under central force is……………….
   (a) Zero (b) Always constant (c) Infinite (d) All the above
9. The special theory of relativity treat problems involving………………..
   (a) Inertial frames (b) Non inertial frames
   (b) (c) All reference frames (d) None of the above
10. Length contraction happens only ………………….
    (a) Along the direction of motion (b) Perpendicular to the direction of motion

    (C) Never happens (d) All are correct

****** All the best ******

Max marks:15 M

Section A

Answer any one of the following questions ($1 \times 5 = 5M$)

1. Differentiate undamped, damped, and forced vibrations with examples?
2. Discuss normal modes in two coupled oscillator ?
3. Obtain expressions for harmonics produced in a stretched string and write the relation between them

Section B

Answer any five of the following questions ($5 \times 2 = 10M$)

4. Define Resonance and write any two examples?
5. What is relaxation time, quality factor explain?
6. Write the laws of transverse wave in stretched string?
7. What are coupled oscillations?
8. Define logarithmic decrement and deduce its expression?
9. Write any four the applications of ultrasonics?
10. Write any two methods to detect the ultrasonics?

******** All the best *******

COMMISSIONERATE OF COLLEGEGIATE EDUCATION
GOVERNMENT OF ANDHRA PRADESH

STUDENT EVALUATION REPORT

S.V.L.N.S GOVERNMENT DEGREE COLLEGE
BHEEMUNIPATNAM

Name of the Faculty: M. RAJESWARA RAO   **Subject:** Physics   **Semester:** I   **Title of the Paper:** Mechanics, Waves and Oscillations

Sl.No	Student Id : OAM202101	Student Name	Specialization code	Program Name: I BSC (MPC)	Course Name: Mechanics, waves and oscillations	University Register No;72112220	Continuous internal Assessment (CIA)								Sem End Exams(SEE)	Total (CIA+SEE)	Result	Practical Marks	Result
							Mid Exam-1	Mid Exam-2	Total (Mid-1+Mid-2)	Assignments	Seminar/Quiz/Field Trip/	Clean&Green&Attendae	Total(I+II+III+IV)	Scale down to 25					
							20	15	35	5	5	5	50	25	75	100	P/F	50	P/F
									I	II	III	IV							
	436517	APURUBOTHU DURGA				5001	18	11	29	5	4	5	43	23	F			46	P
	407661	BHOJARAJU ANITHA				5002	15	12	27	4	4	4	39	20	F			46	P
	443699	BONI GANESWARA RAO				5003	16	4	20	2	4	2	28	14	AB			AB	F
	492149	BOYI RAJESH				5004	10	8	18	3	4	3	28	14	F			AB	F
	435591	BUSA VINAY				5005	13	11	24	4	3	4	35	18	F			42	P
	592141	BUTTALA RAJESWARI				5006	15	13	28	5	5	5	43	22	F			45	P
	387887	CHANDAKA KALYANI				5007	19	12	31	5	4	4	44	22	P			46	P
	272209	CHEGIREDDY NAGESWARA REDDY				5008	13	08	21	5	4	4	34	17	F			40	P
	517666	CHETLA NARASIMHAREDDY				5009	14	08	22	4	4	4	34	17	C			46	P

Sr	Roll No	Name			Code									Grade		Marks	Result
10	443265	CHILLA APPALA NARASAMMA			5010	16	12	28	4	4	4	40	20	F		41	P
11		CHUKKA SAVESH			5011	11	10	21	3	2	3	29	15	F		40	P
12	326360	CHUKKA VASU			5012	8	6	14	5	5	4	28	14	F		40	P
13		DHONTALA SRINU			5013	15	9	24	4	5	4	37	19	F		42	P
14	232567	DODDI PAVAN KUMAR			5014	10	11	21	4	3	4	32	16	F		45	P
15	436524	DUBA MOHANA			5015	16	11	27	5	3	4	39	20	F		46	P
16	258848	DUMPA SWATHI			5016	13	11	24	5	4	5	38	19	F		46	P
17	346052	GARIKIN AVANDANA			5017	18	12	30	4	5	5	44	22	B+		47	P
18	251575	GOLAGANA VAMSI			5018	13	10	23	4	4	4	35	18	P		45	P
19	387156	GUVVALA MANGA			5019	12	13	25	4	4	4	37	19	P		44	P
	472469	JAMPA RAMESH			5020	10	12	22	4	3	4	33	17	AB		41	P
	447143	JARLU SANTHI			5021	10	10	20	3	2	3	28	14	AB		AB	F
	370135	KALLA KALYAN RAM			5022	13	7	20	4	3	4	31	16	P		46	P
	353636	KALLEMPUDI DURGA JYOTHI			5023	19	13	32	5	3	5	45	23	B		45	P
	322790	KANNURU SIVA			5024	12	08	20	3	3	2	28	14	F		AB	F
	382136	KANUGUJJI SWATHI			5025	17	13	30	5	3	4	42	21	B+		46	P
	373096	KILLARI SRAVANI			5026	18	14	32	4	4	5	45	23	C		47	P
	392364	KOKKIRI POLI RAJU			5027	08	08	16	4	3	4	27	14	P		40	P
	465967	KOLLI KALYAN			5028	20	14	34	4	4	4	46	23	B+		41	P
	376788	KORATHAM GREESHMA			5029	17	12	29	4	4	4	41	21	F		42	P
	241015	KORRA PRASAD			5030	09	12	21	4	3	4	32	16	F		41	P
	424941	KORRA SURYAM			5031	09	08	17	4	2	4	27	14	P		41	P
	583571	KOYYA YELLAYYA REDDY			5032	10	11	21	5	4	4	34	17	P		46	P
	401519	KURAMAN SRAVANI			5033	09	14	23	4	4	3	34	17	P		45	P
		LOLUGU DHANA LAKSHMI			5034	16	13	29	4	5	4	42	21	AB		44	P

35	462318	MAJJI BHAVANI				5035	17	13	30	4	5	4	43	22	B			43	P
36	193854	MUKKA DURG RAO				5036	19	12	31	5	4	4	44	22	B			45	P
37	349288	MUVVALA SIDDHU				5037	10	10	20	4	2	3	29	15	P			40	P
38	416991	MYNAPU RAJU				5038	17	12	29	5	4	4	42	21	C			42	P
39	405612	NAGIREDLA BHANU PRASAD				5039	19	12	31	4	3	4	42	21	B+			44	P
40	328471	PAKKURTHI SAI KUMAR				5040	19	13	32	4	4	4	44	22	C			41	P
41	434364	PESALA RAJU				5041	13	10	23	4	3	4	34	17	F			44	P
42	237299	RAVUPALLI SAGRA NAIDU				5042	18	12	30	4	5	4	44	22	C			42	P
43	241134	RIKKA HARI CHITTIBABU				5043	10	12	22	4	2	4	32	16	F			47	P
44	399146	SEERAM SUJI				5044	19	13	32	4	4	4	44	22	AB			48	P
45	244366	SIDDANTAPU PAVANI				5045	20	14	34	5	3	5	47	24	B+			47	P
46	306031	SIRIPURAPU MADHAVI				5046	17	11	28	5	5	4	42	21	C			42	P
47		SIRIPURAPU VINOD KUMAR				5047	9	10	19	4	5	4	32	16	F			40	P
48	250007	SUNKARI CHINARAJU				5048	19	10	29	4	4	4	41	21	F			41	P
49	407893	TAVVA ATCHUTA LAKSHMI BHAVANI				5049	18	10	28	5	3	4	40	20	C			42	P
50	262602	UJJU UMA				5050	18	14	32	4	4	4	44	22	B+			42	P
51	350184	VANGALAPUDI RAJU				5051	11	15	26	4	4	4	38	19	F			40	P
52	402275	VANKA NARSING				5052	14	12	26	4	4	4	38	19	F			40	P
53	441216	VASNTHA JAYAVARDHAN				5053	09	07	16	4	4	4	28	14	F			AB	F
54	409661	VEDURU ABHI RAM				5054	14	10	24	4	5	4	37	19	C			44	P
55	278558	YERUSU LIKHITHA				5055	20	13	33	5	4	4	46	23	C			48	P

Average pass percentage: 27/50

Signature of Lecturer: 12/4/2022

Signature of Principal: