



ESTD : 2007



Sri Indu Institute of Engineering and Technology (Autonomous)

(Formerly RVR Institute of Engineering & Technology)

An Autonomous Institution Under UGC

NAAC Accredited. Recognized Under 2(f) of UGC Act 1956

EAMCET CODE: INDI

Approved by AICTE, New Delhi, & Affiliated to JNTUH, Hyderabad.

JNTUH CODE: X3

COURSE FILE

ON

APPLIED PHYSICS

Course Code – AP102BS

**I-B. Tech Semester-I
A.Y. 2022-2023**

Prepared by

B. SANTHI

Asst. Professor

Head of the Department
Department of H&S
SRI INDU INSTITUTE OF ENGG & TECH
Sheriguda(VIII) Ibrahimpatnam (M) R.R. Dist-501 510

PRINCIPAL
Sri Indu Institute of Engineering & Techn.
Sheriguda(VIII), Ibrahimpatnam
R.R. Dist. Telangana-501 510.



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INSTITUTE VISION & MISSION

Vision:

To become a premier institute of academic excellence by providing the world class education that transforms individuals into high intellectuals, by evolving them as empathetic and responsible citizens through continuous improvement.

Mission:

- **IM1:** To offer outcome-based education and enhancement of technical and practical skills.
- **IM2:** To Continuous assess of teaching-learning process through institute-industry collaboration.
- **IM3:** To be a center of excellence for innovative and emerging fields in technology development with state-of-art facilities to faculty and students' fraternity.
- **IM4:** To Create an enterprising environment to ensure culture, ethics and social responsibility among the stakeholders.

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PROGRAM OUTCOMES

PO1: ENGINEERING KNOWLEDGE: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: PROBLEM ANALYSIS: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: DESIGN/DEVELOPMENT OF SOLUTIONS: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: MODERN TOOL USAGE: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6: THE ENGINEER AND SOCIETY: Apply reasoning informed by the contextual knowledge to associate, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: ENVIRONMENT AND SUSTAINABILITY: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: ETHICS: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: INDIVIDUAL AND TEAM WORK: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: COMMUNICATION: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions.

PO11: PROJECT MANAGEMENT AND FINANCE: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: LIFE-LONG LEARNING: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

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SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY
B.Tech. in ELECTRONICS AND COMMUNICATION ENGINEERING
COURSE STRUCTURE, I YEAR SYLLABUS (BR22 Regulations)

Applicable from Academic Year: 2022-23 Batch

I Year I Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1.	MA101BS	Matrices and Calculus	3	1	0	4
2.	AP102BS	Applied Physics	3	1	0	4
3.	CS102ES	C Programming for Engineers	3	0	0	3
4.	ME102ES	Engineering Workshop	0	1	3	2.5
5.	EN104HS	English for Skill Enhancement	2	0	0	2
6.	EC101ES	Elements of Electronics and Communication Engineering	0	0	2	1
7.	AP105BS	Applied Physics Laboratory	0	0	3	1.5
8.	EN107HS	English Language and Communication Skills Laboratory	0	0	2	1
9.	CS105ES	C Programming for Engineers Laboratory	0	0	2	1
10.	*MC101ES	Environmental Science	3	0	0	0
11.		Induction Programme				
		Total	14	3	12	20

I Year II Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1.	MA201BS	Ordinary Differential Equations and Vector Calculus	3	1	0	4
2.	CH203BS	Engineering Chemistry	3	1	0	4
3.	ME201ES	Computer Aided Engineering Graphics	1	0	4	3
4.	EE201ES	Basic Electrical Engineering	2	0	0	2
5.	EC201ES	Electronic Devices and Circuits	2	0	0	2
6.	CS202ES	Applied Python Programming Laboratory	0	1	2	2
7.	CH206BS	Engineering Chemistry Laboratory	0	0	2	1
8.	EE202ES	Basic Electrical Engineering Laboratory	0	0	2	1
9.	EC202ES	Electronic Devices and Circuits Laboratory	0	0	2	1
		Total	11	3	12	20

APPLIED PHYSICS
(Course Code: AP102BS)

B. Tech. I Year I Sem.

L T P C
3 1 0 4

Pre-requisites: 10 + 2 Physics

Course Objectives: The objectives of this course for the student are to:

1. Understand the basic principles of quantum physics and band theory of solids.
2. Understand the underlying mechanism involved in construction and working Principles of various semiconductor devices.
3. Study the fundamental concepts related to the dielectric, magnetic and energy materials.
4. Identify the importance of Nano scale, quantum confinement and various fabrications

Topics

5. Study the characteristics of lasers and optical fibers.

Course Outcomes: At the end of the course the student will be able to:

1. Understand physical world from fundamental point of view by the concepts of Quantum mechanics and visualize the difference between conductor, semiconductor, and an insulator by classification of solids.
2. Identify the role of semiconductor devices in science and engineering Applications.
3. Explore the fundamental properties of dielectric, magnetic materials and energy for their applications
4. Appreciate the features and applications of Nano materials.
5. Understand various aspects of Lasers and Optical fiber and their applications in diverse fields

UNIT - I: QUANTUM PHYSICS AND SOLIDS

Quantum Mechanics: Introduction to quantum physics, blackbody radiation – Stefan-Boltzmann’s law, Wein’s and Rayleigh-Jean’s law, Planck’s radiation law - photoelectric effect - Davisson and Germer experiment –Heisenberg uncertainty principle - Born interpretation of the wave function – time independent Schrodinger wave equation - particle in one dimensional potential box.

Solids: Symmetry in solids, free electron theory (Drude & Lorentz, Sommerfeld) - Fermi-Dirac distribution - Bloch’s theorem -Kronig-Penney model – E-K diagram- effective mass of electron-origin of energy bands- classification of solids.

UNIT - II: SEMICONDUCTORS AND DEVICES

Intrinsic and extrinsic semiconductors – Hall effect - direct and indirect band gap semiconductors - construction, principle of operation and characteristics of P-N Junction diode, Zener diode and bipolar junction transistor (BJT)–LED, PIN diode, avalanche photo diode (APD) and solar cells, their structure, materials, working principle and characteristics.

UNIT - III: DIELECTRIC, MAGNETIC AND ENERGY MATERIALS

Dielectric Materials: Basic definitions- types of polarizations (qualitative) - ferroelectric, piezoelectric, and pyro electric materials – applications – liquid crystal displays (LCD) and crystal oscillators. Magnetic Materials: Hysteresis-soft and hard magnetic materials magnetstriction magneto-resistance -applications -bubble memory devices, magnetic field sensors and multiferroics. Energy Materials: Conductivity of liquid and solid electrolytes- superionic conductors - materials and electrolytes for super capacitors - rechargeable ion batteries, solid fuel cells.

UNIT - IV: NANOTECHNOLOGY

Nanoscale, quantum confinement, surface to volume ratio, bottom-up fabrication: sol-gel, precipitation, combustion methods – top-down fabrication: ball milling - physical vapour deposition (PVD) - chemical vapour deposition (CVD) - characterization techniques - XRD, SEM &TEM - applications of nanomaterials.

UNIT - V: LASER AND FIBER OPTICS

Lasers: Laser beam characteristics-three quantum processes-Einstein coefficients and their relations-lasing action - pumping methods- ruby laser, He-Ne laser , CO₂ laser, Argon ion Laser, Nd:YAG laser-semiconductor laser-applications of laser.

Fiber Optics: Introduction to optical fiber- advantages of optical Fibers - total internal reflection-construction of optical fiber - acceptance angle - numerical aperture- classification of optical fibers-losses in optical fiber - optical fiber for communication system - applications.

TEXT BOOKS:

1. M. N. Avadhanulu, P.G. Kshirsagar & TVS Arun Murthy” A Text book of Engineering Physics”-S. Chand Publications, 11th Edition 2019.
2. Engineering Physics by Shatendra Sharma and Jyotsna Sharma, Pearson Publication,2019
3. Semiconductor Physics and Devices- Basic Principle – Donald A, Neamen, Mc Graw Hill, 4thEdition, 2021.
4. B.K. Pandey and S. Chaturvedi, Engineering Physics, Cengage Learning, 2ndEdition, 2022.
5. Essentials of Nanoscience & Nanotechnology by Narasimha Reddy Katta, Typical Creative’s NANO DIGEST, 1st Edition, 2021.

REFERENCE BOOKS:

1. Quantum Physics, H.C. Verma, TBS Publication, 2nd Edition 2012.
2. Fundamentals of Physics – Halliday, Resnick and Walker, John Wiley & Sons, 11th Edition, 2018.
3. Introduction to Solid State Physics, Charles Kittel, Wiley Eastern, 2019.
4. Elementary Solid State Physics, S.L. Gupta and V. Kumar, Pragathi Prakashan, 2019.
5. A.K. Bhandhopadhyaya - Nano Materials, New Age International, 1stEdition, 2007.
6. Energy Materials a Short Introduction to Functional Materials for Energy Conversion Storage Aliaksandr S. Bandarenka, CRC Press Taylor & Francis Group
7. Energy Materials, Taylor & Francis Group, 1st Edition, 2022.



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Khalsa Ibrahimpatnam, Sheriguda(V), Ibrahimpatnam(M), Ranga Reddy Dist., Telangana – 501510

Course: Applied Physics

Class: I- B TECH- ECE

Course Outcomes

After completing this course the student will be able to:

C112.1: Explain Principles of Quantum mechanics and electron theory of solids. **Applying L3**

C112.2: Analyze the various semiconductor devices. **Analyzing L4**

C112.3: Explaining the characteristic properties and applications of dielectric, magnetic and energy materials. **Understanding L2**

C112.4: Explain nanomaterials by various methods and evaluate their characteristics properties. **Evaluating L5**

C112.5: Define the fundamental concepts of laser and construction of various lasers. **Remembering L1**

C112.6: Functioning the principles and characteristics of optical fibers. **Analyzing L4**



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CO's Mapping with PO/PSO

Mapping of course outcomes with program outcomes:

High -3 Medium -2 Low-1

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C112.1	3	2	-	-	-	-	-	-	-	-	-	1
C112.2	3	2	-	-	-	-	-	-	-	-	-	1
C112.3	3	2	-	-	-	-	-	-	-	-	-	1
C112.4	3	-	-	-	-	-	-	-	-	2	-	1
C112.5	3	2	-	-	-	-	-	-	-	2	-	1
C112.6	3	2	-	-	-	-	-	-	-	2	-	1
C112	3	2.33	-	-	-	-	-	-	-	2	-	1



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CO-PO mapping Justification

PO1. ENGINEERING KNOWLEDGE: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2.PROBLEM ANALYSIS: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO10. COMMUNICATION: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions.

PO12. LIFE-LONG LEARNING: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological

C112.1: Explain Principles of Quantum mechanics and electron theory of solids (Applying)

	Justification
PO1	Student get the knowledge of the Quantum behavior of matter and electron theory of solids (level 3)
PO2	Student can identify the method and apply it to the given problem.(level2)
PO12	Student recognize the Principles of Quantum mechanics and electron theory of solids (level1)

C112.2: Analyze the various semiconductor devices. (Analyzing)

	Justification
PO1	student acquire knowledge of various semiconductor devices (level 3)
PO2	Student draw the characteristics of optoelectronic devices (level2)
PO12	Student recognize the various semiconductor devices (level1)

C112.3: Explaining the characteristic properties and applications of dielectric, magnetic and energy materials. (Understanding)

	Justification
PO1	Student classify the dielectric, magnetic and energy materials. (level3)
PO2	Student compare Characteristics of dielectric, magnetic and energy materials(level2)
PO12	Student recognize the properties and applications of dielectric, magnetic and energy materials. (level1)

C112.4: Explain nanomaterials by various methods and evaluate their characteristics properties. (Evaluating)

	Justification
PO1	Student can explain various methods of nanomaterials. (level3)
PO10	Student communicate effectively nanoscience in engineering community(level2)
PO12	Student recognize the nano materials fabrication and characterization techniques in engineering field(level1)

C112.5: Define the fundamental concepts of laser and construction of various laser (Remembering)

	Justification
PO1	Student summarize working principle of lasers(level3)
PO2	Student analyze the different types of laser devices(level2)
PO10	Student can apply laser principles to judge pumping methods (level2)
PO12	Student recognize the laser techniques in engineering field(level1)

C112.6: Functioning the principles and characteristics of optical fibers. (Creating)

	Justification
PO1	Student get knowledge on fiber optic technology(level3)
PO2	Student classify the optical fibers(level2)
PO10	Student communicate effectively fiber optic principles in engineering technology(level2)
PO12	Student recognize the losses associated with optical fibers(level1)



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<https://siiet.ac.in/>

Lr. No. SIIET/BR22/Academic Calendar/2022/02

Date: 15.12.2022

REVISED ACADEMIC CALENDAR I B.TECH FOR THE ACADEMIC YEAR 2022-23 (BR22-REGULATIONS)

Dr. I. Satyanarayana,
Principal.

X3

To,
All the HOD's
Sir,

Sub: SIIET (Autonomous)–Academic & Evaluation–Revised Academic Calendar for I B.Tech - I & II Semesters for the academic year 2022-2023-Reg.

The approved Academic Calendar for I B.Tech – I & II Semesters for the academic year 2022-23 is given below.

I-SEMESTER

S. NO	Description	Period		Duration
		From	To	
1.	Commencement of I Semester class work (including Induction programme)	03.11.2022		
2.	1 st Spell of Instructions	03.11.2022	28.12.2022	8 Weeks
3.	I Mid Examinations	29.12.2022	04.01.2023	1 Week
4.	Submission of First Mid Term Exam Marks to the Autonomous Section on or before	10.01.2023		
5.	2 nd Spell of Instructions	05.01.2023	02.03.2023	8 Weeks
6.	Second Mid Term Examinations	03.03.2023	09.03.2023	1 Week
7.	Preparation & Practical Examinations	10.03.2023	16.03.2023	1 Week
8.	Submission of Second Mid Term Exam Marks to the Autonomous Section on or before	16.03.2023		
9.	I Semester End Examinations	17.03.2023	01.04.2023	2 Weeks

II-SEMESTER

S. NO	Description	Period		Duration
		From	To	
1.	Commencement of II Semester class work	03.04.2023		
2.	1 st Spell of Instructions (including Summer Vacation)	03.04.2023	10.06.2023	10 Weeks
	Summer Vacation	15.05.2023	27.05.2023	2 Weeks
3.	I Mid Examinations	12.06.2023	17.06.2023	1 Week
4.	Submission of First Mid Term Exam Marks to the Autonomous Section on or before	23.06.2023		
5.	2 nd Spell of Instructions	19.06.2023	12.08.2023	8 Weeks
6.	II Mid Term Examinations	14.08.2023	19.08.2023	1 Week
7.	Preparation & Practical Examinations	21.08.2023	26.08.2023	1 Week
8.	Submission of Second Mid Term Exam Marks to the Autonomous Section on or before	26.08.2023		
9.	II Semester End Examinations	28.08.2023	09.09.2023	2 Weeks
Commencement of Class Work for II B.Tech I Semester – 11.09.2023				

K. Srinivas
HEAD OF EXAMINATIONS
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Class: ECE

Semester: I

W.E.F: 14-11-2022

LH: -D-209

	I 9:40- 10:30	II 10:30 - 11:20	III 11:20- 12:10	12:10- 12:45	IV 12.45- 1.35	V 1.35- 2.25	VI 2.25- 3.15	VII 3.15-4.00
MON	CPE	ES	M&C	L U N C H	AP	ENG	M&C	LIB
TUE	AP	M&C	ENG		CPE LAB			PPS(T)/AP(T)
WED	EWS/ELCS LAB				M&C	AP	CPE	ENG(T)/M&C(T)
THU	AP LAB				CPE	ENG	ES	AP(T)/CPE(T)
FRI	AP	CPE	ES		EWS/ELCS LAB			M&C(T)/ENG(T)
SAT	ENG	E-ECE LAB			CPE	M&C	AP	E-ECE(T)

Course Code	Course Name	Name of the Faculty	Course Code	Course Name	Name of the Faculty
MA101BS	Matrices and Calculus	T.THIRUPATHI REDDY	ME102ES	EWS LAB	M.V.B. KALYAN/B.SRINU NAIK
AP102BS	Applied Physics	B. Santhi	AP105BS	Applied Physics - Lab	B.SANTHI/MJANAJAI/ R. YADAGIRI RAO /M.MANISHA
CS102ES	C Programming for Engineers	B.RAJASHWARI	CS105ES	C Programming for Engineers Lab	B.RAJASHWARI/ D.SWAPNA
EN104HS	English for Skill Enhancement	G.VENKAT REDDY	EN107HS	English Language and Communication Skills Lab	G.VENKAT REDDY/E.PRARTHANA
MC101ES	Environmental Sciences	V.MOUNIKA	EC101ES	Elements of Electronics and Communication Engineering	Dr.S.SURESH/Dr.K.SRINIVAS A REDDY

B. Santhi
Class In-Charge

ch. Santhi
Time Table Coordinator



[Signature]
Head of the Department
Dr. R. YADAGIRI RAO
M.Sc., B.Ed., M.Tech(CSE), Ph.D.
Head of the Department
Department of H&S
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LESSON PLAN

Lecture hour	Topic	TA/TM	Reference book
1	Unit wise Introduction of Applied physics-I Syllabus	Lecture-Method	T-2
2	UNIT –I Quantum Mechanics and Solids Introduction to quantum physics	Lecture-Method, Web reference, Video	T-2, R-1,W-1,V-1
3	Explanation of Black body radiation	Lecture-Method	T-1,R-1
4	Derivation of of Planck's radiation law	Lecture-Method	T-1,T-2
5	Photoelectric effect explanation with diagram Variation of Intensity and frequency	Lecture-Method	T-1,T-2, R-1
6	De-Broglie's hypothesis and equation for wavelength	Lecture-Method	T-1
7	Verification of dual nature of electron- Davisson- Germer experiment	Lecture-Method, Video reference,	T-2, R-1, V-2
8	Heisenberg's Uncertainty principle and significance of the wave function-Born's explanation	Lecture-Method	T-1, R-1
9	Derivation of Schrodinger's time independent wave equation	Lecture-Method	T-1. R-1
10	Expression for energy and wave function of electron in one dimensional box.	Lecture-Method, Web reference	T-1,T-2, W-2
11	Problems on of Schrodinger's wave equation and energy of electron	Lecture-Method	T-1,T-2
12	Introduction to solids-symmetry in solids	Lecture-Method	T-2,R-2,
13	Free electron theory of solids(Drude & Lorentz , Sommerfeld)- Explanation	Lecture-Method	T-2,R-2
14	Fermi-Dirac distribution function	Lecture-Method	T-1,T-2
15	Kronig-Penny model, E-K diagram	Lecture-Method	T-1,T-2,R-2
16	Effective mass of electron-Derivation and solids classification	Lecture-Method	T-1
17	UNIT-II- Semiconductor Physics and Devices Intrinsic semiconductors explanation with diagram	Lecture-Method	T-2, R-3
18	Extrinsic semiconductors explanation with diagram	Lecture-Method	T-2,R-3

19	Hall effect explanation-Hall coefficient and Hall voltage	Lecture-Method	T-2,T-3
20	Explanation of formation of p-n junction diode and energy band diagram	Lecture-Method	T-2, R-3
21	p-n junction diode under forward and reverse bias – energy band diagram	Lecture-Method	T-2,T-3
22	Explanation of zener diode and its V -I Characteristics	Lecture-Method	T-2
23	Construction, Principle of operation of BJT	Lecture-Method	T-2,R-3
24	LED explanation with structure, working and V-I characteristics	Lecture-Method,, Video reference,	T-2,R-3, W-3
25	PIN diode working principle, explanation and V-I characteristics	Lecture-Method	T-2, V-3
26	Avalanche diode working principle, explanation and V-I characteristics	Lecture-Method	T-2,T-3
27	Explanation of working principle of solar cell with structure	Lecture-Method	T-2,T-3
28	Solar cell explanation and V-I characteristics and applications	Lecture-Method	T-2,R-3
29	UNIT-III- Dielectric, Magnetic and Energy Materials: Basic definitions	Lecture-Method	T-1, T-2
30	Explanation of Polarization and types of polarization	Lecture-Method	T-2,
31	Classification of dielectric materials -Ferroelectrics Piezo electric and pyro electric	Lecture-Method	T-2
32	Explanation of LCD and Crystal oscillators	Lecture-Method	T-2,V-4
33	Definitions of Magnetization, permeability and susceptibility Hysteresis curve explanation	Lecture-Method	T-2
34	Magnetostriction and Magneto resistance and Bubble memory devices	Lecture-Method, Video reference,	T-2, V-5
35	Magnetic field sensors and Multi ferroics-Application	Lecture-Method	T-2
36	Conductivity of liquid and solid electrolytes, superionic conductors	Lecture-Method ,	T-2 ,
37	Materials and electrolytes for super capacitors	Lecture-Method ,	T-2,R-4

38	Explanation of rechargeable ion batteries-LI-ion battery	Lecture-Method , Video reference,	T-2,R-4, V-6
39	Solid fuel cell and applications	Lecture-Method ,	T-2,R-4
40	UNIT-IV: Nanotechnology Introduction to Nanotechnology –quantum confinement	Lecture-Method	T-2, R-5
41	Surface to volume ratio-Explanation	Lecture-Method	T-2, R-5
42	Bottom up fabrication: Sol-gel, Precipitation method	Lecture-Method	T-2,T-4
43	Combustion method, top up fabrication: Ball milling, PVD Methods	Lecture-Method	T-2,T-4
44	Physical vapor deposition method	Lecture-Method	T-2
45	Chemical vapor deposition method	Lecture-Method, Video reference,	T-2,T-4,
46	Characterization techniques : XRD and SEM	Lecture-Method	T-2,R-5
47	Characterization technique: TEM and applications of nano materials	Lecture-Method	T-2,R-5,W-4
48	UNIT-V- Lasers and Fiber Optics Introduction to lasers and characteristics	Lecture-Method	T-1,T-2
49	Working principle of laser- Three Quantum processes	Lecture-Method	T-1,T-2
50	Explanation of lasing action , Population inversion and Pumping	Lecture-Method	T-2
51	Explanation of Ruby laser AND Nd:YAG laser with energy band diagram	Lecture-Method	T-1, T-2
52	Explanation of Argon-ion laser with energy band diagram	Lecture-Method	T-1,T-2
53	Explanation of Carbon dioxide laser with energy band diagram	Lecture-Method	T-1,T-2
54	Explanation of He-Ne laser with energy band diagram	Lecture-Method, Web reference	T-1,T-2,W-5
55	Explanation of Semiconductor laser with energy band diagram-Application	Lecture-Method	T-1,T-2

56	Introduction to Optical fiber	Lecture-Method	T-2
57	Total internal reflection explanation with diagram	Lecture-Method	T-2
58	Derivation for Acceptance angle and cone and Numerical aperture	Lecture-Method	T-1,T-2
59	Classification of optical fibres	Lecture-Method	T-2
60	Losses associated with optical fibers	Lecture-Method	T-1, T-2
61	Optical fiber for communication system	Lecture-Method, Web reference	T-2, W-6
62	Applications of optical fibers	Lecture-Method	T-1, T-2

TEXT BOOKS:

1. Engineering Physics, B.K. Pandey, S. Chaturvedi - Cengage Learning.
2. Applied Physics Dr. TVS Arun Murthy, Dr Avadhanulu- S Chand
3. Semiconductor Physics and Devices- Basic Principle – Donald A, Neamen, Mc Graw Hill, 4thEdition,2021.
4. Essentials of Nanoscience & Nanotechnology by Narasimha Reddy Katta, Typical Creatives NANO DIGEST, 1st Edition, 2021.

REFERENCES:

1. Quantum Physics, H.C. Verma, TBS Publication, 2nd Edition 2012.
2. Introduction to Solid State Physics, Charles Kittel, Wiley Eastern, 2019.
3. MJ. Singh, Semiconductor Optoelectronics: Physics and Technology, Mc Graw-Hill inc. (1995).
4. Energy Materials, Taylor & Francis Group, 1st Edition, 2022.
5. Fundamentals of Physics – Halliday, Resnick and Walker, John Wiley & Sons, 11th Edition, 2018.



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Khalsa Ibrahimpatnam, Sheriguda(V), Ibrahimpatnam(M), Ranga Reddy Dist., Telangana – 501510

GAP WITHIN THE SYLLABUS-MAPPING TO CO, PO

Boltzmann Distribution law, de-Broglie hypothesis, Schrodinger Time Dependent Wave Equation, Fermi-Dirac Law, Classification of Dielectric materials, Magnetic moment, Magnetic induction, Magnetic susceptibility, Bhor –Magnetron, Laws of Ray-Optics.

Course Outcomes

After completing this topic, the student will be able to:

1. Explain quantum behavior of matter and classify the solids into conductors, semiconductors and Insulators. (Understanding)
2. Make use of the fundamental properties of dielectric, magnetic and energy materials for Their application. (Applying)
3. Applying the fiber optic principles in communication systems. (Applying)

Mapping of course outcomes with program outcomes:

High -3 Medium -2 Low-1

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2
1	3	2										1
3	3	2										1
6	3	2								2		1

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GAP BEYOND THE SYLLABUS-MAPPING TO PO/PSO

1. Introducing current Scientific and Technological innovations and development.
2. Students are encouraged to take part in Technical Quizzes and various co-curricular activities to ensure their overall development
3. Teaching at least a few portions giving practical demonstration to create interest among the students
4. Motivate Students Participate Various Science Exhibitions to gaining Practical Knowledge
5. Regular industrial visits help students to know the information useful for knowledge up gradation

Mapping to PO/PSO:

High -3 Medium -2 Low-1

PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1					2							2
2									2			
3											3	
4	3											
5										2		



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WEB REFERENCES:

W-1 : <http://www.people.fas.harvard.edu/~djmorin/waves/quantum.pdf>(Introduction)

W-2: https://en.wikipedia.org/wiki/Particle_in_a_box

W-3: http://ggn.dronacharya.info/ECEDept/Downloads/QuestionBank/VIIsem/oc_C-Unit-3-LED_Structures.pdf

W-4: <https://www.slideshare.net/JessaArio/transmission-electron-microscopy-14047650>

W-5: <https://www.daenotes.com/electronics/microwave-radar/He-Ne-laser>

W-6: https://en.wikipedia.org/wiki/Fiber-optic_communication

VIDEO REFERENCES:

V-1: <https://www.youtube.com/watch?v=pGerRhxNQJE>(video)

V-2: https://www.youtube.com/watch?v=Ho7K27B_Uu8

V-3: <https://www.youtube.com/watch?v=WR4559RqRzU>

V-4: <https://www.youtube.com/watch?v=IsX-FJACNsM&t=417s>

V-5: <https://www.youtube.com/watch?v=rJ-ysch4-NM>

V-6: <https://ul.org/research/electrochemical-safety/getting-started-electrochemical-safety/what-are-lithium-ion>



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LECTURE NOTES

Unit :1 Quantum Physics and Solids:

<https://drive.google.com/file/d/1qSqCr0jAwgU811Toag2BPW-NeH6iKvs-/view?usp=sharing>

Unit :2 Semiconductors and Devices:

<https://drive.google.com/file/d/16HtidqDQyO3yxQcRIIJWZDv95NF99oN-/view?usp=sharing>

Unit :3 Dielectric, Magnetic and Energy Materials:

<https://drive.google.com/file/d/1eX3STCj7eJ5M9j4xHggQF4o-G1fTM8e6/view?usp=sharing>

Unit :4 Nanotechnology:

<https://drive.google.com/file/d/11mCvbrWquTgTgHipt5Bk3qUAG3qkEbQ1/view?usp=sharing>

Unit :5 Lasers and Fibre Optics:

https://drive.google.com/file/d/1MvTUn7xj4_BjqhqK7eCjJnQmG9K56b72/view?usp=sharing



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POWER POINT PRESENTATION

Semiconductors:

https://docs.google.com/presentation/d/1tm8tAbdhYXFS7D-XNm68cG60di_sOCKK/edit?usp=sharing&oid=116158123970542554956&rtpof=true&sd=true

Magnetic properties:

https://docs.google.com/presentation/d/1y6g3KfYErRJ4404pC6F-3YcBONZj_dwu/edit?usp=sharing&oid=116158123970542554956&rtpof=true&sd=true

Optical Fibre:

https://docs.google.com/presentation/d/1RZp4-CI_MmobTe7LpWSoTmi1BQlq0CX4/edit?usp=sharing&oid=116158123970542554956&rtpof=true&sd=true



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PREVIOUS QUESTION PAPERS

Link:

<https://drive.google.com/file/d/1tw74vgRZt0a17vR925UaMkVFurJCMG9A/view?usp=sharing>



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I B. TECH I – MID Examinations, Dec-2022/ Jan-2023

Set-II

BR22

Branch: CIVIL, ECE, CSE(AL&ML), CSE(IOT), AI&DS
Subject: APPLIED PHYSICS

Marks: 20

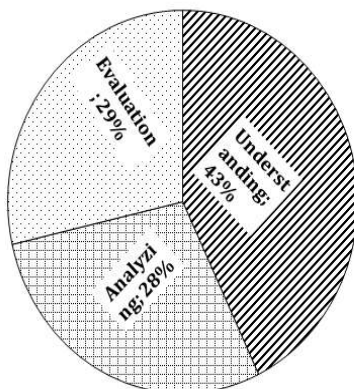
Date: 30-12-2022(FN)
Time: 2 Hours

Answer any FOUR Questions. All question Carry Equal Marks

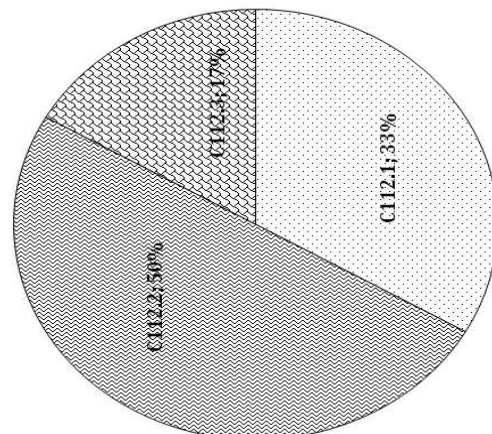
4*5 =20 Marks

1. Derive Eigen values and Eigen functions for a particle in one dimensional box.
(L2) (Understanding)
2.
 - a. Classify the conductors, semiconductors and insulators on the basis of band theory of solids.
(L4) (Analyze)
 - b. Explain Fermi-Dirac distribution function equation.
(L5) (Evaluation)
3. Explain the construction and working of light emitting diode. (L2) (Understanding)
4. Derive an expression for Hall coefficient and Hall mobility? (L2) (Understanding)
5. Explain formation of depletion region in p-n junction diode and write its applications.
(L5) (Evaluation)
6. Analyze briefly ferroelectrics and piezo electric? (L4) (Analyze)

QUESTION PAPER MAPPING WITH BT



QUESTION PAPER MAPPING WITH CO'S



Mid-1 Answer Script Link

<https://drive.google.com/file/d/1WJ8IP2BbMzVWEKUf8QgdjiM6ygrs9fMF/view?usp=sharing>



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I B. TECH II – MID Examinations, March-2023

BR22

Set-I

Branch: CIVIL, ECE, CSE(AL&ML), CSE(IOT), AI&DS
Subject: APPLIED PHYSICS

Marks: 20

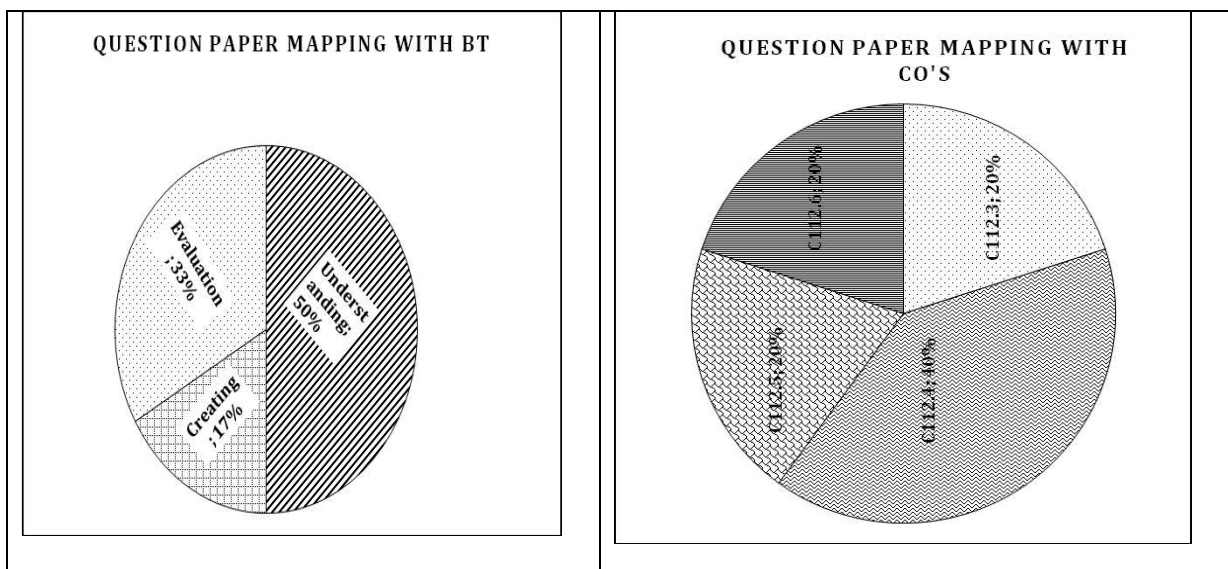
Date: 04-03-2022(FN)
Time: 2 Hours

PART-B

Answer any **FOUR** Questions. All question Carry Equal Marks

4*5 =20 Marks

1. Describe liquid crystal displays? (L2) (Understanding)
2. Discuss sol-gel method to preparation of nanomaterials? (L6) (Creating)
3. Explain how the nanomaterials are characterized by using TEM? (L5) (Evaluation)
4. Explain the construction of He-Ne laser with neat energy level diagram. (L5) (Evaluation)
5. Write the principle and working of Nd: YAG laser with neat energy level diagram? (L2) (Understanding)
6. Derive the relation for acceptance angle and numerical aperture of an optical fiber. (L2) (Understanding)



MID -2 Answer Script Link

<https://drive.google.com/file/d/1rfhLz3DuGRkLpyrfavt9Efl6KWymILnu/view?usp=sharing>

Mid-1 & Mid-2 Key papers Link:

<https://drive.google.com/file/d/1ZNqsdl8Ekf27XXBiJ16oSfoCyECiwvRe/view?usp=sharing>



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ASSIGNMENT QUESTIONS(MID-I)

APPLIED PHYSICS (SEM-I)

1. Describe the construction and working of Davisson and Germer's experiment
(L2) (Understanding)
2. Derive Eigen values and Eigen functions for a particle in one dimensional box.
(L2) (Understanding)
3. Discuss Kronig Penny model for the motion of an electron in a periodic potential.
(L6) (Creating)
4. Derive an expression for hall coefficient and hall mobility (L2) (Understanding)
5. Discuss the construction and working of solar cell. (L6) (Creating)
6. Explain the construction and working of? (L5) (Evaluation)

MID-1 Assignment link :

<https://drive.google.com/file/d/1Je6bzgKzKr5p68smfnBLOZ56hxR4nclh/view?usp=sharing>



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ASSIGNMENT QUESTIONS (MID-II)
APPLIED PHYSICS (SEM-I)

1. Explain briefly liquid crystal displays(LCD). (Understanding) (L2)
2. Explain sol-gel method . (Understanding) (L2)
3. Explain how the nanomaterials are characterized by using TEM ? (Evaluation) (L5)
4. Explain the principle and working of Nd: YAG laser with neat energy level diagram?
(Evaluation) (L5)
5. Derive the relation for acceptance angle and numerical aperture of an optical fiber.
(Understanding) (L2)
6. Distinguish between monomode and multimode fiber Analyzing (L4)

MID -2 Assignment

https://drive.google.com/file/d/1KCcqTf40YcpPxL6b6j8EPYiOa_VnOljr/view?usp=sharing



SCHEME OF EVALUATION WITH CO and BTL MAPPING

SCHEME OF EVALUATION-APPLIED PHYSICS(MID-I) (Set-II)		
<i>Instructions:</i>		
a) Any answer by alternate method should be valued and suitably awarded. b) All answers (including extra, stuck off and repeated) should be valued. Answers with maximum marks must be considered.		
Qn No	Description of Answer	Marks
1.	To get derivation Energy of electron $E_n = \frac{n^2 h^2}{8mL^2}$ (C112.1) (Understanding)	3
	To get derivation wave function $\psi_n = \sqrt{\frac{2}{L}} \sin \frac{n\pi x}{L}$ (C112.1) (Understanding)	2
2.a.	Classification of solids into the conductors, semiconductors and insulators on the basis of band theory of solids.	3
b.	Fermi-Dirac distribution function explanation (C112.1) (Analyze)	2
	To get derivation of Schrodinger equation $\nabla^2 \psi + \frac{8\pi^2}{h^2} m(E-V)\psi$ (C112.1) (Analyze)	3
3.	Definition of LED (C112.1) (Understanding)	1
	Diagram and Explanation of Construction of LED ((C112.1) (Understanding)	2
	Explanation of Working of LED (C112.1) (Understanding)	2
	Diagram of formation of energy gap (C112.1) (Understanding)	1
4.	To get Hall coefficient equation $R_H = \frac{1}{pe}$ (C112.1) (Understanding)	3
	To get Hall mobility $\mu_H = \sigma R_H$ (C112.1) (Understanding)	2
5.	Diagram of formation of energy gap (C112.2) (Evaluation)	1
	Explanation for the formation of energy gap of p-n junction diode. (C112.2) (Evaluation)	2
	P-n diode application :a) As rectifier, b) as gun diode, c) as tunnel diode D) photodiode	2
6	Definition and Explanation of ferroelectric materials (C112.3) (Analyze)	3
	Definition and Explanation of piezoelectric materials (C112.3) (Analyze)	2
TOTAL		20



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SCHEME OF EVALUATION-APPLIED PHYSICS (MID-II) (Set-1)

Instructions:

- Any answer by alternate method should be valued and suitably awarded.
- All answers (including extra, stuck off and repeated) should be valued. Answers with maximum marks must be considered.

Qn No	Description of Answer	Marks
1.	Definition of LCD (C112.3) (Understanding)	1
	Diagram and Explanation of Construction of LCD (C112.3) (Understanding)	2
	Explanation of Working of LCD (C112.3) (Understanding)	2
2.	Definition of sol-gel synthesis method (C112.4) (Creating)	1
	Diagram of sol-gel synthesis method (C112.4) (Creating)	1
	Explanation of preparation of nanomaterial's. (C112.5) (Evaluation)	3
3.	Transmission Electron Microscope diagrams. (C112.5) (Evaluation)	1
	Explanation of TEM	4
4.	Diagram of He-Ne laser (C112.5) (Evaluation)	1
	Explanation and working of He-Ne laser (C112.5) (Evaluation)	4
5.	Diagram of Nd:YAG laser (C112.5) (Understanding)	1
	Explanation and working of Nd:YAG laser (C112.5) (Understanding)	4
6.	Diagram of Acceptance angle (C112.6) (Understanding)	1
	To get equation $\theta_0 = \sin^{-1}(\sqrt{n_1^2 - n_2^2})$ (C112.6) (Understanding)	3
	To get equation $NA = \sin \sqrt{n_1^2 - n_2^2}$ (C112.6) (Understanding)	1
TOTAL		20



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TUTORIAL TOPICS

S.No	Topic	Teaching Method/Teaching Aid	No. of Sessions Planned	Reference book
1	Derivation of Planck's distribution law	Lecture-Method	1	T-1,T-2
2	Verification of dual nature of electron- Davisson-Germer experiment	Lecture Method, video	1	T-2, R-1, V-2
3	Expression for energy of electron in one dimensional box.	Lecture-Method Web reference	1	T-1,T-2, W-2
4	Free electron theory of metals Fermi-Dirac distribution function	Lecture-Method	1	T-1,T-2
5	Kronig-Penny model, E-K diagram	Lecture-Method		T-1,T-2,R-2
6	Hall effect explanation	Lecture Method	1	T-2,T-3
7	Explanation of formation of p-n junction diode and energy band diagram	Lecture-Method	1	T-2, R-3
8	LED explanation with structure	Lecture-Method reference , web	1	T-2 ,W-3
9	Solar cell explanation and V-I characteristics	Lecture-Method	1	T-2
10	Explanation of LCD and Crystal oscillators	Lecture Method, video	1	T-2,R-3, V-4
11	Magnetostriction and Magneto resistance and Bubble memory devices	Lecture Method, video	1	T-2, V-5
12	Explanation of rechargeable ion batteries-LI-ion battery	Lecture Method, video	1	T-2,R-4, V-6
13	Explanation of Nd:YAG and Ruby laser with energy band diagram	Lecture-Method	1	T-1, T-2
14	Explanation of He-Ne laser with energy band diagram	Lecture-Method reference , web	1	T-1,T-2,W-5
15	Derivation for Acceptance angle and cone and Numerical aperture	Lecture-Method	1	T-1,T-2
16	Losses associated with optical fibers	Lecture-Method	1	T-1, T-2
17	Optical fiber for communication system	Lecture-Method reference , web	1	T-2, W-6
18	Applications of optical fibers	Lecture-Method	1	T-1, T-2

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Result Analysis:

ECE

Course Title	APPLIED PHYSICS
Course Code	AP102BS
Programme	B.Tech
Year & Semester	Ist year Ist semester
Regulation	R22
Course Faculty	B.Santhi, Assistant Professor , H&S

Weak Students:

S No	Roll no	Intermediate Marks	Internal-I Status (35Marks)	Internal-II Status (40Marks)
1	22X31A0401	58%	18	25
2	22X31A0403	69%	27	30
3	22X31A0413	68.5%	19	21
4	22X31A0428	59.4%	17	23
5	22X31A0429	55.9%	21	30
6	22X31A0430	41.2%	17	24
7	22X31A0431	69.6%	21	22
8	22X31A0432	59.7%	17	24
9	22X31A0435	58.5%	17	24
10	22X31A0440	50.2%	17	24
11	22X31A0443	63.6%	24	27
12	22X31A0448	55%	17	23
13	22X31A0454	55.3%	17	24

Advanced learners:

S No	Roll No	Intermediate Marks	Gate Material
1	22X31A0402	95.9%	Quantum Mechanics, Electronics
2	22X31A0434	90.9%	
3	22X31A0442	93.8%	
4	22X31A0449	91.4%	
5	22X31A0455	91%	
6	22X31A0458	95.6	
7	22X31A0459	93	



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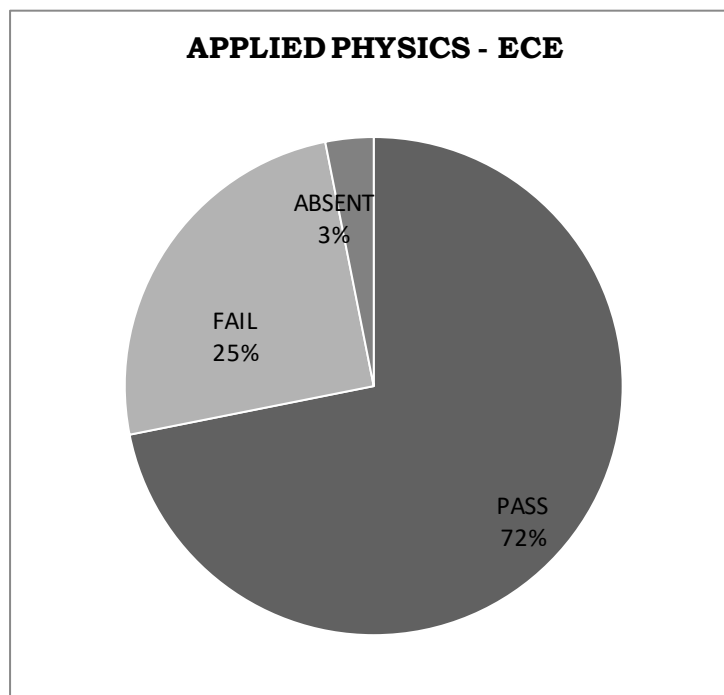
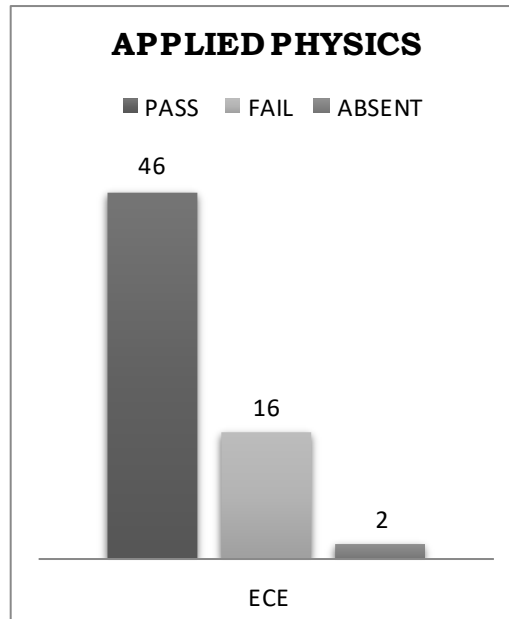
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RESULT ANALYSIS AT THE END OF SEMISTER

Branch: ECE

Subject: APPLIED PHYSICS





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DEPARTMENT OF HUMANITIES AND SCIENCE
REMEDIAL CLASSES TIME TABLE

DAY/ PERIOD	MON 4.00-5.00	TUE 4.00-5.00	WED 4.00-5.00	THUR 4.00-5.00	FRI 4.00-5.00	SAT 4.00-5.00
CSE-A	M&C	PPS	BEE	EG	EC	M&C
CSE-B	BEE	M&C	EG	PPS	EC	BEE
CSE-C	EC	EG	BEE	M&C	PPS	EC


DAY/ PERIOD	MON 4.00-5.00	TUE 4.00-5.00	WED 4.00-5.00	THUR 4.00-5.00	FRI 4.00-5.00	SAT 4.00-5.00
DS	M&C	EC	BEE	PPS	EG	EC
CYBER	PPS	M&C	EC	EG	BEE	M&C

DAY/ PERIOD	MON 4.00-5.00	TUE 4.00-5.00	WED 4.00-5.00	THUR 4.00-5.00	FRI 4.00-5.00	SAT 4.00-5.00
AIML-A	AP	PPS	M&C	ENG	AP	M&C
AIML-B	M&C	EG	PPS	AP	M&C	EG

DAY/ PERIOD	MON 4.00-5.00	TUE 4.00-5.00	WED 4.00-5.00	THUR 4.00-5.00	FRI 4.00-5.00	SAT 4.00-5.00
AI&DS	M&C	ENG	AP	PPS	AP	PPS
IOT	PPS	AP	M&C	EG	M&C	EG

DAY/ PERIOD	MON 4.00-5.00	TUE 4.00-5.00	WED 4.00-5.00	THUR 4.00-5.00	FRI 4.00-5.00	SAT 4.00-5.00
ECE	AP	ENG	M&C	PPS	AP	PPS
CIVIL	EG	AP	M&C	PPS	M&C	EG


Head of the Department
Department of H&S
SRI INDU INSTITUTE OF ENGG & TECH
Sheriguda(V) Ibrahimpatnam (M) R.R. Dist-501 510


PRINCIPAL
Sri Indu Institute of Engineering & Tech.
Sheriguda(VIII), Ibrahimpatnam
R.R. Dist. Telangana-501 510.

Target set by the faculty / HoD	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	6.00	3.00
Number of students performed above	20	0	0	16	15	0	32	0	0	13	0	0	21	0	0	0	0	0	63	64
Number of students attempted	33	0	0	38	15	0	49	0	0	26	0	0	40	0	0	3	0	0	64	64
Percentage of students scored more than target	61%			42%	100%		65%			50%			53%			0%			98%	100%

CO Mapping with Exam Questions:

CO - 1	Y			Y															Y	Y
CO - 2							Y			Y									Y	Y
CO - 3													Y						Y	Y
CO - 4																				
CO - 5																				
CO - 6																				

Scored >Target %	61%			42%	100%		65%			50%			53%			0%			98%	100%
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CO Attainment based on Exam Questions:

CO - 1	61%			42%															98%	100%
CO - 2							65%			65%						65%			98%	100%
CO - 3													65%						98%	100%
CO - 4																				
CO - 5																				
CO - 6																				

CO	Subj	obj	Asgn	Overall	Level	Attainment Lev	
CO-1	51%	70%	100%	74%	3.00	1	40%
CO-2	65%	74%	100%	80%	3.00	2	50%
CO-3	65%	82%	100%	82%	3.00	3	60%
CO-4							
CO-5							
CO-6							

Attainment (Internal 1 Examination) 3.00

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Humanities & Sciences

Course Outcome Attainment (Internal Examination-2)



Name of the faculty: <u>B.SANTHI</u>	Academic Year: <u>2022-2023</u>
Branch & Section: <u>ECE</u>	Examination: <u>II Internal</u>
Course Name: <u>APPLIED PHYSICS</u>	Year: <u>I</u> Semester: <u>I</u>

S.No	HT No.	Q1a	Q1b	Q1c	Q2a	Q2b	Q2c	Q3a	Q3b	Q3c	Q4a	Q4b	Q4c	Q5a	Q5b	Q5c	Q6a	Q6b	Q6c	Obj	A2	viva/ ppt
Max. Marks ==>		5			5			5			5			5			5			10	5	5
1	22X31A0401	2			2			2									1			8	5	5
2	22X31A0402	5			4						2			5						9	5	5
3	22X31A0403	3						2			3			3			0			9	5	5
4	22X31A0404	4			3			2						5						9	5	5
5	22X31A0405	2												5			5			9	5	5
6	22X31A0406																			8	5	5
7	22X31A0407													2			3			8	5	5
8	22X31A0408	4			3			4									3			8	5	5
9	22X31A0409	5			4									4			5			10	5	5
10	22X31A0410	4									3			4			4			8	5	5
11	22X31A0411	4			4												1			9	5	5
12	22X31A0412	3			1						1									9	5	5
13	22X31A0413	3																		8	5	5
14	22X31A0414	5			1						3			5						8	5	5
15	22X31A0415	1						5						5			0			9	5	5
16	22X31A0416	3									3			2						7	5	5
17	22X31A0417	1																		9	5	5
18	22X31A0418							4						2						9	5	5
19	22X31A0419	3									4			1						9	5	5
20	22X31A0420	1			1			0									0			8	5	5
21	22X31A0421	1												3						8	5	5
22	22X31A0422	A			A			A			A			A			A			A	A	5
23	22X31A0423	2			1												3			8	5	5
24	22X31A0424	2															0			8	5	5
25	22X31A0425	2			2									3			1			9	5	5
26	22X31A0426	4			3			5			4									8	5	5
27	22X31A0427	1						2						5			5			9	5	5
28	22X31A0428	3															1			9	5	5
29	22X31A0429	5						5									2			8	5	5
30	22X31A0430	3			0												2			9	5	5
31	22X31A0431	4															1			7	5	5
32	22X31A0432	4									0						1			9	5	5
33	22X31A0433	4			0						0			1			5			10	5	5
34	22X31A0434	5			0						1			5			4			9	5	5
35	22X31A0435	3												1			0			10	5	5
36	22X31A0436	5			3			3						5						10	5	5
37	22X31A0437	A			A			A						A			A			A	A	A
38	22X31A0438																			9	5	5
39	22X31A0439	5			2									4			2			10	5	5
40	22X31A0440	2						2												10	5	5
41	22X31A0441	4			5			5						5						10	5	5
42	22X31A0442	5															5			8	5	5
43	22X31A0443	4									2						1			10	5	5
44	22X31A0444	4																		8	5	5
45	22X31A0445	3			4			3						4			2			8	5	5
46	22X31A0446	5									2									8	5	5
47	22X31A0447	4			2						4									10	5	5
48	22X31A0448	2			2			1												8	5	5
49	22X31A0449	5			5			5						4						7	5	5
50	22X31A0450	3			4			5												8	5	5
51	22X31A0451	4												3						8	5	5
52	22X31A0452	4												3			0			7	5	5
53	22X31A0453	4			4			2			4									7	5	5
54	22X31A0454	3						0			2			1						8	5	5
55	22X31A0455	5						5						5			5			9	5	5
56	22X31A0456																2			9	5	5
57	22X31A0457				1									2			2			6	5	5
58	22X31A0458	5			3									5			3			8	5	5
59	22X31A0459	5			3									4			5			8	5	5
60	22X31A0460	4			1									4			5			9	5	5
61	22X31A0461	2												5						7	5	5
62	22X31A0462	5			4									5			5			10	5	5
63	22X31A0463	5						3						4			5			10	5	5
64	22X31A0464	3						3						3			2			10	5	5

Target set by the faculty / HoD	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	6.00	3.00	3.00
Number of students performed above the target	43	0	0	15	0	0	13	0	0	8	0	0	27	0	0	16	0	0	62	62	63
Number of students attempted	58	0	0	31	0	0	24	0	0	17	0	0	37	0	0	38	0	0	64	64	64
Percentage of students scored more than target	74%			48%			54%			47%			73%			42%			97%	97%	98%

CO Mapping with Exam Questions:

CO - 1																					
CO - 2																					
CO - 3	Y																		Y	Y	Y
CO - 4							Y												Y	Y	Y
CO - 5									Y			Y							Y	Y	Y
CO - 6				Y										Y					Y	Y	Y

% Students Scored >Target %	74%			48%			54%			47%			73%			42%			97%	97%	98%
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CO Attainment based on Exam Questions:

CO - 1																					
CO - 2																					
CO - 3	74%																		97%	97%	97%
CO - 4							74%												97%	97%	97%
CO - 5									74%			74%							97%	97%	97%
CO - 6				74%											74%				97%	97%	98%

CO	Subj	obj	aasg	ppt	Overall	Level
CO-1						
CO-2						
CO-3	74%	97%	97%	97%	91%	3
CO-4	74%	97%	97%	97%	91%	3.00
CO-5	74%	97%	97%	97%	91%	3.00
CO-6	74%	97%	97%	98%	92%	3.00

Attainment Level	
1	40%
2	50%
3	60%

Attainment (Internal Examination-2) 3.00




SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Humanities & Sciences

Course Outcome Attainment (University Examinations)

Name of the faculty	<u>B.SANTHI</u>	Academic Year:	<u>2022-2023</u>		
Branch & Section:	<u>ECE</u>	Year / Semester:	<u>I/I</u>		
Course Name:	<u>APPLIED PHYSICS</u>				
S.No	Roll Number	Marks Secured	S.No	Roll Number	Marks Secured
1	22X31A0401	12	36	22X31A0436	36
2	22X31A0402	46	37	22X31A0437	A
3	22X31A0403	25	38	22X31A0438	9
4	22X31A0404	21	39	22X31A0439	23
5	22X31A0405	31	40	22X31A0440	14
6	22X31A0406	34	41	22X31A0441	30
7	22X31A0407	17	42	22X31A0442	25
8	22X31A0408	39	43	22X31A0443	43
9	22X31A0409	41	44	22X31A0444	21
10	22X31A0410	40	45	22X31A0445	37
11	22X31A0411	23	46	22X31A0446	21
12	22X31A0412	23	47	22X31A0447	22
13	22X31A0413	17	48	22X31A0448	17
14	22X31A0414	34	49	22X31A0449	26
15	22X31A0415	33	50	22X31A0450	24
16	22X31A0416	22	51	22X31A0451	21
17	22X31A0417	2	52	22X31A0452	16
18	22X31A0418	8	53	22X31A0453	34
19	22X31A0419	14	54	22X31A0454	22
20	22X31A0420	5	55	22X31A0455	45
21	22X31A0421	23	56	22X31A0456	7
22	22X31A0422	A	57	22X31A0457	16
23	22X31A0423	8	58	22X31A0458	30
24	22X31A0424	0	59	22X31A0459	35
25	22X31A0425	27	60	22X31A0460	21
26	22X31A0426	25	61	22X31A0461	21
27	22X31A0427	23	62	22X31A0462	21
28	22X31A0428	9	63	22X31A0463	21
29	22X31A0429	22	64	22X31A0464	24
30	22X31A0430	21	65		
31	22X31A0431	21	66		
32	22X31A0432	24	67		
33	22X31A0433	23	68		
34	22X31A0434	41	69		
35	22X31A0435	25	70		
Max Marks		60			
Class Average mark		24	Attainment Level	% students	
Number of students performed above the target		26	1	40%	
Number of successful students		64	2	50%	
Percentage of students scored more than target		41%	3	60%	
Attainment level		2			

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

	Department of Humanities & Sciences					
<u>Course Outcome Attainment</u>						
Name of the faculty:	B.SANTHI			Academic Year:	2022-2023	
Branch & Section:	ECE			Examination:	I Internal	
Course Name:	APPLIED PHYSICS			Year:	I	
				Semester:	I	
Course Outcomes	1st Internal Exam	2nd Internal Exam	Internal Exam	University Exam	Attainment Level	
CO1	3.00		3.00	2.00	2.30	
CO2	3.00		3.00	2.00	2.30	
CO3	3.00	3.00	3.00	2.00	2.30	
CO4		3.00	3.00	2.00	2.30	
CO5		3.00	3.00	2.00	2.30	
CO6		3.00	3.00	2.00	2.30	
Internal & University Attainment:			3.00	2.00		
Weightage			30%	70%		
CO Attainment for the course (Internal, University)			0.90	1.40		
CO Attainment for the course (Direct Method)			2.30			
Overall course attainment level					2.30	

SRI INDU INSTITUTE OF ENGINEERING & TECHNOLOGY



Department of Humanities & Sciences

Program Outcome Attainment (from Course)

Name of Faculty: B.SANTHI	Academic Year: 2022-2023
Branch & Section: ECE	Year: I
Course Name: APPLIED PHYSICS	Semester: I

CO-PO mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	1
CO2	3	2	-	-	-	-	-	-	-	-	-	1
CO3	3	2	-	-	-	-	-	-	-	-	-	1
CO4	3	-	-	-	-	-	-	-	-	2	-	1
CO5	3	2	-	-	-	-	-	-	-	2	-	1
CO6	3	2	-	-	-	-	-	-	-	2	-	1
Course	3.00	2.00								2.00		1.00

CO	Course Outcome Attainment
CO1	2.30
CO2	2.30
CO3	2.30
CO4	2.30
CO5	2.30
CO6	2.30
Overall course attainment level	2.30

PO-ATTAINMENT

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO Attainment	2.30	1.53								1.53		0.77

CO contribution to PO - 33%, 67%, 100% (Level 1/2/3)



SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY
(UGC AUTONOMOUS INSTITUTION)

Accredited by NAAC A+ Grade, Recognized under 2(f) of UGC Act 1956.

(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad)

Khalsa Ibrahimpatnam, Sheriguda(V), Ibrahimpatnam(M), Ranga Reddy Dist., Telangana – 501510

ATTENDANCE REGISTER

<https://drive.google.com/file/d/1yVUhBAU6o7eFl0kByPgCNxQlCG6006wx/view?usp=sharing>