||Jai Sri Gurudev||

B G S INSTITUTE OF TECHNOLOGY

BG Nagara-571448, Mandya

Department of Engineering Physics

COURSE FILE

2019 BATCH – I SEM

Course Coordinator	:	**SHANKARA S R**
Designation	:	**Assistant Professor**
Course Name	:	**Engineering Physics**
Course Code	:	**18PHY12/22**

Signature of Course Coordinator

Signature of HOD

HOD
Dept. of Phy Engineering
BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taiuk, Mandya District.

II Jai Sri Gurudev II

B G S INSTITUTE OF TECHNOLOGY

B G NAGAR-571448

Vision of the Institute

BGSIT is committed to the cause of creating tomorrow's engineers by providing quality education inculcating ethical values.

Mission of the Institute

- Imparting quality technical education by nurturing a conducive learning environment.
- Offering professional training to meet industry requirements.
- Providing education with a moral - cultural base and spiritual touch.

Principal
BGS Institute of Technology
B G Nagara - 571448,
Nagamangala Tq, Mandya Dist.

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

VISION

To enrich young minds with the knowledge of engineering physics by providing quality education and inculcating ethical values.

MISSION

1. To stimulate their technical knowledge by imparting basics of Engineering Physics.
2. To inculcate analytical thinking in students thereby enabling them to contribute to the betterment of society.

Course Learning Objectives

1. Students will demonstrate and understand the impact of physics concepts on applications for society.
2. Learn the basic concepts of physics, which are very much essential for understanding and solving challenges.
3. Gain the knowledge of newer concepts in physics for the better appreciation in technology.

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Nagamangala Taiuk, Mandya District.

Program outcomes

1. Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

2. Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3. Design/ Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations.

4. 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.

5. Modern Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The Engineer and Society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

7. Environment and Sustainability: Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

9. Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

10. 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, and give and receive clear instructions.

11. 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.

12. 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.

Department of Engg. Physics
B.G.S. Institute of Technology
B G Nagara 571 448
Nagamangala Tq, Mandya Dist
Karnataka INDIA

HOD
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BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taluk, Mandya District.

19 - 1 Sem

|| JAI SRI GURUDEV ||

BGS INSTITUTE OF TECHNOLOGY

B G Nagara, Nagamangala Taluk, Mandya District, Karnataka State, INDIA - 571448

CALENDAR OF EVENTS FOR THE ACADEMIC YEAR 2019-20 (ODD SEM) BE, MBA & M.TECH

AUGUST

Mon	Tue	Wed	Thu	Fri	Sat	Sun
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Number of Working Days - 25

SEPTEMBER

Mon	Tue	Wed	Thu	Fri	Sat	Sun
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Number of Working Days - 22

OCTOBER

Mon	Tue	Wed	Thu	Fri	Sat	Sun
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Number of Working Days - 23

NOVEMBER

Mon	Tue	Wed	Thu	Fri	Sat	Sun
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Number of Working Days - 24

DECEMBER

Mon	Tue	Wed	Thu	Fri	Sat	Sun
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Number of Working Days - 12

ACTIVITIES

1 - Registration & Commencement of 3rd Semester Classes
5 - Registration & Commencement of 1st Semester Classes
12 - Bakrid
15 - Independence Day

2 - Ganesha Chaturti
10 - Moharam
25, 26, 27 - Test 1
28 - Mahalaya Amavasye

2 - Gandhi Jayanti
7 - Aayudha Pooja 8 - Vijayadashami
11 - Test 1 Progress Report Dispatch
12 - Class Teachers Meeting
24, 25, 26 - Test 2
29 - Balipadyami

1 - Kannada Rajyotsava
8 - Test 2 Progress Report Dispatch
9 - Class Teachers Meeting
15 - Kanakadasa Jayanti

5, 6, 7 - Test 3
12 - Test 3 Progress Report Dispatch
13 - Class Teachers Meeting
14 - Last Working Day
25 - Christmas

BGSIT IS COMMITTED TO THE CAUSE OF CREATING TOMORROW'S ENGINEERS BY PROVIDING QUALITY EDUCATION INCULCATING ETHICAL VALUES.

Practical Examinations	16-12-2019 to 30-12-2019
Theory Examinations	1-1-2020 to 30-01-2020
Commencement of EVEN Semester	10-02-2020

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Dept. of Pte Engineering
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Nagamangala Taluk, Mandya District.

Dr. B.K.Raghavendra
Academic Incharge

Dr. B.K.Narendra
Principal

" Jai Sri Gurudev "

B.G.S. Institute of Technology, B.G. Nagara-571448

Department of Pre – engineering

Time Table for First Semester

Period From: 5th – August – 2019 to 14th – December - 2019

Electronics & Communication Engg.

SECTION – B

Room No : 308

Day \ Time	09:00AM-09:55 AM	09:55AM-10:50 AM	11:00AM-1 1:55AM	11:55AM-12:50PM	01:50PM-02:40PM	02:40PM-03:30PM	03:30PM-04:20PM
Monday	18ELE-13 (PGB)	18MAT-11 (HLP)	18CIV-14 (AMR)	18PHY-12 (KNR)	18ELE-13 (PGB)		
Tuesday	**HR CLASS**		18PHY-12 (SRS)	18MAT-11 (HLP)	**LAB 18PHYL-16(B1)/18ELEL-17(B2)/18CED-15(B3)**		
Wednesday	**COMPUTER AIDED ENGINEERING DRAWING THEORY (PH)**				18CIV-14 (AMR)	18ELE-13 (PGB)	
Thursday	18PHY-12 (KNR)	**LAB 18PHYL-16(B2)/18ELEL-17(B3)/18CED-15(B1)**			18MAT-11 (HLP)	18PHY-12 (SRS)	18ELE-13 (PGB)
Friday	18CIV-14 (AMR)	**LAB 18PHYL-16(B3)/18ELEL-17(B1)/18CED-15(B2)**			**CAED LAB (B1/B2/B3)**		
Saturday	18ELE-13 (PGB)	18MAT-11 (HLP)	18CIV-14 (AMR)	18PHY-12 (KNR)	18CIV-14 (AMR)	18MAT-11 (HLP)	

Subject	Subject Code	Staff Name
1. Engineering Mathematics-I	18MAT-11	Parashivamurthy H L (HLP)
2. Engineering Physics	18PHY-12	Shankara S R (SRS) / Ranjitha K N (KNR)
3. Basic Electrical Engineering	18ELE-13	Puneeth Kumar G B (PGB)
4. Civil Engineering & Mechanics	18CIV-14	Ashwini M R (AMR)
5. Computer Aided Engineering	18CED-15	Pradeep H (PH)
6. Engineering Physics Lab	18PHYL-16	Shankara S R (SRS) / Ranjitha K N (KNR)
7. Basic Electrical Engineering Lab	18ELEL-17	Mohankumar K S (KSM)
8. English-I	18EGH-18	

Prepared By
Shankara S R

Verified By
Dr Yuvaraja B K
HOD
Dept. of Pre Engineering,
BGS Institute of Technology,
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Nagamangala Taiuk, Mandya District.

Principal
Dr Narendra B K
PRINCIPAL
B.G.S. INSTITUTE OF TECHNOLOGY
B.G. NAGAR - 571 448

" Jai Sri Gurudev "

B.G.S. Institute of Technology, B.G. Nagara-571448

Department of Pre – engineering

Time Table for First Semester

SECTION – C

Period From: 5th – August – 2019 to 14th – December - 2019

Room No : Mechanical Block

Civil Engg.

Day / Time	09:00AM-09:55 AM	09:55AM-10:50 AM	11:00AM-11:55AM	11:55AM-12:50PM	01:50PM-02:40PM	02:40PM-03:30PM	03:30PM-04:20PM
Monday	18ELE-13 (PPS)	18MAT-11 (SHN)	18CIV-14 (GR)	18PHY-12 (SRS)	**LAB 18PHYL-16(C1)/18ELEL-17(C2)/18CED-15(C3)**		
Tuesday	18MAT-11 (SHN)	18CIV-14 (GR)	**HR CLASS**		18CIV-14 (GR)	18ELE-13 (PPS)	
Wednesday	18PHY-12 (SRS)	**LAB 18PHYL-16(C2)/18ELEL-17(C3)/18CED-15(C1)**			18CIV-14 (GR)	18PHY-12 (SRS)	
Thursday	18ELE-13 (PPS)	18MAT-11 (SHN)	18PHY-12 (SRS)	18ELE-13 (PPS)	**CAED LAB (C1/C2/C3)**		
Friday	**COMPUTER AIDED ENGINEERING DRAWING THEORY (SN)**				18CIV-14 (GR)	18EGH-18	
Saturday	18MAT-11 (SHN)	**LAB 18PHYL-16(C3)/18ELEL-17(C1)/18CED-15(C2)**			18MAT-11 (SHN)	18PHY-12 (SRS)	18ELE-13 (PPS)

Subject	Subject Code	Staff Name
1. Engineering Mathematics-I	18MAT-11	Shwetha H N (SHN)
2. Engineering Physics	18PHY-12	Shankara S R (SRS)
3. Basic Electrical Engineering	18ELE-13	Prafulla P S (PSS)
4. Civil Engineering & Mechanics	18CIV-14	Gomathi R
5. Computer Aided Engineering	18CED-15	Sharath N (SN)
6. Engineering Physics Lab	18PHYL-16	Shankara S R (SRS) / Ranjitha K N (KNR)
7. Basic Electrical Engineering Lab	18ELEL-17	Goutham V (GV)

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Shankara S R

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B.G. NAGAR - 571 448

Semester	I / II	Course Title	Engineering Physics	Course Code	18PHY12/22
Teaching Period	50 Hours	L – T – P – TL	4 – 1 – 0 – 5	SEE	3 Hours
CIE	40 Marks	SEE	60 Marks	Total	100 Marks
CREDITS – 04					

COURSE OBJECTIVES:

This course will enable students to learn the basic concepts in Physics which are very much essential in understanding and solving engineering related challenges.

COURSE CONTENTS:

::MODULE – 1:: (10 Hours)

Oscillations and Waves:

Free Oscillations: Definition of SHM, derivation of equation for SHM, Mechanical simple harmonic oscillators (mass suspended to spring oscillator), complex notation and phasor representation of simple harmonic motion. Equation of motion for free oscillations, Natural frequency of oscillations.

Damped and forced oscillations: Theory of damped oscillations: over damping, critical & under damping, quality factor. Theory of forced oscillations and resonance, Sharpness of resonance. One example for mechanical resonance.

Shock waves: Mach number, Properties of Shock waves, control volume. Laws of conservation of mass, energy and momentum. Construction and working of Reddy shock tube, applications of shock waves. Numerical problems.

::MODULE – 2:: (10 Hours)

Elastic properties of materials:

Elasticity: concept of elasticity, plasticity, stress, strain, tensile stress, shear stress, compressive stress, strain hardening and strain softening, failure (fracture/fatigue), Hooke's law, different elastic moduli: Poisson's ratio, Expression for Young's modulus (Y), Bulk modulus (K) and Rigidity modulus (n) in terms of α and β. Relation between Y, n and K.

Bending of beams: Neutral surface and neutral plane, Derivation of expression for bending moment of a beam with circular and rectangular cross section. Single cantilever derivation of expression for Young's modulus.

Torsion of cylinder: Expression for couple per unit twist of a solid cylinder (Derivation), Torsional pendulum-Expression for period of oscillation.

Numerical problems.

::MODULE – 3:: (10 Hours)

Crystal structure and Optical fibers:

Crystal structure: Space lattice, Bravais lattice–Unit cell, Primitive cell. Lattice parameters. Crystal systems. Direction and planes in a crystal. Miller indices. Expression for inter – planar spacing. Co-ordination number. Atomicpacking factors (SC,FCC,BCC). Bragg's law, Determination of crystal structure using Bragg's X–ray difractometer. Polymarphism and Allotropy. Crystal Structure of Diamond.

Optical fibers: Propagation mechanism, angle of acceptance. Numerical aperture. Modes of propagation and Types of optical fibers. Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient, Discussion of block diagram of point to point communication. Applications.

Numerical problems.

::MODULE – 4:: (10 Hours)

Quantum Mechanics and Lasers:

Quantum Mechanics: Introduction to Quantum mechanics, Wave nature of particles, Heisenberg's uncertainty principle and applications (non confinement of electron in the nucleus), Schrodinger time independent wave equation, Significance of Wave function, Normalization, Particle in a box, Energy eigen values of a particle in a box and probability densities.

Lasers: Review of spontaneous and stimulated processes, Einstein's coefficients (Derivation of expression for energy density). Requisites of a Laser system. Conditions for laser action. Principle, Construction and working of CO_2 and semiconductor Lasers. Application of Lasers in Defense (Laser range finder), Engineering (Data storage).
Numerical problems.

::MODULE – 5:: (10 Hours)

Material Science:
Quantum Free electron theory of metals: Review of classical free electron theory, mention of failures. Assumptions of Quantum Free electron theory, Mention of Expression for density of states, Fermi-Dirac statistics (qualitative), Fermi factor, Fermi level, Derivation of the expression for Fermi energy, Success of QFET.
Physics of Semiconductor: Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band, Hole concentration in valance band (Mention the expression), Conductivity of semiconductors(Derivation).
Dielectric materials: Polar and non-polar dielectrics, internal fields in a solid, Clausius - Mossotti equation, (Derivation), mention of solid, liquid and gaseous dielectrics with one example each.
Numerical problems.

COURSE OUTCOMES:
Upon completion of this course, students will be able to

1. **Memorize** the setup of differential equations for the types of oscillations and analyze the solutions and also to **recognize** the importance of shock waves and their applications.
2. **Describe** the Elastic properties and Electrical properties of the materials and identify their applications in Engineering.
3. **Study** of Crystal structure and applications are to boost the technical skills and its applications.
4. **Explain** the principle, conditions , requisites and generation of laser and its different applications mainly optical fiber communication through the study of construction, working and types of optical fibers
5. **Realize** the various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models.

RECOMMENDED LEARNING RESOURCES:
Text Books:

1. MN Avadhanulu and PG Kshirsagar, "A Text book of Engineering Physics", 10th revised Ed, S. Chand and Company Ltd, New Delhi.
2. Arthur Beiser, "Concepts of Modern Physics", 6th Ed., Tata McGraw Hill Edu Pvt Ltd, New Delhi, 2006.
3. BB Laud, "Lasers and Non-Linear Optics", 3rd Ed., New Age International Publishers, 2011.
4. Gaur and Gupta, "Engineering Physics", Dhanpat Rai Publications, 2017.

Reference Books:

1. M. K. Verma, "Introduction to Mechanics", 2nd Ed., University Press (India) Pvt. Ltd., Hyderabad, 2009.
2. O. Svelto, "Principles of Lasers", Springer Science & Business Media, 2010.
3. B. G. Streetman, "Solid State Electronic Devices", Prentice Hall of India, 1995.
4. MK Harbola, "Engineering Mechanics", 2nd Ed., Cengage publications, New Delhi, 2009.
5. Chintoo S. Kumar, K. Takayama and K. P. J. Reddy, "Shock Waves made simple", Wiley India Pvt. Ltd., New Delhi, 2014.
6. David Griffiths, "Introduction to Electrodynamics", 4th Ed., Cambridge University Press, 2017,

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Semester	I / II	Course Title	Engineering Physics Lab	Course Code	18PHYL16/26
Teaching Period	42 Hours	L – T – P – TL	0 –0 – 3 – 3	SEE	3 Hours
CIE	40 Marks	SEE	60 Marks	Total	100 Marks
CREDITS – 02					

COURSE OBJECTIVES:

- To realize experimentally, the mechanical, electrical and thermal properties of materials, concept of waves and oscillations.
- Design simple circuits and hence study the characteristics of semiconductor devices.

COURSE CONTENTS:

1. Determination of spring constants in Series and Parallel combinations.
2. n & I by Torsional pendulum.
3. Single Cantilever Experiment.
4. Radius of curvature of plano convex lens using Newton's rings.
5. LCR Resonance (Series and Parallel).
6. Study of Zener diode characteristics.
7. Acceptance angle and Numerical aperture of an optical fiber.
8. Wavelength of semiconductor laser using Laser diffraction.
9. Estimation of Fermi Energy of Copper.
10. Study of Transistor characteristics.
11. Study of Photodiode characteristics.
12. Calculation of Dielectric constant by RC charging and discharging.

COURSE OUTCOMES:

Upon completion of this course, students will be able to:

1. **Demonstrate** the phenomenon of interference and diffraction using simple experiments.
2. **Interpret** the characteristics of bipolar junction transistors and photo-diode and also to **Analyze** the resonance concept and its applications in electrical circuits.
3. **Determine** the strength of the given elastic materials using bending and torsion methods and also the force constant of springs.
4. **Calculate** the electrical properties like Dielectric Constant of the Dielectric material, Fermi energy of a metal through simple experiments and **Compare** the theoretical and experimental values.
5. **Visualize** laser source and application of laser in the optical fiber and diffraction experiments to **calculate** the related quantities.
6. **Practice** the measurement of quantities, honest recording, representing and analyzing the data and **expressing** the final results.

CONDUCTION OF PRACTICAL EXAMINATION:

- 10 experiments are mandatory. Student has to perform two experiments in the SEE.
- Remaining two experiments must be introduced as compulsory demo experiment.

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6 . Course Information

6 . 2

Semester : 1 **Section :** C **Course :** ENGINEERING PHYSICS

Period	Planned			Execution		
	Date	Topic	Source material to be referred	Date	Topic	Source material to be referred
			1			
1	2019-08-19	Free Oscillations: Definition of SHM, derivation of equation for SHM	-	2019-08-19	Free Oscillations: Definition of SHM, derivation of equation for SHM	-
2	2019-08-20	Equation of motion for free oscillations	-	2019-08-20	Equation of motion for free oscillations	-
3	2019-08-21	Natural frequency of oscillations.	-	2019-08-21	Equation of motion for free oscillations	-
4	2019-08-21	Mechanical simple harmonic oscillators (mass suspended to spring oscillator)	-	2019-08-21	Natural frequency of oscillations.	-
5	2019-08-22	Damped and forced oscillations: Theory of damped oscillations: over damping	-	2019-08-22	Mechanical simple harmonic oscillators (mass suspended to spring oscillator)	-
6	2019-08-26	quality factor	-	2019-08-26	Damped and forced oscillations: Theory of damped oscillations: over damping	-
7	2019-08-27	critical & under damping	-	2019-08-26	quality factor	-
8	2019-08-28	Theory of forced oscillations and resonance	-	2019-08-27	critical & under damping	-
9	2019-08-28	Sharpness of resonance, One example for mechanical resonance.	-	2019-08-28	Theory of forced oscillations and resonance	-
12	2019-08-29	Mach number, Properties of Shock waves, control volume	-	2019-11-20	Neutral surface and neutral plane, Derivation of expression for bending moment	-
14	2019-08-31	Laws of conservation of mass, energy and momentum, Construction and working ofReddy shock tube	-	2019-11-20	Bending moment of a beam with circular and rectangularcross section, Single cantilever	-

16	2019-09-04	applications of shock waves, Numerical problems.	-	2019-11-21	derivation of expression for Young's' modulus.	-
17	2019-09-04	Numerical problems.	-	2019-09-04	applications of shock waves, Numerical problems.	Ref 2
			2			
10	2019-08-28	Bulk modulus (K) and Rigidity modulus (n) in terms of and p, Relation between Y, n andK.	-	2019-08-28	Sharpness of resonance, One example for mechanical resonance.	-
11	2019-08-28	Neutral surface and neutral plane, Derivation of expression for bending moment	-	2019-11-18	Bulk modulus (K) and Rigidity modulus(n) in terms of and p, Relation between Y, n andK.	-
13	2019-08-29	Bending moment of a beam with circular and rectangular cross section, Single cantilever	-	2019-08-29	Mach number, Properties of Shock waves, control volume	Ref 2
15	2019-08-31	derivation of expression for Young's' modulus.	-	2019-08-31	Laws of conservation of mass, energy and momentum, Construction and working ofReddy shock tube	Ref 2
18	2019-09-04	Expression for couple per unit twist of a solid cylinder (Derivation)	-	2019-09-04	Numerical problems.	Ref 2
19	2019-09-04	Torsional pendulum-Expression for period of oscillation	-	2019-11-23	Expression for couple per unit twist of a solid cylinder (Derivation)	-
21	2019-09-05	Numerical problems	-	2019-09-05	Review of spontaneous and stimulated processes	Ref 1
			3			
23	2019-09-07	Crystal structure: Space lattice, Bravais lattice–Unit cell, Primitive cell	-	2019-09-09	Requisites of a Laser system, Conditions for laser action	-
24	2019-09-09	Lattice parameters, Crystal systems, Direction and planes in a crystal	-	2019-10-24	Crystal structure: Space lattice, Bravais lattice–Unit cell, Primitive cell	-
26	2019-09-11	Miller indices, Expression for inter – planar spacing, Co-ordination number	-	2019-09-11	Principle, Construction and working of CO2 and semiconductor Lasers	-
27	2019-09-11	Atomicpacking factors (SC,FCC,BCC)	-	2019-10-30	Miller indices, Expression for inter – planar spacing, Co-ordination number	-
29	2019-09-12	Bragg's law, Determination of crystal structure using Bragg's X–ray difractometer.	-	2019-09-12	Einstein's coefficients (Derivation of expression for energy density)	-

31	2019-09-14	Propagation mechanism, angle of acceptance	-	2019-09-16	Numerical problems., Application of Lasers in industrial field	-
32	2019-09-16	Numerical aperture, Modes of propagation and Types of optical fibers	-	2019-09-30	Propagation mechanism, angle of acceptance	-
34	2019-09-18	Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient, Discussion of block diagram of point to point communication	-	2019-09-16	Numerical problems.	-
35	2019-09-18	Applications	-	2019-10-10	Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient, Discussion of block diagram of point to point communication	-
36	2019-09-19	Numerical problems.	-	2019-10-14	Applications	-
37	2019-09-21	Expression for inter – planar spacing	Ref 3	2019-10-15	Numerical problems.	-
38	2019-09-23	Co-ordination number	Ref 3	2019-10-16	Expression for inter – planar spacing	Ref 3
39	2019-09-25	Atomicpacking factors (SC, BCC), FCC, Bragg's law	Ref 3	2019-10-17	Co-ordination number	Ref 3
40	2019-09-25	Determination of crystal structure using Bragg's X–ray difractometer.	Ref 2	2019-10-21	Atomicpacking factors (SC, BCC), FCC, Bragg's law	Ref 3
			4			
20	2019-09-05	Review of spontaneous and stimulated processes	-	2019-11-25	Torsional pendulum- Expression for period of oscillation	-
22	2019-09-05	Requisites of a Laser system, Conditions for laser action	-	2019-11-27	Numerical problems	-
25	2019-09-09	Principle, Construction and working of CO2 and semiconductor Lasers	-	2019-10-26	Lattice parameters, Crystal systems, Direction and planes in a crystal	-
28	2019-09-11	Einstein's coefficients (Derivation of expression for energy density)	-	2019-10-31	Atomicpacking factors (SC, FCC, BCC)	-
30	2019-09-12	Numerical problems., Application of Lasers in industrial field	-	2019-09-12	Bragg's law, Determination of crystal structure using Bragg's X–ray difractometer.	-
33	2019-09-16	Numerical problems.	-	2019-10-09	Numerical aperture, Modes of propagation and Types of optical fibers	-

41	2019-09-26	Quantum Mechanics: Introduction to Quantum mechanics, Wave nature of particles	-	2019-10-23	Determination of crystal structure using Bragg's X–ray difractometer.	Ref 2
42	2019-09-28	Heisenberg's uncertainty principle and applications (non confinement of electron in the nucleus), Schrodinger time independent wave equation	-	2019-09-18	Quantum Mechanics: Introduction to Quantum mechanics, Wave nature of particles	-
43	2019-09-30	Significance of Wave function, Normalization	-	2019-09-19	Heisenberg's uncertainty principle and applications (non confinement of electron in the nucleus), Schrodinger time independent wave equation	-
44	2019-10-09	Particle in a box	-	2019-09-21	Significance of Wave function, Normalization	-
45	2019-10-09	Energy eigen values of a particle in a box and probability densities.	-	2019-09-23	Particle in a box	-
46	2019-10-10	Review of spontaneous and stimulated processes, Einstein's coefficients (Derivation of expression for energy density)	-	2019-09-25	Energy eigen values of a particle in a box and probability densities.	-
			5			
47	2019-10-19	Assumptions of Quantum Free electron theory, Mention of Expression for density of states	-	2019-09-26	Review of spontaneous and stimulated processes, Einstein's coefficients (Derivation of expression for energy density)	-
48	2019-10-21	Fermi-Dirac statistics (qualitative), Fermi factor	-	2019-10-24	Assumptions of Quantum Free electron theory, Mention of Expression for density of states	-
49	2019-10-23	Fermi level, Derivation of the expression for Fermi energy.	-	2019-10-26	Fermi-Dirac statistics (qualitative), Fermi factor	-
50	2019-10-23	Physics of Semiconductor: Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band	-	2019-10-30	Fermi level, Derivation of the expression for Fermi energy.	-

51	2019-10-28	Hole concentration in valance band (Mention the expression)	-	2019-10-31	Physics of Semiconductor: Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band	-
52	2019-10-30	Conductivity of semiconductors (Derivation).	-	2019-11-02	Hole concentration in valance band (Mention the expression)	-
53	2019-10-30	Polar and non-polar dielectrics, internal fields in a solid, Clausius - Mossotti equation	-	2019-11-04	Conductivity of semiconductors (Derivation).	-
54	2019-10-31	(Derivation), mention of solid	-	2019-11-06	Polar and non-polar dielectrics, internal fields in a solid, Clausius - Mossotti equation	-
55	2019-11-02	liquid and gaseous dielectrics with one example each, Numerical problems.	-	2019-11-13	(Derivation), mention of solid	-
56	-	-		2019-11-14	liquid and gaseous dielectrics with one example each, Numerical problems.	-

6 . Course Information

6 . 2

Semester : 1 **Section :** B **Course :** ENGINEERING PHYSICS

Period	Planned			Execution		
	Date	Topic	Source material to be referred	Date	Topic	Source material to be referred
1						
1	2019-08-17	Free Oscillations: Definition of SHM, derivation of equation for SHM	-	2019-08-17	Free Oscillations: Definition of SHM, derivation of equation for SHM	-
2	2019-08-19	Mechanical simple harmonic oscillators (mass suspended to spring oscillator), complex notation and phasor representation of simple harmonic motion	-	2019-08-19	Mechanical simple harmonic oscillators (mass suspended to spring oscillator), complex notation and phasor representation of simple harmonic motion	-
3	2019-08-20	Equation of motion for free oscillations	-	2019-08-20	Equation of motion for free oscillations	-
4	2019-08-22	Natural frequency of oscillations.	-	2019-08-22	Natural frequency of oscillations.	-
5	2019-08-22	Damped and forced oscillations: Theory of damped oscillations: over damping, critical & under damping	-	2019-08-22	Damped and forced oscillations: Theory of damped oscillations: over damping, critical & under damping	-
6	2019-08-24	quality factor, Theory of forced oscillations and resonance	-	2019-08-26	quality factor, Theory of forced oscillations and resonance	-
7	2019-08-26	Sharpness of resonance, One example for mechanical resonance.	-	2019-08-27	Sharpness of resonance, One example for mechanical resonance.	-
8	2019-08-27	Mach number, Properties of Shock waves, control volume	-	2019-08-29	Mach number, Properties of Shock waves, control volume	-
9	2019-08-29	Laws of conservation of mass, energy and momentum, Construction and working of Reddy shock tube	-	2019-08-29	Laws of conservation of mass, energy and momentum, Construction and working ofReddy shock tube	-
10	2019-08-29	applications of shock waves, Numerical problems.	-	2019-08-31	applications of shock waves, Numerical problems.	-

			2			
41	2019-11-25	Concept of elasticity, plasticity, stress, strain	-	2019-11-12	Concept of elasticity, plasticity, stress, strain	-
42	2019-11-26	tensile stress, shear stress, compressive stress, strain hardening and strain softening	-	2019-11-14	tensile stress, shear stress, compressive stress, strain hardening and strain softening	-
43	2019-11-28	failure (fracture/fatigue), Hooke's law, different elastic moduH: Poisson's ratio, Expression for Young's modulus (Y)	-	2019-11-18	failure(fracture/fatigue), Hooke's law, different elastic moduH: Poisson's ratio, Expression for Young's modulus (Y)	-
44	2019-11-28	Bulk modulus (K) and Rigidity modulus (n) in terms of and p, Relation between Y, n andK.	-	2019-11-19	Bulk modulus (K) and Rigidity modulus(n) in terms of and p, Relation between Y, n andK.	-
45	2019-11-30	Neutral surface and neutral plane, Derivation of expression for bending moment	-	2019-11-21	Neutral surface and neutral plane, Derivation of expression for bending moment	-
46	2019-12-02	Bending moment of a beam with circular and rectangular cross section, Single cantilever	-	2019-11-23	Bending moment of a beam with circular and rectangularcross section, Single cantilever	-
47	2019-12-03	derivation of expression for Young's' modulus.	-	2019-11-25	derivation of expression for Young's' modulus.	-
48	2019-12-09	Expression for couple per unit twist of a solid cylinder (Derivation)	-	2019-11-26	Expression for couple per unit twist of a solid cylinder (Derivation)	-
49	2019-12-10	Torsional pendulum-Expression for period of oscillation	-	2019-11-28	Torsional pendulum-Expression for period of oscillation	-
50	2019-12-10	Numerical problems	-	2019-11-30	Numerical problems	-
			3			
21	2019-09-30	Crystal structure: Space lattice, Bravais lattice–Unit cell, Primitive cell	-	2019-09-19	Crystal structure: Space lattice, Bravais lattice–Unit cell, Primitive cell	-
22	2019-10-01	Lattice parameters, Crystal systems, Direction and planes in a crystal	-	2019-09-21	Lattice parameters, Crystal systems, Direction and planes in a crystal	-
23	2019-10-10	Miller indices, Expression for inter – planar spacing, Co-ordination number	-	2019-09-23	Miller indices, Expression for inter – planar spacing, Co-ordination number	-
24	2019-10-10	Atomicpacking factors (SC,FCC,BCC)	-	2019-09-24	Atomicpacking factors (SC, FCC, BCC)	-
25	2019-10-12	Bragg's law, Determination of crystal structure using Bragg's X–ray difractometer.	-	2019-09-26	Bragg's law, Determination of crystal structure using Bragg's X–ray difractometer.	-

26	2019-10-14	Propagation mechanism, angle of acceptance	-	2019-09-30	Propagation mechanism, angle of acceptance	-
27	2019-10-15	Numerical aperture, Modes of propagation and Types of optical fibers	-	2019-10-01	Numerical aperture, Modes of propagation and Types of optical fibers	-
28	2019-10-17	Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient, Discussion of block diagram of point to point communication	-	2019-10-10	Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient, Discussion of block diagram of point to point communication	-
29	2019-10-17	Applications	-	2019-10-14	Applications	-
30	2019-10-19	Numerical problems.	-	2019-10-15	Numerical problems.	-
			4			
11	2019-09-05	Quantum Mechanics: Introduction to Quantum mechanics, Wave nature of particles	-	2019-09-03	Quantum Mechanics: Introduction to Quantum mechanics, Wave nature of particles	-
12	2019-09-05	Heisenberg's uncertainty principle and applications (non confinement of electron in the nucleus), Schrodinger time independent wave equation	-	2019-09-05	Heisenberg's uncertainty principle and applications (non confinement of electron in the nucleus), Schrodinger time independent wave equation	-
13	2019-09-07	Significance of Wave function, Normalization	-	2019-09-05	Significance of Wave function, Normalization	-
14	2019-09-09	Particle in a box	-	2019-09-07	Particle in a box	-
15	2019-09-12	Energy eigen values of a particle in a box and probability densities.	-	2019-09-09	Energy eigen values of a particle in a box and probability densities.	-
16	2019-09-12	Review of spontaneous and stimulated processes, Einstein's coefficients (Derivation of expression for energy density)	-	2019-09-12	Review of spontaneous and stimulated processes, Einstein's coefficients (Derivation of expression for energy density)	-
17	2019-09-14	Requisites of a Laser system, Conditions for laser action	-	2019-09-12	Requisites of a Laser system, Conditions for laser action	-
18	2019-09-16	Principle, Construction and working of CO2 and semiconductor Lasers	-	2019-09-16	Principle, Construction and working of CO2 and semiconductor Lasers	-
19	2019-09-17	Application of Lasers in industrial field	-	2019-09-17	Application of Lasers in industrial field	-
20	2019-09-19	Numerical problems.	-	2019-09-19	Numerical problems.	-
			5			
31	2019-10-28	Quantum Free electron theory of metals: Review of classical free electron theory, mention of failures	-	2019-10-17	Quantum Free electron theory of metals: Review of classical free electron theory, mention of failures	-

32	2019-10-31	Assumptions of Quantum Free electron theory, Mention of Expression for density of states	-	2019-10-19	Assumptions of Quantum Free electron theory, Mention of Expression for density of states	-
33	2019-10-31	Fermi-Dirac statistics (qualitative), Fermi factor	-	2019-10-21	Fermi-Dirac statistics (qualitative), Fermi factor	-
34	2019-11-02	Fermi level, Derivation of the expression for Fermi energy.	-	2019-10-22	Fermi level, Derivation of the expression for Fermi energy.	-
35	2019-11-04	Physics of Semiconductor: Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band	-	2019-10-24	Physics of Semiconductor: Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band	-
36	2019-11-05	Hole concentration in valance band (Mention the expression)	-	2019-10-24	Hole concentration in valance band (Mention the expression)	-
37	2019-11-07	Conductivity of semiconductors (Derivation).	-	2019-10-26	Conductivity of semiconductors (Derivation).	-
38	2019-11-07	Polar and non-polar dielectrics, internal fields in a solid, Clausius - Mossotti equation	-	2019-10-31	Polar and non-polar dielectrics, internal fields in a solid, Clausius - Mossotti equation	-
39	2019-11-09	(Derivation), mention of solid	-	2019-11-02	(Derivation), mention of solid	-
40	2019-11-11	liquid and gaseous dielectrics with one example each, Numerical problems.	-	2019-11-11	liquid and gaseous dielectrics with one example each, Numerical problems.	-

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO & CO-PSO mapping (18 Scheme)

Programme	Course Code	Subject	Credits	L-T-P-TL	Assessment		Exam Duration
					SEE	CIA	
B.E	18PHY12/22	Engineering Physics	04	4-1-0-5	60	40	3Hrs

Co's

18C102.1	**Memorize** the setup of differential equations for the types of oscillations and analyze the solutions and also to **recognize** the importance of shock waves and their applications.
18C102.2	**Describe** the Elastic properties and Electrical properties of the materials and identify their applications in Engineering.
18C102.3	**Study** of Crystal structure and applications are to boost the technical skills and Its applications.
18C102.4	**Explain** the principle, conditions , requisites and generation of laser and its different applications mainly optical fiber communication through the study of construction, working and types of optical fibers.
18C102.5	**Realize** the various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
17C102.1	3	2												
17C102.2	2	2	1											
17C102.3	3	2												
17C102.4	3	2												
17C102.5	3	2												
AVG	**2.8**	**2**	**1**											

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

Course Coordinator

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|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO & CO-PSO mapping (18 Scheme)

Programme	Course Code	Subject	Credits	L-T-P-TL	Assessment		Exam Duration
					SEE	CIA	
B.E	18PHY16 /26	Engineering Physics Lab	02	0-0-3-3	60	40	3Hrs

Co's

18C102.1	**Demonstrate** the phenomenon of interference and diffraction using simple experiments.
18C102.2	**Interpret** the characteristics of bipolar junction transistors and photo-diode and also to **Analyze** the resonance concept and its applications in electrical circuits.
18C102.3	**Determine** the strength of the given elastic materials using bending and torsion methods and also the force constant of springs.
18C102.4	**Calculate** the electrical properties like Dielectric Constant of the Dielectric material, Fermi energy of a metal through simple experiments and **Compare** the theoretical and experimental values.
18C102.5	**Visualize** laser source and application of laser in the optical fiber and diffraction experiments to **calculate** the related quantities.
18C102.6	**Practice** the measurement of quantities, honest recording, representing and analyzing the data and **expressing** the final results.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
17C102.1	3	1							1					
17C102.2	3	1							1					
17C102.3	3	1							1					
17C102.4	3	1							1					
17C102.5	3	1							1					
17C102.6	3	2	1		1	1			1					
AVG	**3**	**1.17**	**1**		**1**	**1**			**1**					

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

Course Coordinator

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Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

LABORATORY RUBRICS

Programme	Course Code	Subject	Credits	L-T-P-TL	Assessment		Exam Duration
					SEE	CIA	
B.E	18PHY16/26	Engineering Physics Lab	02	0-0-3-3	60	40	3Hrs

Maximum Marks: 40

Continuous Internal Evaluation	Excellent (80%-100%)	Good (80%-60%)	Average (40%-50%)
a. Observation write up and punctuality (05)	Students should write the experiments in the Observation book neatly and attend the labs regularly	Students should write the experiments in the Observation book and attend the labs.	Improper maintenance of observation books and being irregular to the labs.
b. Conduction of experiment and output (10)	Students should conduct the experiments following the given procedure, plot the graph, perform calculation and show the accurate results with S.I unit.	Students should conduct the experiments following the given procedure, plot the graph and perform calculation with average results.	Improper conduction of experiments, graph plotting and results without S.I. unit.
c. Viva voce (05)	They should answer all the questions.	If they answer some of the questions.	If they doesn't answer the questions.
d. Record write up (10)	They should write records neatly, legibly and with suitable circuit diagrams.	They should write records with suitable circuit diagrams.	Improper/poor maintenance of record.
e. Internal Test (10)	Students should write the given experiments containing Formula, Tabular column, Nature of the graph, conduct the experiment and show the results with S.I. unit.	Students must write the given experiments, conduct the experiment and show the results.	If the student write the experiment but fails to conduct it.

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Supplementary Exam → 2018 Batch.

18PHY12/22

First/Second Semester BE Degree Examination September 2019
(CBCS Scheme)

Time: 3 Hours

Max Marks: 100 marks

Sub: Engineering Physics

Q P Code: 60003/13

Instructions: 1. Answer **five full** questions.
2. Choose one full question from each module.
3. Your answer should be specific to the questions asked.
4. write the same question numbers as they appear in this question paper.
5. Write Legibly

Module – 1

1 a What are damped oscillations? Give the theory of damped oscillations and hence discuss the case of under damping. 10 marks

b State and explain the laws of conservation of mass, energy and momentum. 6 marks

c A free particle is executing simple harmonic motion in a straight line. The maximum velocity it attains during any oscillation is 62.8 m/s. Find the frequency of oscillation, if its amplitude is 0.5 m. 4 marks

Or

2 a Describe the construction and working of Reddy Shock tube. Mention any four properties of shock waves. 10 marks

b Write a short note on i) resonance ii) sharpness of resonance and iii) Helmholtz resonator. 6 marks

c Given the force constant as 9.8 N/m for a spring, estimate the number of oscillations it would complete in one minute if it is set for oscillations with a load of 89.37 gm. Assume there are no external forces acting on it. 4 marks

Module – 2

3 a Derive an expression for young's modulus Y of a material of a single cantilever. 8 marks

b State that explain Hooke's law. Define the different moduli of elasticity. 8 marks

c Calculate the force required to produce an extension of 1 mm in a wire of length 3m and diameter 1 mm. young's modulus of the wire = 7.5×10^{10} N/m^2. 4 marks

Or

4 a Give the expressions for young's modulus (Y), bulk modulus (K) and rigidity modulus (η) in terms of α and β. Derive relation by Y, η and K. 6 marks

b Define neutral surface and neutral axis. Derive an expression for bending moment. $\left[B.M. = \left(\frac{Y}{R}\right) Ig\right]$. 10 marks

c Calculate the angular twist of a wire of length 0.3 m and radius 0.2×10^{-3} m when a torque of 5×10^{-4} Nm is applied. Given $\eta = 8 \times 10^{10}$ N/m^2 4 marks

P.T.O

Module – 3

5 a Define co-ordination number. Calculate the atomic packing factor and co-ordination number for SC, BCC and FCC structures. 10 marks

b Derive an expression for numerical aperture in terms of refractive index of core and cladding. 6 marks

c Calculate the glancing angle for incidence of X-rays of wavelength 0.58 Å on the plane (132) of NaCl which results in 2nd order diffraction maxima taking the lattice spacing as 3.81 Å. 4 marks

Or

6 a Derive an expression for interplanar spacing of a crystal in terms of miller indices. 6 marks

b Describe how Bragg's X-ray spectrometer is used to determine the wavelength of X-ray beam. 6 marks

c Describe the point to point communication system using optical fiber with the help of a block diagram. 4 marks

d A fiber sample 500 m long has an input power of 8.6 μW and an output power of 7.5 μW. what is the loss specification for the cable sample? 4 marks

Module – 4

7 a State de-Broglie hypothesis and show that $\lambda = h/p$. 4 marks

b Explain i) Stimulated emission ii) metastable state and iii) Spontaneous emission. 6 marks

c Show that the electron cannot exist inside the nucleus using Heisenberg's uncertainty principle. 6 marks

d Compute the ground state and first excited state energy values for an electron in a box of width 0.4 nm. 4 marks

Or

8 a Find the Eigen energy values and Eigen functions for an electron in 1-dimensional potential well of infinite height. 8 marks

b Describe construction and working of semiconductor laser. Mention any two applications. 8 marks

c A pulsed laser is emitting photons of wavelength 694.3 nm and the temperature of operation is 18°C. Find the ration of population of the two energy states responsible for the release of photons. 4 marks

Module – 5

9 a Obtain an expression for Fermi energy at 0°K. 6 marks

b Explain Fermi level in intrinsic semiconductor. Mention expressions for electron and hole concentration 6 marks

c Define i) Dielectrics ii) Polarization and iii) internal field. 4 marks

d If a Nacl crystal is subjected to an electric field of 1000 V/m and the resulting polarization is 4.3×10^{-8} C/m^2. Calculate the dielectric constant of NaCl. 4 marks

Or

10 a Explain the variation of Fermi factor for cases $E<E_F$ & $E>E_F$ at T=0°K. 4 marks

b Derive Clausius-Mossotti equation. 6 marks

c Derive an expression for conductivity of semiconductors. 6 marks

d If the Fermi energy of silver is 5.5 eV, find Fermi velocity of conductions electrons? 4 marks

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II – Sem 2018 Batch.

18PHY12/22

First/Second Semester BE Degree Examination July 2019
(CBCS Scheme)

Time: 3 Hours Max Marks: 100 marks

Sub: Engineering Physics

Q P Code: 60003/13

Instructions: 1. Answer **five full** questions.
2. Choose one full question from each module.
3. Your answer should be specific to the questions asked.
4. write the same question numbers as they appear in this question paper.
5. Write Legibly

Module – 1

1 a What are shock waves? Mention any four applications of shock waves. 6 marks

b Give a theory of forced vibrations and hence obtain the expression for amplitude. 10 marks

c A mass 0.5 KG causes an extension 0.03m in a spring and the system is set for oscillations. Find (i) force constant k of the spring, (ii) angular frequency, (iii) period T 4 marks

Or

2 a Define simple harmonic motion. Derive the differential equation of motion for SHM and give any two examples of S.H.M. 8 marks

b Explain the construction an working function of Reddy shock tube. 8 marks

c In a Reddy tube experiment, it was found that, the time taken to travel between the two sensors is 195 μs and velocity of sound under the same condition is 340m/s. if the distance between the two sensors is 100mm, find the Mach number. 4 marks

Module – 2

3 a State Hooke's law. Explain the nature of elasticity with the help of stress- strain diagram. 8 marks

b Define bending moment. Obtain an expression for bending moment of a beam $\left[B.M. = \left(\frac{Y}{R}\right) Ig\right]$ 8 marks

c Calculate the torque required to twist a wire of length 1.5m, radius 0.0425×10^{-2}m, through an angle $(\pi/45)$ radian, if the value of rigidity modulus of its material is 8.3×10^{10}N/m^2. 4 marks

Or

4 a What are torsional oscillations? Give the expressions for time period of torsional oscillations. Mention the applications of torsional oscillation. 6 marks

b Define Poisson's ratio. Derive the relation between Y, η and σ where the symbols have their usual meaning. 10 marks

c Calculate the extension produced in wire of a length 2m and radius 0.013×10^{-2}m due to force of 1.47N applied along its length. (Given Young's modulus $Y = 2.1 \times 10^{11}$N/m^2) 4 marks

Module – 3

5 a Define co-ordination number and packing factor. Calculate the atomic packing factor for SC, BCC and FCC. 10 marks

b Describe the different types of optical fiber with suitable diagram. 6 marks

c Calculate the V- number and number of modes in an optical fiber of core diameter $40\mu m$. Refractive indices are 1.55 and 1.50 respectively at wavelength of 1400nm. 4 marks

Or

6 a Derive an expression for inter planar spacing in terms of Miller indices for simple cubic structure. 6 marks

b What is attenuation? Discuss two factors contributing to the fiber loss. 6 marks

c Discuss point to point optical fiber communication system with the help of diagram. 5 marks

d Draw the following planes in a cubic unit cell. (i) (1 0 0) (ii) (1 1 0) (iii) (112) 3 marks

Module – 4

7 a Mention any two properties of a wave function. Setup one dimensional time independent Schrodinger wave equation. 8 marks

b Derive an expression for energy density under the condition of thermal equilibrium in terms of Einstein's co-efficient. 8 marks

c An electron is confined to move between two rigid walls separated by 20Å. Calculate the Eigen energy values in eV for the first three allowed energy states. 4 marks

Or

8 a State Heisenberg's Uncertainty Principle. Show that electron emitted during β-decay does not pre-exist inside the nucleus using uncertainty principle. 8 marks

b Explain the terms (a) Spontaneous emission (b) stimulated emission (c) Active medium (d) Resonance cavity 8 marks

c A medium in thermal equilibrium at temperature 300K has two energy levels with a wavelength separation of $1\mu m$. Find the ratio of population densities of the upper and lower levels. 4 marks

Module – 5

9 a Define Fermi energy and Fermi factor. Discuss the variation of Fermi factor with different temperature. 10 marks

b Derive Clausius-Mossotti equation. 6 marks

c For intrinsic gallium arsenide, the room temperature electrical conductivity is $10^{-6}/\Omega$m, the electron and hole motilities are respectively $0.85m^2V^{-1}S^{-1}$ and $0.04m^2V^{-1}S^{-1}$. Compute the intrinsic carrier concentration at room temperature. 4 marks

Or

10 a Explain the failures of classical free electron theory. 6 marks

b Derive the expression for electrical conductivity of a semiconductor. 6 marks

c What are dielectrics? Give the relation between dielectric constant and polarization. 4 marks

d Calculate the Fermi velocity and mean free path for the conduction electron in silver, given that its Fermi energy is 5.5eV and the relaxation time for electron is $3.83\text{x}10^{-14}$sec. 4 marks

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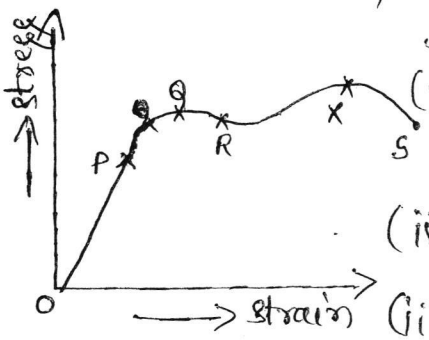
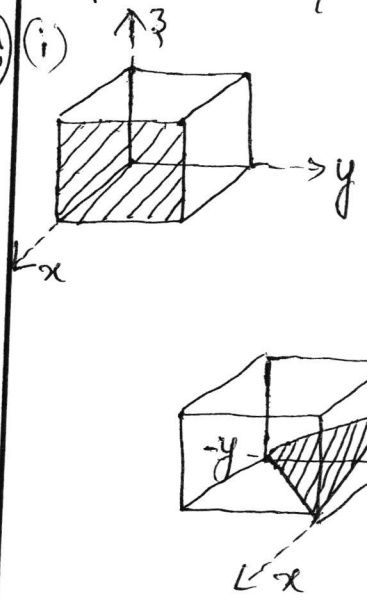
Scheme & Solution

Semester: First | Subject Title: Engineering Physics | Subject Code: 18PHY-12

Question Number	Solution	Marks Allocated
	Module - 1	
1. a)	Definition of shock waves & Equ^{n} → 02 Any four applications → 04	06
b)	Theory @ Explanation of forced osci^{n} → 02 Resultant force $= -r\frac{dx}{dt} - kx + F\sin pt$ → 01 Resultant force $= m\frac{d^2x}{dt^2}$ → 01 upto $\frac{d^2x}{dt^2} + 2b\frac{dx}{dt} + \omega^2 x = \frac{F}{m}\sin(pt)$ → 02 General sol^{n} Equ^{n} $x = a\sin(pt-\alpha)$ → 01 From $\frac{dx}{dt} = ap\cos(pt-\alpha)$ to $a = \frac{F/m}{\sqrt{4b^2p^2 + (\omega^2 - p^2)}}$ → 03	10
c)	(i) $k = \frac{-F}{-x} = \frac{4.9}{0.03} = 163.3$ N/m → 01 $F = mg = -4.9$ N → 01 $\omega = \sqrt{\frac{k}{m}} = \sqrt{\frac{163.3}{0.5}} = 18.1$ rad/sec → 01 $f = \frac{\omega}{2\pi} = \frac{18.1}{2\pi} = 0.35$ sec → 01	04
2. a)	Definition of S.H.M → 02 Fig with Explanation → 02 $F = -kx$ → 01 $\frac{d^2x}{dt^2} + \frac{k}{m}\cdot x = 0$ @ $\frac{d^2x}{dt^2} + \omega^2 x = 0$ → 02 Two Examples of S.H.M. → 01	08
b)	Fig with explanation for construction → 04 Explanation for Working of Reddy shock tube → 04	08

Question Number	Solution	Marks Allocated
c)	$U_s = \frac{d}{t} = \frac{100 \times 10^{-3}}{195 \times 10^{-6}} = 512$ @ 513 →	02
	$M = \frac{U_s}{a} = \frac{512}{340} = 1.505$ @ 1.51 →	02
		(04)
	Module – 2	
3. a)	Statement Hooke's law →	02
	 Discussion of (i) Proportional limit & Elastic limit & yield point → (ii) Plastic behaviour → (S. Hard & S. Soft) (iii) Ultimate strength & Fracture point →	02 02 02
		(08)
b)	Fig with expl^n of a bending beam →	02
	Change in length $= r\theta$ & Linear strain $= \frac{r}{R}$	02
	$Y = \frac{\text{Longitudinal stress}}{\text{Linear strain}} = \frac{F/a}{r/R}$ →	01
	Moment of this force about neutral axis $= F \times r = \frac{Y a r^2}{R} \Rightarrow$	01
	For entire beam $= \sum \frac{Y}{R} \cdot a r^2$ →	01
	Bending moment for Rectangular body $= \frac{Y}{R} \cdot I_g = \frac{Y}{R} \times \frac{bd^3}{12}$	01
		(08)
c)	$\eta = 8.3 \times 10^{10}\ N/m^2$, $R = 0.0425 \times 10^{-2}\ m$, 4	
	Couple/unit twist, $C = \frac{\pi \eta R}{2L}$ →	01
	$L = 1.5\ m$, $\theta = (\pi/45)\ rad$	
	Substitute with answer $C = 2.836 \times 10^{-3}$ →	01
	Torque, $\tau = C \times \theta$ →	01
	Substitute with answer $\tau = 1.98 \times 10^{-4}\ N.m$ →	01
		(04)

Question Number	Solution	Marks Allocated
4. a)	Definition of torsional oscillations →	02
	$T = 2\pi \times \sqrt{\frac{I}{C}}$, where I moment of inertia and 'C' is couple/unit twist of wire	02
	Any two applications →	02
		(06)
b)	Definition of Poisson's ratio ($\sigma = \beta/\alpha$) →	02
	Figure with explanation →	02
	Total elongation = D.P.T. $(\alpha + \beta)$ →	01
	From $P\frac{1}{x} = D.P.T.(\alpha+\beta)$ to $\eta = \frac{1/\alpha}{2(1+\sigma)}$ $(\because \sigma = \beta/\alpha)$ →	02
	$\because Y = 1/\alpha \Rightarrow \therefore Y = 2\eta(1+\sigma)$ →	01
		(08)
c)	$L = 2m$, $R = 0.013 \times 10^{-2} m$, $F = 14.7N$	
	$Y = 2.1 \times 10^{11} N/m^2$ →	01
	$Y = \frac{F/a}{x/L} \Rightarrow x = \frac{FL}{aY}$ $(\because a = \pi R^2)$ →	01
	Substitution & calculation → $x = 2.6 \times 10^{-3} m$	02
		(04)
	Module – 3	
5. a)	Definition of coordination number & Packing factor →	02
	Packing factor for S.C → $a = 2R$, P.F = 0.52 →	02
	—"— B.C.C. → $a = \frac{4}{\sqrt{3}}R$, P.F = 0.68 →	02
	—"— F.C.C. → $a = 2\sqrt{2}R$, P.F = 0.74 →	02
		(08)
b)	Step index single mode optical fiber fig →	02
	—"— Multimode O.F. with fig →	02
	Graded Index Multimode O.F. with fig →	02
		(06)

Question Number	Solution	Marks Allocated
	c) $V = \frac{\pi d}{\lambda} \times \sqrt{n_1^2 - n_2^2} = \frac{3.14 \times 40 \times 10^{-6}}{1400 \times 10^{-9}} \times \sqrt{(1.55)^2 - (1.50)^2}$ $V = 35$ Number of modes $= M_n = \frac{V^2}{2} = 612$	02 02 (04)
6.	a) Figure with Explanation $d_{hkl} = x.\cos\alpha = y.\cos\beta = z.\cos\gamma$ $x : y : z = \frac{a}{h} : \frac{b}{k} : \frac{c}{l}$ $\cos^2\alpha + \cos^2\beta + \cos^2\gamma = 1$ For Cubic, $a = b = c$ $\therefore d_{hkl} = \frac{a}{\sqrt{h^2+k^2+l^2}}$	02 01 01 01 (06)
	b) Attenuation definition & Equ^n $\alpha = -\frac{10}{L} \times \log_{10}\left(\frac{P_{out}}{P_{in}}\right)$ dB/km Expln: (i) Absorption losses (ii) Scattering losses (iii) Bending losses	02 Any two → 04 (06)
	c) Block diagram for communication system Explanation using diagram	02 03 (05)
	d) (i)  (ii)	→ 02 → 01 (03)

Question Number	Solution	Marks Allocated
7. a)	Module – 4 Any two properties of Wavefunction →	02
	$\psi = A \cdot e^{i(kx - \omega t)}$ ⟶	01
	$\frac{d^2\psi}{dt^2} = -\omega^2 \cdot \psi$ ⟶	01
	Travelling wave equ^{n}, $\frac{d^2\psi}{dx^2} = \frac{1}{v^2} \cdot \frac{d^2\psi}{dt^2}$ →	01
	$\frac{d^2\psi}{dx^2} = -\frac{\omega^2}{v^2} \cdot \psi$ ⟶	01
	K.E $= -\frac{h^2}{8\pi^2 m} \cdot \frac{1}{\psi} \cdot \frac{d^2\psi}{dx^2}$ to $\frac{d^2\psi}{dx^2} + \frac{8\pi^2 m}{h^2} \cdot (E - V) \cdot \psi = 0$ } →	02
		(08)
b)	Expression for (i) Rate of induced absorption (ii) Rate of spontaneous emission (iii) Rate of stimulated emission with initial assumption & diagram	03
	Assuming Thermal equilibrium con^{n}: $B_{12} N_1 U_\gamma = A_{21} \cdot N_2 + B_{21} \cdot N_2 U_\gamma$ ⟶	01
	upto $U_\gamma = \frac{A_{21}}{B_{21}} \cdot \left[\frac{1}{\frac{B_{12}}{B_{21}} \cdot e^{h\gamma/kT} - 1}\right]$ →	03
	upto $U_\gamma = \frac{A}{B\left(e^{h\gamma/kT} - 1\right)}$ ⟶	01
		(08)
c)	Formula $E_n = \frac{n^2 h^2}{8ma^2}$ ⟶	01
	For ground state, $n=1$, $E_0 = 1.51 \times 10^{-20}$ J $E_0 =$	01
	For 1st excited state, $n=2$, $E_1 = 6.03 \times 10^{-20}$ J $E_1 =$	01
	For 2nd excited state, $n=3$, $E_2 = 1.36 \times 10^{-19}$ J $E_2 =$	01
		(04)
8. a)	Heisenberg's Uncertainty Principle statement →	02
	Einstein's Theory of Relativity $E^2 = c^2(p^2 + m_0 c^2)$ →	02
	$\Delta P_x \geq 1.1 \times 10^{-20}$ N.sec →	01

Question Number	Solution	Marks Allocated
	Upto $E \geq 20.6$ MeV & 9.7 MeV →	02
	conclusion →	01
		(08)
b)	Explanation of (i) Spontaneous Emission →	02
	(ii) Stimulated emission →	02
	iii) Active medium iv) Resonance cavity with fig. →	02+02
		(08)
c)	Formula $N_2 = N_1 \cdot e^{-h\nu/kT}$ →	01
	substitution →	01
	Calculation, then answer $\frac{N_2}{N_1} = 1.365 \times 10^{-21}$ →	02
		(04)
	Module – 5	
9. a)	Defination of Fermi energy and fermi factor with equation $E_F = \frac{h^2}{8m} \times \left(\frac{3n}{\pi}\right)^{2/3}$ & $f(E) = \frac{1}{e^{h\nu/kT}+1}$ →	02+02 =04
	(i) $E < E_F$ at $T=0K$, $f(E)=1$ →	01
	(ii) $E > E_F$ at $T=0K$, $f(E)=0$ →	01
	(iii) $E = E_F$ at $T>0K$ $f(E)=0.5$ →	01
	Graphical fig with conclusion →	01+02
		(10)
b)	consideration & $\mu = \alpha_e E_i$ →	02
	upto $E_i = \frac{P}{N \cdot \alpha_e}$ →	01
	upto $E = \frac{P}{\varepsilon_0(\varepsilon_r - 1)}$ →	01
	upto $\frac{1}{N\alpha_e} = \frac{1}{\varepsilon_0} \cdot \left[\frac{1}{(\varepsilon_r - 1)} + \frac{1}{3}\right]$ →	01
	$\frac{\varepsilon_r - 1}{\varepsilon_r + 2} = \frac{N\alpha_e}{3\varepsilon_0}$ →	01
		(06)
c)	$\sigma_i = 10^{-6}/\Omega \cdot m$, $\mu_e = 0.85\ m^2/V.sec$ $\mu_h = 0.04\ m^2/V.sec$ $\sigma_i = n_i e(\mu_e + \mu_h)$ →	02
	substitution & Calculation $n_i = 7.0 \times 10^{12}/m^3$ →	02
		(04)

Question Number	Solution	Marks Allocated
10. a)	(i) Specific Heat :-	
	According to theory, $C_v = \frac{3}{2} \cdot R$	02
	But experimental observation $C_v = 10^{-4} RT$	
	(ii) Conductivity dependence on Temperature :-	
	Acc. to theory, $\sigma \propto \frac{1}{\sqrt{T}}$	02
	But experimental observation, $\sigma \propto \frac{1}{T}$	
	(iii) Conductivity dependance on electron concentration :-	
	Acc. to theory, $\sigma \propto n$	02
	Experimentally, $\sigma \propto \frac{1}{n}$	06
b)	Consideration $\rightarrow I = N_e \cdot e \cdot A \cdot v$	02
	$J = I/A \Rightarrow N_e \cdot e v$	01
	$\vec{J} = \sigma \cdot \vec{E}$	01
	upto $\sigma_e = N_e \cdot e \mu_e$, $\sigma_h = N_h \cdot e \mu_h$	01
	$\sigma = e(N_e \cdot \mu_e + N_h \cdot \mu_h)$	01
		06
c)	$E_F = 5.5\,eV = 5.5 \times 1.602 \times 10^{-19}\,J$	
	$\tau = 3.97 \times 10^{-14}$ sec	01+01
	$E_F = \frac{1}{2} m v_F^2 \Rightarrow v_F = \sqrt{\frac{2E_F}{m}}$	
	$v_F = 1.39 \times 10^6$ m/sec	
	$\lambda = v_F \cdot \tau$	01
	$\lambda = 5.518 \times 10^{-8}$ m	01
		04

HOD
Department of Engg. Physics
C.S. Institute of Technology
C Nagar 471 1...
...

First Semester BE Degree Examination
(CBSC Scheme)

Time: 3 Hours | Max Marks: 100 marks

SUB: ENGINEERING PHYSICS

Q P Code: 60003

Instructions: 1. Answer **five full** questions.
2. Choose one full question from each module
3. Your answer should be specific to the questions asked.
4. write the same question numbers as they appear in this question paper.
5. Write Legibly

MODULE – 1

1.	a.	Define damped oscillations and forced oscillations with examples.	4 marks
	b.	Describe the construction and working of Reddy Shock tube.	6 marks
	c.	Define simple harmonic motion. Derive the equation for simple harmonic motion using Hooke's law.	6 marks
	d.	Evaluate the resonance frequency of a spring of force constant 2467 N/m, carrying a mass of 100 gm.	4 marks

OR

2.	a.	Define Mach number. Write the applications of shock waves.	6 marks
	b.	Discuss the theory of forced vibrations and hence obtain the expression for amplitude.	10 marks
	c.	Find the frequency of oscillation of a free particle executing simple harmonic motion of amplitude 0.35 m if the maximum velocity it can attain is 220 m/s.	4 marks

MODULE – 2

3.	a.	Define young's modulus, bulk modulus and rigidity modulus and derive a relation between them.	8 marks
	b.	Define bending moment of a beam. Derive an expression for bending moment $\left(B.M = \left(\frac{Y}{R}\right) Ig\right)$	8 marks
	c.	A wire length 1 m and diameter 1 mm is clamped at one of its ends. Calculate the couple required to twist the other end by 90°. Given rigidity modulus = 2.8×10^{10} N/m^2.	4 marks

OR

4.	a.	State Hooke's law of elasticity. Derive an expression for young's modulus Y of a material of a single cantilever.	10 marks
	b.	What are torsional oscillations? Mention the expression for couple per unit twist of a solid cylinder and expression for period of oscillation.	6 marks
	c.	A solid lead sphere of radius 10.3 m is subjected to a normal pressure of 10 N/m^2 acting all over the surface. Determine the change in its volume.	4 marks

PTO

MODULE – 3

5. a. Define lattice and basis. Explain seven crystal systems with neat diagram. — 10 marks
   b. Discuss different types of optical fibers with suitable diagrams. — 6 marks
   c. A monochromatic X-ray beam of wavelength 0.7 Å undergoes first order Bragg reflection from the plane (302) of cubic crystal at a glancing angle of 35°. Calculate the lattice constant — 4 marks

OR

6. a. Derive an expression for numerical aperture in terms of refractive index of core and cladding. — 6 marks
   b. Derive Bragg's law. — 4 marks
   c. Derive an expression for interplanar spacing of a crystal in terms of miller indices. — 6 marks
   d. Calculate the V-number and number of modes supported by an optical fiber of core index 1.54 and cladding index 1.5 at operating wavelength 1.3 μm. The diameter of the fiber is 50 μm. — 4 marks

MODULE – 4

7. a. Set up 1-dimensional time independent Schrodinger's wave equation and mention any two properties of wave function. — 8 marks
   b. Derive an expression for energy density at thermal equilibrium through Einstein's coefficients. — 8 marks
   c. An electron has a speed of 500 m/s correct up to 0.01 %. With what fundamental accuracy the position of the electron can be located? — 4 marks

OR

8. a. Show that the electron cannot exist inside the nucleus using Heisenberg's uncertainity principle. — 6 marks
   b. What is a laser? Describe the construction and working of CO_2 laser with the help of energy level diagram. — 10 marks
   c. A pulsed laser emits of pulses of 20 ns duration with an average power / pulse being 0.1 Mw. If the number of photons emitted per pulse is 6.981×10^{15}, calculate the wavelength of the laser. — 4 marks

MODULE – 5

9. a. Define Fermi level and Fermi factor. Write the assumptions of quantum free electron theory. — 6 marks
   b. Derive an expression for conductivity of semiconductors. — 6 marks
   c. What are polar and non polar dielectrics? — 4 marks
   d. The Fermi level in silver is 5.5 eV at 0^0K. Calculate the number of free electrons / unit volume. — 4 marks

OR

10. a. Obtain an expression for Fermi energy at 0^0 K. — 6 marks
    b. Derive Clausius-Mossotti equation. — 6 marks
    C. Discuss solid, liquid and gaseous dielectrics with examples. — 4 marks
    d. The following data are given for intrinsic germanium at 300 K. The electron and hole mobilities are 0.85 $m^2V^{-1}s^{-1}$ and 0.04 $m^2V^{-1}s^{-1}$. Find the resistivity of the sample if the intrinsic carrier concentration is 7×10^{12} m^{-3}. — 4 marks

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Scheme of Evaluation

Module – 1

1. a) Definition of damped oscillation with example.
Definition of forced oscillation with example.

b) Reddy Shock tube
construction
working

c) Simple harmonic motion definition

$F = -kx \qquad F = m\frac{d^2x}{dt^2}$

$$\frac{d^2x}{dt^2} + \frac{k}{m}x = 0$$

d) Face constant $k = 2467\ N/m$

mass $m = 100\ gm = 100 \times 10^{-3}\ kg$

$$\omega = \sqrt{\frac{k}{m}} \qquad \omega = 2\pi\gamma$$

$$\gamma = \frac{1}{2\pi}\sqrt{\frac{k}{m}} = \frac{1}{2\pi}\sqrt{\frac{2467}{100 \times 10^{-3}}} = 25\ Hz$$

2. a) Definition of Mach number.
Any four & five applications

b) Theory of forced Vibrations

$$\text{Resultant force} = -\gamma\frac{dx}{dt} - kx + F\sin Pt$$

$$\text{Resultant force} = m\frac{d^2x}{dt^2}$$

$$\frac{d^2x}{dt^2} + \frac{\gamma}{m}\frac{dx}{dt} + \frac{k}{m}x = \frac{F}{m}\sin(Pt)$$

$\frac{d^2x}{dt^2} + 2b\frac{dx}{dt} + \omega^2 x = \frac{F}{m}\sin(pt)$ — ① 01 M

$x = a\sin(pt - \alpha)$ 01 M

$\frac{dx}{dt} = ap\cos(pt - \alpha)$

$\frac{d^2x}{dt^2} = -ap^2\sin(pt - \alpha)$

Substituting above eqns in eqn ① & simplifying we get 04 M

$$a = \frac{F/m}{\sqrt{4b^2p^2 + (\omega^2 - p^2)^2}}$$

c)

$V_{max} = 220 m/s$ $V = \omega\sqrt{a^2 - x^2}$ 01 M

$\gamma = ?$

$a = 0.35 m$ $x = 0$ $V_{max} = \omega a$ 01 M

$\omega = \frac{V_{max}}{a} = \frac{220}{0.35} = 628.5 rad/s$ 01 M

$\gamma = \frac{\omega}{2\pi} = \frac{628.5}{2\pi} = 100 Hz$ 01 M

Module - 2

3 a) Definition of young's modulus, bulk modulus & rigidity modulus 05 M

$\eta = 2n(1+\sigma)$ & $k = \frac{\eta}{3(1-2\sigma)}$ 03 M

$$\eta = \frac{9nk}{(3k+n)}$$

b) Definition of bending moment — 01M

Diagram — 01M

Linear Strain $= \frac{x}{R}$ Linear Stress $= \frac{F}{a}$ — 03M

$F = \frac{Yax}{R}$, moment of force $= \frac{Y}{R}\sum ax^2$

$I_g = \sum ax^2 = Ak^2$ bending moment $= \frac{Y}{R} I_g$ — 03M

For rectangular cross section,

bending moment $= \frac{Y}{R}\left(\frac{bd^3}{12}\right)$

c)

$L = 1m$

$R = 0.5 \times 10^{-3} m$ — 01M

$\theta = 90° = \pi/2$

$\eta = 2.8 \times 10^{10} N/m^2$

$\tau = \frac{\pi \eta R^4 \theta}{2L}$

$= \frac{\pi \times 2.8 \times 10^{10} \times (0.5 \times 10^{-3})^4 \times \pi}{2 \times 1 \times 2}$ — 02M

$\tau = 4.3 \times 10^{-3} Nm$ — 01M

4. a) Hooke's law statement — 01M

diagram, bending moment $\frac{Y}{R} I_g = W(L-x)$ — 02M

$\frac{1}{R} = \frac{d^2y}{dx^2}$ Substituting this in the above eqn. integrating & simplifying, arrive at — 04M

$Y = \frac{WL^3}{3y_0 I_g}$ — 01M

For rectangular cross section $I_g = \frac{bd^3}{12}$ — 02M

$Y = \frac{4WL^3}{y_0 bd^3}$

b) Torsional oscillations — 02M

Expression for couple per unit twist $C = \frac{\pi \eta R^4}{2L}$ with explaining notations — 02M

$T = 2\pi\sqrt{\frac{I}{C}}$ with notations — 02M

c) $\gamma = 10.3\ m$, $P = 10\ N/m^2$, $K = 4.58 \times 10^{10}\ N/m^2$ — 01M

$V = \frac{4}{3}\pi R^3$ — 01M

$K = \frac{PV}{v}$

$v = \frac{P}{K}\frac{4}{3}\pi R^3 = 10^{-6}\ m^3$ — 02M

Module -3

5 a) Definition lattice & basis — 02M

Seven crystal systems explanation with diagrams — 08M

b) Types of optical fibers, 3 types each carried 2 marks. Diagram with explanation — 06M

c) $\lambda = 0.7\ Å$, $n = 1$, $(hkl) = (302)$, $\theta = 35^0$, $a = ?$

$2d \sin\theta = n\lambda$

$d = \frac{n\lambda}{2\sin\theta} = \frac{1 \times 0.7\ Å}{2\sin(35)} = 0.61\ Å$ — 02M

$d = \frac{a}{\sqrt{h^2+k^2+l^2}}$ $\quad a = d\sqrt{3^2+0^2+2^2}$

$a = 2.2\ Å$ — 02M

6 a) Diagram $n_0 \sin\theta_0 = n_1 \sin\theta_1$ — 03M

$n_0 \sin(90-\theta_1) = n_2 \sin 90^0 \quad \cos\theta_1 = n_2/n_1$

$\sin\theta_0 = \sqrt{1 - \frac{n_2^2}{n_1^2}} = \frac{1}{n_0}\sqrt{n_1^2 - n_2^2}$ — 03M

b) Diagram, $2d\sin\theta = n\lambda$ with complete explanation — 04 M

c) Diagram with complete derivation — 02 M

$\cos^2\alpha + \cos^2\beta + \cos^2\gamma = 1$ — 01 M

$$d_{hkl} = \frac{1}{\sqrt{\frac{h^2}{a^2} + \frac{k^2}{b^2} + \frac{l^2}{c^2}}}$$ — 02 M

For cubic lattice $a = b = c = a$ — 01 M

$$d_{hkl} = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

d) $V_{number} = ?$

$N = ?$

$n_1 = 1.54$

$n_2 = 1.5$

$\lambda = 1.3\,\mu m$

$d = 50\,\mu m$

$$V_{number} = \frac{\pi d \sqrt{n_1^2 - n_2^2}}{\lambda} = 42.13$$ — 02M

$$N = \frac{V^2}{2} = 887.6$$ — 02M

Module - 4

7. a) $\psi = Ae^{i(kx - \omega t)}$ to $\frac{1}{\lambda^2} = -\frac{1}{4\pi^2\psi}\frac{d^2\psi}{dx^2}$ — Any two properties — 02M; 03M

Total Energy $E = KE + PE$ to $\frac{d^2\psi}{dx^2} + \frac{8\pi^2 m(E-V)}{h^2}\psi = 0$ — 03M

b) Explanation of Induced absorption, spontaneous emission & stimulated emission with equations — 03M

$B_{12} N_1 U_\nu = A_{21} N_2 + B_{21} N_2 U_\nu$ — 01M

$$U_\nu = \frac{A_{21}}{B_{21}}\left[\frac{1}{\frac{B_{12}}{B_{21}}\frac{N_1}{N_2} - 1}\right] \qquad \frac{N_1}{N_2} = e^{\frac{h\nu}{kT}}$$ — 02M

$$U_\nu = \frac{8\pi h\nu^3}{c^3}\left[\frac{1}{e^{\frac{h\nu}{kT}}-1}\right]$$ 01M

$$U_\nu = \frac{A}{B\left(e^{\frac{h\nu}{kT}}-1\right)}$$ 0 M

c)

$\Delta V = 500 \times \frac{0.01}{100} = 0.05 m/s$ $\Delta x \cdot \Delta P = \frac{h}{4\pi}$ 02M

$\Delta x = ?$

$m = 9.1 \times 10^{-31} kg$ $\Delta x = \frac{h}{4\pi \Delta V m}$ 01M

$\Delta x = 1.15 \times 10^{-3} m$ 01M

a) $E = p^2c^2 + m_0c^4$

$\Delta x \cdot \Delta P \geq \frac{h}{4\pi}$ $d = 10^{-14} m$ $\Delta x \simeq 10^{-14} m$. 06M

$E = 10 MeV$ & $20 MeV$

b) Laser definition 01M

construction of CO_2 laser 04M

working of CO_2 laser 05M

c)

$t = 20 ns$

$P_{av} = 0.1 MW$

$N = 6.981 \times 10^{15}$

$\lambda = ?$

$\lambda = \frac{Nhc}{Pt} = 6937 Å$ 02M

$= \frac{6.981 \times 10^{15} \times 6.625 \times 10^{-34} \times 3 \times 10^8}{0.1 \times 10^6 \times 20 \times 10^{-9}}$ 02M

$\lambda = 6937 A$

Module - 5

9. a) Define Fermi level & Fermi factor — 02M

b) Assumptions of quantum free electron theory — 04M

b) $I_e = N_e e A V_e \qquad I_h = N_h e A V_h$

$I = I_e + I_h = eA[N_e V_e + N_h V_h]$ — 02M

$J = I/A \qquad \mu = \frac{V_d}{E}$

$J = \sigma E \qquad \sigma = e(N_e \mu_e + N_h \mu_h)$ — 02M

For intrinsic SC, $N_e = N_h = n_i$

$\therefore \sigma = n_i e(\mu_e + \mu_h)$ — 02M

Any method, students can use

c) Polar & non polar dielectrics definition — 04M

d) $E_F = 5.5\,eV$

$n = ?$

$B = 5.85 \times 10^{-38}$

$E_{F_0} = B n^{2/3}$ — 01M

$n = \left(\frac{E_{F_0}}{B}\right)^{3/2}$

$= \left(\frac{5.5 \times 1.602 \times 10^{-19}}{5.85 \times 10^{-38}}\right)^{3/2}$ — 02M

$n = 5.845 \times 10^{28} / m^3$ — 01M

10. a) Expression for fermi energy at 0 K

$N(E)dE = g(E)dE \times f(E) \quad -①$ — 01M

$f(E) = 1 \qquad g(E)dE = \frac{8\sqrt{2}\pi m^{3/2}}{h^3} E^{1/2} dE$ using both eqns — 02M

in ① integrating & simplifying we get

$$E_{F_0} = \frac{h^2}{8m}\left(\frac{3n}{\pi}\right)^{2/3} \qquad 03M$$

$$E_{F_0} = B\, n^{2/3}$$

b) Clausius - Mossotti equation

$P = N\alpha_e E_i$ $\qquad P = \epsilon_0(\epsilon_r - 1)E$ $\qquad 02M$

$E_i = E + \gamma\frac{P}{\epsilon_0}$ Substituting E_i & E & simplifying

$$\frac{1}{N\alpha_e} = \frac{1}{\epsilon_0}\left[\frac{1}{(\epsilon_r - 1)} + \gamma\right] \qquad 02M$$

$\gamma = \frac{1}{3}$, for Lorentz field & simplifying the above eqn, we get $\qquad 02M$

$$\frac{(\epsilon_r - 1)}{(\epsilon_r + 2)} = \frac{N\alpha_e}{3\epsilon_0}$$

c) Solid, liquid & gaseous dielectrics with examples. 2 marks each $\qquad 06M$

d) $\mu_e = 0.85\ m^2V^{-1}s^{-1}$

$\mu_h = 0.04\ m^2V^{-1}s^{-1}$

$\rho = ?$

$n_i = 7\times10^{12}\ /m^3$

$\sigma = n_i e(\mu_e + \mu_h)$ $\qquad 01M$

$$\rho = \frac{1}{\sigma} = \frac{1}{n_i e(\mu_e + \mu_h)} \qquad 02M$$

$$= \frac{1}{7\times10^{12}\,[0.85 + 0.04]} = \qquad 01M$$

1.6×10^{-19}

$\rho = 1\times10^{6}\ \Omega m$

BGSIT BG Nagara	Doc. Title: Internal Test Question Paper		Doc. No.: 06#Form#02b
	Page 1 of 1	Date: 03.10.2019	Rev. No. 00

INTERNAL TEST QUESTION PAPER FORMAT- CBCS SCHEME (VTU)

Name of the Faculty/s: SHANKARA S R & RANJITHA K N

Date : 03.10.2019 **Signature:**

Reviewer's Signature:	

BGS Institute of Technology

Department: Engineering Physics

Test: I

Semester: I **Section**: A, B & C

USN:

Subject Name & Code: Engg.Physics & 18PHY12

Instructions

Duration: 60 minutes **Max. Marks**: 30

i) Select one question from each part.

ii) All main questions carry equal marks.

Question Number	Questions	Marks	CO	Levels
	PART – A			
1	a) What are damped oscillations? Give the theory of damped oscillations.	10	CO1	L2
	b) Calculate the resonance frequency for a simple pendulum of length 1m.	5	CO1	L3
	OR			
2	a) Define Mach number. Explain the construction and working function of Reddy shock tube.	10	CO1	L2
	b) A body of mass 500gm is attached to a spring and the system is driven by an external periodic force of amplitude 15N and frequency 0.796Hz. The spring extends by a length of 88mm under the given load. Calculate the amplitude of oscillation, if the resistance coefficient of the medium is 5.05 kg/s. Ignore the mass of the spring.	5	CO1	L3
	PART – B			
3	a) Give the theory of forced vibrations and hence obtain the expression for amplitude.	10	CO1	L2
	b) What are shock waves? Mention any four applications of Shock waves.	5	CO1	L2
	OR			
4	a) Explain the construction and working function of CO_2 laser with the help of energy level diagram.	10	CO4	L2
	b) In a Reddy tube experiment, it was found that, the time taken to travel between the two sensors is 200μs and velocity of sound under the same condition is 340m/s. If the distance between the two sensors is 100mm, find the Mach number.	5	CO1	L2

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CBCS Scheme ( )

DEPARTMENT: PHYSICS

Scheme & Solution

Semester: First **Subject Title: Engineering Physics** **Subject Code: 18PHY-12**

Question Number	Solution	Marks Allocated
	Part – A	
1 a)	Definition for Damped oscillations → 02	
	Restoring force $\propto$ Displacement	
	$F_r \propto x \Rightarrow F_r = -kx \rightarrow (1)$	02
	Frictional force $\propto$ velocity	
	$F_f \propto \frac{dx}{dt} \Rightarrow F_f = -r.\frac{dx}{dt} \rightarrow (2)$	
	Resulting force $= F_r + F_f$	
	$m.\frac{d^2x}{dt^2} = -kx - r.\frac{dx}{dt}$ → 02	
	$\frac{d^2x}{dt^2} + 2b.\frac{dx}{dt} + \omega^2 x = 0 \longrightarrow$	01
	General solution for the above equation → $x = A.e^{\alpha t} \longrightarrow$	01
	$x = \frac{x_0}{2}\left\{\left[1+\frac{b}{\sqrt{b^2-\omega^2}}\right].e^{(-b+\sqrt{b^2-\omega^2})t} + \left[1-\frac{b}{\sqrt{b^2-\omega^2}}\right].e^{(-b-\sqrt{b^2-\omega^2})t}\right\}$ →	02
		(10)
b)	$l = 1m$, $f = ?$	
	$T = 2\pi \times \sqrt{\frac{l}{g}} \Rightarrow f = \frac{1}{2\pi} \times \sqrt{\frac{1}{g}}$ →	02
	$f = 0.5$ →	03
		(05)
2. a)	Definition for Mach number →	02
	Construction with fig →	04
	Explanation for working function →	04
		(10)

Question Number	Solution	Marks Allocated
	b) $m = 500 \times 10^{-3}$ kg, $f = 0.796$ Hz $F = 15$ N, $\gamma = 5.05$ kg/sec $x = 88 \times 10^{-3}$ m $a = ?$ $P = 2\pi\gamma = 5$ rad/sec →	01
	$k = \frac{F}{x} = 55.68$ N/m →	01
	$\omega = \sqrt{\frac{k}{m}} = 10.55$ rad/sec →	01
	$b = \frac{\gamma}{2m} = 0.05$ rad/sec →	01
	$a = \frac{F/m}{\sqrt{4b^2p^2 + (\omega^2 - p^2)^2}} \longrightarrow a = 0.3$ m →	01
		(05)
	Part – B	
3	a) Definition for forced oscillation →	02
	Restoring force ∝ Displacement $F_r \propto x \Rightarrow F_r = -kx$ Frictional force ∝ Velocity $F_f \propto \frac{dx}{dt} \Rightarrow F_f = -\gamma \cdot \frac{dx}{dt}$ External periodic force $= F \cdot \sin(pt)$	→ 03
	$ma = -kx - \gamma \cdot \frac{dx}{dt} + F \cdot \sin(pt)$ →	01
	Final expression for amplitude $a = \frac{F/m}{\sqrt{4b^2p^2 + (\omega^2 - b^2)^2}}$ →	04
		(10)
	b) Definition for shock waves →	02
	i) Medical field for eye defect ii) For Wood preservation iii) For Pencil industry iv) For Defence field	→ 04
		(06)

Question Number	Solution	Marks Allocated
(4) a)	Explanation for construction with fig } →	04
	Working function with energy level diagram } →	06
		(10)
b)	$d = 100 \times 10^{-3}$ m	
	$t = 200 \times 10^{-6}$ sec	
	$a = 340$ m/sec	
	$v = \frac{100 \times 10^{-3}}{200 \times 10^{-6}} = 0.5 \times 10^{+3} = 500$ m/sec	02
	$M = \frac{v}{a} = \frac{500}{340} = 1.47$	03
		(05)

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BGSIT BG Nagara	Doc. Title: Internal Test Question Paper		Doc. No.: 06#Form#02b
	Page 1 of 1	Date: 04.11.2019	Rev. No. 00

INTERNAL TEST QUESTION PAPER FORMAT- CBCS SCHEME

Name of the Faculty/s: SHANKARA S R & RANJITHA K N

Date : 04.11.2019 **Signature:**

Reviewer's Signature:	

BGS Institute of Technology

Department: Engineering Physics

Test: II

USN:

Semester: I **Section**: A,B&C

Subject Name & Code: Engg.Physics & 18PHY-12

Instructions

Duration: 60 minutes **Max. Marks**: 30

i) Select one question from each part.

ii) All main questions carry equal marks.

Question Number	Questions	Marks	CO	Levels
	PART – A			
1	a) Explain the different types of optical fibers.	06	CO3	L2
	b) Derive the expression for numerical aperture in terms of R.I core and clad.	05	CO3	L1
	c) Calculate the V-number and Number of modes in an optical fiber of core diameter 50μm, core and cladding refractive indices 1.41 and 1.40, at wavelength 820nm	04	CO3	L3
	OR			
2	a) Explain the construction and working function of semiconductor laser	06	CO4	L2
	b) Explain the applications of laser in industrial field.	05	CO4	L1
	c) Find the ratio of population of the two energy states of the ruby laser the transition between which is responsible for the emission of photons of wavelength 632.8 nm. Assume the temperature as 330K	04	CO4	L3
	PART – B			
3	a) Find the energy Eigen values and Eigen functions for a particle in one-dimensional potential well of infinite height and discuss the solutions.	10	CO4	L2
	b) Compute the first 3 permitted energy values for an electron in a box of width 4Å.	05	CO4	L3
	OR			
4	a) State Heisenberg's Uncertainty Principle. Show that electron cannot exist inside the nucleus of an atom using Heisenberg's Uncertainty Principle.	10	CO4	L2
	b) An electron has a Speed of 100 m/s. The inherent uncertainty in its measurement is 0.005%. Calculate the corresponding uncertainty that arises in determining its position.	05	CO4	L3

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CBCS Scheme (

DEPARTMENT: PHYSICS

Scheme & Solution

Semester: ~~First~~ Second **Subject Title: Engineering Physics** **Subject Code: 18PHY-12**

Question Number	Solution	Marks Allocated
	Part – A	
1 a)	i) Single mode optical fiber →	02
	ii) Step-Index Multimode O.F →	02
	iii) Graded-Index Multimode O.F →	02
		06
b)	Fig with Explanation →	02
	$n_0 \cdot \sin(\theta_0) = n_1 \cdot \sin(\theta_1)$ →	01
	$n_1 \cdot \sin(90 - \theta_1) = n_2 \cdot \sin(90^\circ)$ →	01
	$\sin(\theta_0) = \frac{\sqrt{n_1^2 - n_2^2}}{n_0}$ →	
	For Air medium, $n_0 = 1$ →	01
	$\therefore N.A = \sqrt{n_1^2 - n_2^2}$ →	
		05
c)	$V = \frac{\pi d}{\lambda} \cdot \sqrt{n_1^2 - n_2^2}$ →	01
	$V = \frac{3.14 \times 50 \times 10^{-6}}{820 \times 10^{-9}} \times \sqrt{(1.41)^2 - (1.40)^2}$ →	01
	$V = 32$ →	01
	No of modes $(M_n) = \frac{V^2}{2}$ →	01
	$= 512$	04

Question Number	Solution	Marks Allocated
2 a)	Fig with Explanation of constructional part →	03
	Explanation of Working function of Semiconductor laser →	03
		(06)
b)	i) Laser Welding →	02
	ii) Laser Cutting →	02
	iii) Laser Drilling →	01
		(05)
c)	Formula → $\frac{N_2}{N_1} = e^{-\frac{h\gamma}{kT}}$ →	01
	$\frac{N_2}{N_1} = e^{-\frac{6.625\times10^{-34}\times3\times10^{8}}{1.38\times10^{-23}\times632.8\times10^{-9}\times330}}$ →	01
	Calculation →	01
	Answer $\frac{N_2}{N_1} = 1.059\times10^{-30}$ →	01
		(04)
	Part - B	
3. a)	Fig with Potential function →	02
	$\frac{d^2\psi}{dx^2} + \frac{8\pi^2 m}{h^2}.(E-V).\psi = 0$ →	01
	$A.\sin lx + B.\cos lx$ →	01

Question Number	Solution	Marks Allocated
	upto $E_n = \frac{n^2 h^2}{8ma^2}$ ⟶	02
	upto $\psi_n = A \cdot \sin kx$ ⟶	02
	Solution & Discussion ⟶	02
		(10)
b)	Formula, $E_n = \frac{n^2 h^2}{8ma^2}$ ⟶	01
	Calculation ⟶	01
	For Zero Point E. S. $E_0 = 2.35$ eV	01
	For Ist Excited E. S. $E_1 = 9.4$ eV	01
	For IInd Excited E. S. $E_2 = 21.5$ eV	01
		(05)
4. a)	For Satatement of Heisenberg's Uncertainty Principle ⟶	02
	Explanation ⟶	02
	$E = mc^2$ ⟶	01
	$p = mv$ ⟶	01
	$\Delta x \leq 10^{-14}$ m ⟶	01
	$\Delta p_x \cdot \Delta x \geq \frac{h}{4\pi}$ ⟶	01

Question Number	Solution	Marks Allocated
	$P \geq 0.5 \times 10^{-20}$ N.sec & $E \geq 20$ MeV	01
	Final conclusion →	01
		(10)
b)	$\Delta p \cdot \Delta x \geq \frac{h}{4\pi}$ →	01
	$\Delta v = 100 \times \frac{\%\text{ of } \Delta v}{v}$ →	01
	$\Delta v = 0.005$ m/sec	
	$\Delta p = m \cdot \Delta v$ →	01
	$\Delta p = 9.1 \times 10^{-31} \times 0.005$ →	01
	$\Delta x \geq 0.0115$ m →	01
		(05)

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INTERNAL TEST QUESTION PAPER FORMAT- CBCS SCHEME (VTU)

Name of the Faculty/s: SHANKARA S R
Date : 06.12.2019 **Signature:**

Reviewer's Signature:

BGS Institute of Technology
Department: Engineering Physics
Test: III

USN:

Semester: I **Section**: A, B & C
Subject Name & Code: Engg.Physics & 18PHY12

Instructions

Duration: 60 minutes **Max. Marks**: 30

i) Select one question from each part.
ii) All main questions carry equal marks.

Question Number	Questions	Marks	CO	Levels
	PART – A			
1	a) Derive the expression for Clausius-Mossotti equation.	6	CO5	L2
	b) Obtain the expression for Fermi energy at 0 K.	5	CO5	L2
	c) The charge carrier density of intrinsic germanium is $2.372 \times 10^{-19}/m^3$. Assuming electron and hole mobility's as $3.38 m^2V^{-1}s^{-1}$ and $0.18\ m^2V^{-1}s^{-1}$ Calculate the resistivity of intrinsic germanium at 27^0C.	4	CO5	L3
	OR			
2	a) Discuss the probability of occupation of various energy states by electrons at T=0K, and T>0K on the basis of Fermi factor.	6	CO5	L2
	b) Derive the expression for electrical conductivity of a semiconductor.	5	CO5	L2
	c) Calculate the Fermi energy and Fermi velocity of a metal at 0 K whose density is 10500kg/m3, atomic weight is 107.9 and as one free electron per atom.	4	CO5	L3
	PART – B			
3	a) Define the Unit cell and Primitive cell. Explain in brief the Seven Crystal System, with geometrical figure.	10	CO3	L2
	b) Draw the following planes in a cubic unit cell. (i) (1 0 0) (ii) (1 1 0) (iii) (1 1 2)	5	CO3	L3
	OR			
4	a)Derive an expression for inter planar spacing in terms of Miller indices for SCC and Calculate atomic packing factor for SCC & BCC.	10	CO3	L2
	b) Inter planar distance for a crystal is 3Å and the glancing angle for second order spectrum was observed to be equal to $10^030'$. Find the wavelength of the X-rarys used.	5	CO3	L3

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CBCS Scheme (...)

DEPARTMENT: PHYSICS

Scheme & Solution

Semester: First | **Subject Title: Engineering Physics** | **Subject Code: 18PHY-12**

Test – III | Date: 06/12/2019

Question Number	Solution	Marks Allocated
	Part – A	
1 a)	Consideration of $\mu_e = \alpha_e \cdot E_i$	→ 01
	$E_i = \frac{P}{N \cdot \alpha_e}$	→ 01
	$E = \frac{P}{\varepsilon_0(\varepsilon_r - 1)}$	→ 01
	upto $\frac{1}{N\alpha_e} = \frac{1}{\varepsilon_0} \cdot \left[\frac{1}{(\varepsilon_r - 1)} + ?\right]$	→ 02
	$\frac{\varepsilon_r - 1}{\varepsilon_r + 2} = \frac{N \cdot \alpha_e}{3\varepsilon_0}$	→ 01
		(06)
b)	$N(E) \cdot dE = g(E) \cdot dE \times f(E)$	→ 01
	$f(E) = 1$, $g(E) \cdot dE = \frac{8\sqrt{2} \cdot \pi m^{3/2} E^{1/2} \cdot dE}{h^3}$	→ 01
	then integrating & simplify we get $E_F(0) = \frac{h^2}{8m} \times \left(\frac{3n}{\pi}\right)^{2/3}$	→ 03
		(05)
c)	$n_i = 2.372 \times 10^{19}/m^3$, $\mu_e = 3.38\ m^2/V.sec$	
	$\mu_h = 0.18\ m^2/V.sec$	→ 01
	$\sigma_i = n_i \cdot e(\mu_e + \mu_h)$	
	$\rho_i = \frac{1}{n_i \cdot e(\mu_e + \mu_h)}$	→ 01
	Substitution & Calculation $\rho_i = \frac{1}{1.35 \times 10^{-37}} = 7.41 \times 10^{36}\ \Omega.m$	02
		(04)

Question Number	Solution	Marks Allocated
2 a)	Fermi factor, $f(E) = \frac{1}{e^{\frac{E-E_F}{kT}} + 1}$ →	01
	(i) $E < E_F$ at $T = 0K$, $f(E) = 1$ →	01
	(ii) $E > E_F$ at $T = 0K$, $f(E) = 0$ →	01
	(iii) $E = E_F$ at $T > 0K$ $f(E) = 0.5$ →	01
	Graphical fig with conclusion →	02
		(06)
b)	Consideration of $I = N_e \cdot eAv$ →	01
	$J = I/A \Rightarrow N_e \cdot ev$ →	01
	$J = \sigma \cdot E$, upto	
	$\sigma_e = N_e \cdot e\mu_e$, $\sigma_h = N_h \cdot e\mu_h$ →	01
	$\sigma = e(N_e \cdot \mu_e + N_h \cdot \mu_h)$ →	01
	For intrinsic semiconductor	
	$\sigma_i = n_i \cdot e(\mu_e + \mu_h)$ →	01
		(05)
c)	$n = \frac{\text{No of free electrons/atom} \times N_A \times D}{A}$ →	01
	$n = 5.863 \times 10^{28} / m^3$ →	01
	$E_F = \frac{h^2}{8m} \times \left(\frac{3n}{\pi}\right)^{2/3}$ →	01
	$E_F = 5.5\,eV$ →	01
		(04)

Question Number	Solution	Marks Allocated
3 a)	Definition for Unit Cell and Primitive Cell →	03
	Explanation for Seven Crystal system, ① Cubic ② Tetragonal ③ Orthorhombic ④ Monoclinic ⑤ Triclinic ⑥ Hexagonal ⑦ Rhombohedral	07
		10
b)	(i) (100) (ii) (110) (iii) (112) →	05
4 a)	Figure with Explanation →	02
	$d_{hkl} = x \cdot \cos\alpha = y \cdot \cos\beta = z \cdot \cos\gamma$ →	01
	$x : y : z = \frac{a}{h} : \frac{b}{k} : \frac{c}{l}$ →	01
	$\cos^2\alpha + \cos^2\beta + \cos^2\gamma = 1$ →	01
	For SCC, $a = b = c = 1$	
	$\therefore d_{hkl} = \frac{a}{\sqrt{h^2+k^2+l^2}}$ →	01
		06
	Packing factor for SCC, $a = 2R$, P.F = 0.52 →	02
	Packing factor for BCC, $a = \frac{4}{\sqrt{3}} \cdot R$, P.F = 0.68 →	02
		04
b)	$d = 3 \times 10^{-10}$ m, $n = 2$, $\theta = 10^\circ 30'$	
	$n\lambda = 2d \sin\theta$ →	01
	Substitution & Calculations → $\lambda = 0.55 \times 10^{-10}$ m	03
		04

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B G S INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

Academic Year: 2019 – 2020 (ODD SEM) **For the Period:** 20/09/2019 to 30/09/2019

Assignment - I

Faculty Name: SHANKARA S R
Semester: I
Section: B & C
Course Name: ENGINEERING PHYSICS
Course Code: 18PHY-12

Sl. No.	Questions	COs
1	What are shock waves? Mention the characteristics of shock waves.	1
2	With a neat diagram explain the construction and working of Reddy tube. Mention any four applications of Shock waves	1
3	What is mach number? Distinguish between acoustic, subsonic and supersonic waves.	1
4	State and explain laws of conservation of mass, energy and momentum	1
5	Define simple harmonic motion. Derive the differential equation for simple harmonic motion using Hooke's law.	1
6	What are damped oscillations? Give the theory of damped oscillations and hence discuss the case of critical damping.	1
7	Discuss the following damped oscillations. (i) Over damping (ii) Critical damping (iii) Under damping	1
8	Give the theory of forced vibrations and hence obtain the expression for amplitude.	1
9	Write short notes on (i) Damped oscillations (ii) Forced oscillations (iii) Resonance (iv) Sharpness of resonance (v) Quality factor.	1

Signature of Course Coordinator

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Signature of HOD

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|| Jai Sri Gurudev||

B G S INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

Academic Year: 2019 – 2020 (ODD SEM) **For the Period:** 20/11/2019 to 27/11/2019

Assignment II

Faculty Name: SHANKARA S R
Semester: I
Section: B & C
Course Name: ENGINEERING PHYSICS
Course Code: 18PHY-12

Sl. No.	Questions	COs
1	Explain the following parameters. (i) Acceptance angle (ii) Numerical aperture (iii) V-Number (iv) RRID	3
2	Derive an expression for numerical aperture in terms of R.I of core & clad.	3
3	Explain the different types of Optical fiber with suitable diagram.	3
4	Explain basics the of point to point communication system.	3
5	Explain the seven basic crystal system with geometrical figure.	3
6	Calculate the atomic packing factor for SCC, BCC & FCC.	3
7	Explain the construction and working function of Bragg's X-ray spectrometer.	3
8	Derive the expression for inter planar spacing in terms of Miller Indices.	3

Signature of Course Coordinator

Signature of HOD

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B G S INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

Academic Year: 2019 – 2020 (ODD SEM) **For the Period:** 01/12/2019 to 10/12/2019

Assignment III

Faculty Name: SHANKARA S R
Semester: I
Section: B & C
Course Name: ENGINEERING PHYSICS
Course Code: 18PHY-12

Sl. No.	Questions	COs
1	State Hook's law. Explain stress versus strain diagram with the help of Hook's law statement.	2
2	Explain the different types of moduli of elasticity.	2
3	Define (i)Longitudinal strain co-efficient(α) (ii)Lateral strain co-efficient(β) (iii) Poission's ratio(σ)	2
4	What is beam? Derive the expression for moment of beam for rectangular cross section.	2
5	Obtain an expression for the Young's modulus Y of the material of a single cantilever for rectangular cross section.	2
6	Derive the expression for couple per unit twist of a solid cylinder.	2
7	What are torsional oscillations? Give the expression for time period of torsional oscillations. Mention the applications of torsional oscillations.	2

Signature of Course Coordinator

Signature of HOD

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Adichunchanagiri University, BG Nagar

Register Numbers for **Electronics & Communication Engineering** students of 2019-20 admissions

Sl No	Name	Register Number
1	ABHISHEK S HULLOLLI	19ECE001
2	ADARSHA T S	19ECE002
3	AFREEN FATHIMA	19ECE003
4	AJAY B K	19ECE004
5	AKASH S M	19ECE005
6	ARFA FATHIMA	19ECE006
7	ARUN KUMAR S	19ECE007
8	ASHWINI D K	19ECE008
9	BHARATHESH K C	19ECE009
10	BHAVANA C	19ECE010
11	BHAVANA K R	19ECE011
12	BHOOMIKA N	19ECE012
13	CHANDAN M A	19ECE013
14	CHARITHA H R	19ECE014
15	CHETHAN B GOWDA	19ECE015
16	CHETHANA D M	19ECE016
17	CHITRA K T	19ECE017
18	DARSHAN R GOWDA	19ECE018
19	DEEPASHREE K B	19ECE019
20	DEEPASHREE T	19ECE020
21	DEEPTHI B H	19ECE021
22	DEEPTHI N M	19ECE022
23	DHAMINI G N	19ECE023
24	DHANU N GOWDA	19ECE024
25	DHANUSH C K	19ECE025
26	DHANUSHGOWDA D H	19ECE026
27	DHARANI N J	19ECE027
28	DHYAN A P	19ECE028
29	DILIP SHESHADRI M	19ECE029
30	DISHA G	19ECE030
31	DIVYASAMEEKSHA K	19ECE031
32	GAGAN L D	19ECE032
33	GANESH M	19ECE033
34	GOUTHAM D	19ECE034
35	GOWDA GEEVITA NANJAPPA	19ECE035
36	H C PRAJWAL GOWDA	19ECE036
37	HARSHITHGOWDA C R	19ECE037
38	HIFZA	19ECE038
39	ISHITHA N	19ECE039
40	JAYANTH M R	19ECE040
41	JEEVITHA B R	19ECE041
42	KARTHIK K L	19ECE042
43	KARTHIK P K	19ECE043

Adichunchanagiri University, BG Nagar

Register Numbers for **Electronics & Communication Engineering** students of 2019-20 admissions

Sl No	Name	Register Number
44	KARTHIK U S	19ECE044
45	KAVYASHREE C S	19ECE045
46	KAVYASHREE T G	19ECE046
47	KISHOR L	19ECE047
48	KRUTHIKA K V	19ECE048
49	KUSHAL A B	19ECE049
50	KUSHAL K T	19ECE050
51	KUSUMA H N	19ECE051
52	LIKITH GOWDA C S	19ECE052
53	MADHU P	19ECE053
54	MADHUSUDAN K G	19ECE054
55	MAHALAKSHMI D R	19ECE055
56	MANU M R	19ECE056
57	MITHUN GOWDA G	19ECE057
58	MOHANRAJU V S	19ECE058
59	MONIKA M M	19ECE059
60	NAYEEM-UR-RAHMAN	19ECE060
61	NIHARIKA S	19ECE061
62	NIKHILESH GOWDA U S	19ECE062
63	NISARGA H S	19ECE063
64	NISARGA M D	19ECE064
65	NISCHAY Y	19ECE065
66	NISHA B R	19ECE066
67	NITHEESH G	19ECE067
68	NITHYARAJ G P	19ECE068
69	NITHYASHREE K N	19ECE069
70	NOOR AYESHA	19ECE070
71	PAVANKUMAR S	19ECE071
72	PAVITHRA N P	19ECE072
73	PAYAL B S	19ECE073
74	POOJA A	19ECE074
75	POOJA B C	19ECE075
76	POORVIK M P	19ECE076
77	POORVIKA T P	19ECE077
78	PRAJWAL A H	19ECE078
79	PRATHIBHA M E	19ECE079
80	PREETHI L	19ECE080
81	PRIYANKA S D	19ECE081
82	PRUTHVI B R	19ECE082
83	RACHANA T	19ECE083
84	RAKSHITHA C S	19ECE084
85	RAMYA K L	19ECE085
86	ROHITH GOWDA K S	19ECE086

Adichunchanagiri University, BG Nagar

Register Numbers for **Electronics & Communication Engineering** students of 2019-20 admissions

Sl No	Name	Register Number
87	SAFINATAJ	19ECE087
88	SAGAR A N	19ECE088
89	SAGAR B S	19ECE089
90	SAGAR C S	19ECE090
91	SANDHYA C	19ECE091
92	SANJAY H B	19ECE092
93	SANTHOSH B M	19ECE093
94	SHASHANK T P	19ECE094
95	SHIFA MOHAMADI	19ECE095
96	SHIVA KUMAR H K	19ECE096
97	SHIVA KUMAR J	19ECE097
98	SHREELEKHA S	19ECE098
99	SHWETHA N	19ECE099
100	SINCHANA N L	19ECE100
101	SNEHA B S	19ECE101
102	SRINIDHI B N	19ECE102
103	SUDEEP R	19ECE103
104	SUDEEP V J	19ECE104
105	TEJASGOWDA H S	19ECE105
106	TEJASWINI R	19ECE106
107	THRIPURA S G	19ECE107
108	THUSHTI K	19ECE108
109	UMME SHAMSHIYA	19ECE109
110	VARSHINI S	19ECE110
111	VARUN L	19ECE111
112	VIDYASHREE B T	19ECE112
113	VINAY S S	19ECE113
114	VIVEK GOWDA D S	19ECE114
115	YASHWANTH A S	19ECE115

HOD
Dept. of E&C Engineering
BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taluk, Mandya District.

Registrar (Evaluation)

Adichunchanagiri University, BG Nagar

Register Numbers for **Civil Engineering** students of 2019-20 admissions

Sl No	Name	Register Number
1	AISHWARYA T	19CVE001
2	AJAY H J	19CVE002
3	ARUNKUMAR B R	19CVE003
4	CHANDAN A N	19CVE004
5	CHANDANA T R	19CVE005
6	DARSHAN GOWDA R	19CVE006
7	DARSHAN M L	19CVE007
8	DHANUSH P K	19CVE008
9	DURGESH MASTAPPA NAIK	19CVE009
10	FARHAN AHMED	19CVE010
11	GOUTHAM D G	19CVE011
12	HARSHITH M GOWDA	19CVE012
13	K R MAHENDRA	19CVE013
14	KAMALESH K S	19CVE014
15	KAVANA B P	19CVE015
16	KISHOR R	19CVE016
17	KUSHAL D S	19CVE017
18	LIKITH KUMAR M V	19CVE018
19	MANJUNATH G K	19CVE019
20	MANOJ G N	19CVE020
21	MANOJ K	19CVE021
22	MOHAMMED UMRAZ	19CVE022
23	MONISHA H	19CVE023
24	NAVYA D	19CVE024
25	NITHIN P	19CVE025
26	PAVAN R J	19CVE026
27	PAVANGOWDA T G	19CVE027
28	PAVANKUMAR	19CVE028
29	POOJA C	19CVE029
30	PRAVEEN KUMAR S B	19CVE030
31	PREETHAM K P	19CVE031
32	PURUSHOTHAM	19CVE032
33	SAHANA A	19CVE033
34	SAHANA Y V	19CVE034
35	SAIF SAQLAIN	19CVE035
36	SHRIDHARA J K	19CVE036
37	SINCHANA C R	19CVE037
38	SINCHANA K	19CVE038
39	SUHAS G P	19CVE039
40	SUMAN C	19CVE040
41	TARUN M S	19CVE041
42	UMMER M	19CVE042

Adichunchanagiri University, BG Nagar

Register Numbers for **Civil Engineering** students of 2019-20 admissions

Sl No	Name	Register Number
43	VARUN N GOWDA	19CVE043
44	VISHWAKUMAR A R	19CVE044
45	YASHWANTH H B	19CVE045
46	YUVARAJU U C	19CVE046
47	ZOYA MULK	19CVE047

HOD
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Nagamangala Taluk, Mandya District.

||Jai Sri Gurudev||

Sri Adichunchanagiri Shikshana Trust ®

B.G.S. INSTITUTE OF TECHNOLOGY

PROCTOR DETAILS

SL NO	NAME OF THE STUDENT	USN	STUDENT	PARENTS	E - Mail ID
1	AISHWARYA T	19CVE001	6361642757	9964580612	aishnayak211@gmail.com
2	AJAY H.J	19CVE002	9740252964	9741533264	ajayg3162@gmail.com
3	ARUNKUMAR B.R	19CVE003	8747937968	9535147214	arunhunsuru@gmail.com
4	CHANDAN A.N	19CVE004	8431364797	9900569199	chandannagarajugowda@gmail.com
5	CHANDANA T R	19CVE005	6363598815	9483680142	rameshsughunacd@gmail.com
6	DARSHAN GOWDA R	19CVE006	9632437748	9448610048	darshangowda2129@gmail.com
7	DARSHAN M L	19CVE007	6360105185	9980204344	Darshandarshu419@gmail.com
8	DHANUSH P K	19CVE008	8970321962	8970321962	dhanushpk2002@gmail.com
9	DURGESH MASTAPPA NAIK	19CVE009	9113509810	7975319832	durgeshkodsul@gmail.com
10	FARHAN AHMED	19CVE010	8050536312	8197300598	sharifarhan0@gmail.com
11	GOUTHAM D G	19CVE011	9945976936	9663936246	teju7740@gmail.com
12	HARSHITH M GOWDA	19CVE012	6363065644	9164807585	hmgowda119@gmail.com
13	K R MAHENDRA	19CVE013	9900290776	7259651936	Chinnumahendra309@gmail.com
14	KAVANA B P	19CVE015	8105103438	8183037565	kavanabp2@gmail.com
15	KISHOR R	19CVE016	6363465567	9482454990	kishorrgowda.01@gmail.com

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Nagamangala Taluk. Mandya District.

II Jai Sri Gurudev II

BGS Institute of Technology

Department of Engineering Physics

List of Slow Learners Identified

PERIOD	From: 05/08/2019 To: 14/12/2019
SEM	I Sem
SUBJECT NAME & CODE	Engineering Physics & 18PHY12
STAFF NAME	SHANKARA S R/RANJITHA K N
NO. OF STUDENTS IDENTIFIED	08

Signature of Course Coordinator

Signature of HOD

HOD
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Nagamangala Taiuk, Mandya District.

II Jai Sri Gurudev II

BGS Institute of Technology

Department of Engineering Physics

Slow learners Attendance for the batch 2018-19

Sl. No	Reg No	Name	1	2	3	4	5	6	7	8	9	10
1	19ECE021	DEEPTHI B H	1	2	3	A	4	5	6	7	A	8
2	19ECE049	KUSHAL A B	A	1	2	3	4	5	6	7	8	9
3	19ECE062	NIKILESH GOWDA U S	1	2	3	4	5	6	7	8	9	10
4	19ECE070	NOOR AYESHA	1	2	3	4	5	6	7	8	9	10
5	19CVE020	MANOJ G N	1	2	3	4	5	6	7	A	8	9
6	19CVE025	NITHIN P	1	2	3	4	5	6	7	8	9	10
7	19CVE040	SUMAN C	1	2	3	4	5	6	7	8	9	10
8	19CVE047	ZOYA MULK	A	1	2	3	4	5	6	7	8	9

Topics Covered

Sl. No	Topic Identified	Delivery Date	Time
1	Construction & Working function of Reddy Shock Tube	14/10/2019	Evening Time (4.30PM-5.30PM)
2	Damped Oscillations & Forced Osillations	15/10/2019	
3	Heisenberg's Uncertainty Principle & its application	21/10/2019	
4	Time Independent Schrodinger wave equation	22/10/2019	
5	Particle in an one dimensional potential well of infinite height	23/10/2019	
6	Different types of Optical Fiber	29/10/2019	
7	Construction & Working function of CO_2 Laser Source	30/10/2019	
8	Energy density expression in terms of Einstein's Co-efficients	31/10/2019	
9	Seven Basic Crystal System, Unit cell, Primitive Cell	18/11/2019	
10	Atomic Packing factor for SCC, BCC, & FCC	19/11/2019	

List of Slow Learners

SL.NO	Name	Reg No	FIRST IA	Final IA
1	DEEPTHI B H	19ECE021	08	19
2	KUSHAL A B	19ECE049	13	19
3	NIKILESH GOWDA U S	19ECE062	08	12
4	NOOR AYESHA	19ECE070	AB	11
5	MANOJ G N	19CVE020	02	11
6	NITHIN P	19CVE025	00	11
7	SUMAN C	19CVE040	AB	12
8	ZOYA MULK	19CVE047	07	10

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

Sl No	Name	Register Number	Engg. Physics Result	Engg. Physics Lab Result
1	AISHWARYA T	19CVE001	PASS	PASS
2	AJAY H J	19CVE002	FAIL	PASS
3	ARUNKUMAR B R	19CVE003	PASS	PASS
4	CHANDAN A N	19CVE004	FAIL	PASS
5	CHANDANA T R	19CVE005	PASS	PASS
6	DARSHAN GOWDA R	19CVE006	PASS	PASS
7	DARSHAN M L	19CVE007	PASS	PASS
8	DHANUSH P K	19CVE008	PASS	PASS
9	DURGESH MASTAPPA NAIK	19CVE009	PASS	PASS
10	FARHAN AHMED	19CVE010	PASS	PASS
11	GOUTHAM D G	19CVE011	PASS	PASS
12	HARSHITH M GOWDA	19CVE012	FAIL	PASS
13	K R MAHENDRA	19CVE013	PASS	PASS
14	KAMALESH K S	19CVE014	PASS	PASS
15	KAVANA B P	19CVE015	PASS	PASS
16	KISHOR R	19CVE016	FAIL	FAIL
17	KUSHAL D S	19CVE017	FAIL	PASS
18	LIKITH KUMAR M V	19CVE018	PASS	PASS
19	MANJUNATH G K	19CVE019	PASS	PASS
20	MANOJ G N	19CVE020	PASS	PASS
21	MANOJ K	19CVE021	FAIL	PASS
22	MOHAMMED UMRAZ	19CVE022	PASS	PASS
23	MONISHA H	19CVE023	PASS	PASS
24	NAVYA D	19CVE024	PASS	PASS
25	NITHIN P	19CVE025	FAIL	PASS
26	PAVAN R J	19CVE026	PASS	PASS
27	PAVANGOWDA T G	19CVE027	FAIL	PASS
28	PAVANKUMAR	19CVE028	PASS	PASS
29	POOJA C	19CVE029	PASS	PASS
30	PRAVEEN KUMAR S B	19CVE030	PASS	PASS
31	PREETHAM K P	19CVE031	PASS	PASS
32	PURUSHOTHAM	19CVE032	PASS	PASS
33	SAHANA A	19CVE033	PASS	PASS
34	SAHANA Y V	19CVE034	FAIL	PASS
35	SAIF SAQLAIN	19CVE035	FAIL	PASS
36	SHRIDHARA J K	19CVE036	PASS	PASS
37	SINCHANA C R	19CVE037	PASS	PASS

38	SINCHANA K	19CVE038	PASS	PASS
39	SUHAS G P	19CVE039	PASS	PASS
40	SUMAN C	19CVE040	PASS	PASS
41	TARUN M S	19CVE041	PASS	PASS
42	UMMER M	19CVE042	PASS	PASS
43	VARUN N GOWDA	19CVE043	PASS	PASS
44	VISHWAKUMAR A R	19CVE044	PASS	PASS
45	YASHWANTH H B	19CVE045	PASS	PASS
46	YUVARAJU U C	19CVE046	PASS	PASS
47	ZOYA MULK	19CVE047	PASS	PASS

Total number of Students	47	47
Number of students Pass	37	46
Number of students Fail	10	1
Total Percentage	79%	98%

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Nagamangala Taluk, Mandya District.

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

Sl No	Name	Register Number	Engg. Physics Result	Engg. Physics Lab Result
1	ABHISHEK S HULLOLLI	19ECE001	PASS	PASS
2	ADARSHA T S	19ECE002	PASS	PASS
3	AFREEN FATHIMA	19ECE003	PASS	PASS
4	AJAY B K	19ECE004	PASS	PASS
5	AKASH S M	19ECE005	PASS	PASS
6	ARFA FATHIMA	19ECE006	PASS	PASS
7	ARUN KUMAR S	19ECE007	FAIL	PASS
8	ASHWINI D K	19ECE008	PASS	PASS
9	BHARATHESH K C	19ECE009	PASS	PASS
10	BHAVANA C	19ECE010	PASS	PASS
11	BHAVANA K R	19ECE011	PASS	PASS
12	BHOOMIKA N	19ECE012	PASS	PASS
13	CHANDAN M A	19ECE013	PASS	PASS
14	CHARITHA H R	19ECE014	PASS	PASS
15	CHETHAN B GOWDA	19ECE015	PASS	PASS
16	CHETHANA D M	19ECE016	PASS	PASS
17	CHITRA K T	19ECE017	PASS	PASS
18	DARSHAN R GOWDA	19ECE018	PASS	PASS
19	DEEPASHREE K B	19ECE019	PASS	PASS
20	DEEPASHREE T	19ECE020	PASS	PASS
21	DEEPTHI B H	19ECE021	PASS	PASS
22	DEEPTHI N M	19ECE022	PASS	PASS
23	DHAMINI G N	19ECE023	PASS	PASS
24	DHANU N GOWDA	19ECE024	PASS	PASS
25	DHANUSH C K	19ECE025	PASS	PASS
26	DHANUSHGOWDA D H	19ECE026	PASS	PASS
27	DHARANI N J	19ECE027	PASS	PASS
28	DHYAN A P	19ECE028	PASS	PASS
29	DILIP SHESHADRI M	19ECE029	PASS	PASS
30	DISHA G	19ECE030	PASS	PASS
31	DIVYASAMEEKSHA K	19ECE031	PASS	PASS
32	GAGAN L D	19ECE032	PASS	PASS
33	GANESH M	19ECE033	PASS	PASS
34	GOUTHAM D	19ECE034	PASS	PASS
35	GOWDA GEEVITA NANJAPPA	19ECE035	PASS	PASS
36	H C PRAJWAL GOWDA	19ECE036	PASS	PASS
37	HARSHITHGOWDA C R	19ECE037	PASS	PASS

38	HIFZA	19ECE038	PASS	PASS
39	ISHITHA N	19ECE039	PASS	PASS
40	JAYANTH M R	19ECE040	PASS	PASS
41	JEEVITHA B R	19ECE041	PASS	PASS
42	KARTHIK K L	19ECE042	PASS	PASS
43	KARTHIK P K	19ECE043	FAIL	PASS
44	KARTHIK U S	19ECE044	PASS	PASS
45	KAVYASHREE C S	19ECE045	PASS	PASS
46	KAVYASHREE T G	19ECE046	PASS	PASS
47	KISHOR L	19ECE047	PASS	PASS
48	KRUTHIKA K V	19ECE048	PASS	PASS
49	KUSHAL A B	19ECE049	PASS	PASS
50	KUSHAL K T	19ECE050	PASS	PASS
51	KUSUMA H N	19ECE051	PASS	PASS
52	LIKITH GOWDA C S	19ECE052	PASS	PASS
53	MADHU P	19ECE053	PASS	PASS
54	MADHUSUDAN K G	19ECE054	PASS	PASS
55	MAHALAKSHMI D R	19ECE055	PASS	PASS
56	MANU M R	19ECE056	PASS	PASS
57	MITHUN GOWDA G	19ECE057	PASS	PASS
58	MOHANRAJU V S	19ECE058	PASS	PASS
59	MONIKA M M	19ECE059	PASS	PASS
60	NAYEEM-UR-RAHMAN	19ECE060	PASS	PASS
61	NIHARIKA S	19ECE061	PASS	PASS
62	NIKHILESH GOWDA U S	19ECE062	PASS	PASS
63	NISARGA H S	19ECE063	PASS	PASS
64	NISARGA M D	19ECE064	PASS	PASS
65	NISCHAY Y	19ECE065	FAIL	FAIL
66	NISHA B R	19ECE066	PASS	PASS
67	NITHEESH G	19ECE067	FAIL	PASS
68	NITHYARAJ G P	19ECE068	PASS	PASS
69	NITHYASHREE K N	19ECE069	PASS	PASS
70	NOOR AYESHA	19ECE070	PASS	PASS
71	PAVANKUMAR S	19ECE071	PASS	PASS
72	PAVITHRA N P	19ECE072	PASS	PASS
73	PAYAL B S	19ECE073	PASS	PASS
74	POOJA A	19ECE074	PASS	PASS
75	POOJA B C	19ECE075	PASS	PASS
76	POORVIK M P	19ECE076	PASS	PASS
77	POORVIKA T P	19ECE077	PASS	PASS
78	PRAJWAL A H	19ECE078	PASS	PASS
79	PRATHIBHA M E	19ECE079	PASS	PASS
80	PREETHI L	19ECE080	PASS	PASS
81	PRIYANKA S D	19ECE081	PASS	PASS
82	PRUTHVI B R	19ECE082	PASS	PASS

83	RACHANA T	19ECE083	PASS	PASS
84	RAKSHITHA C S	19ECE084	PASS	PASS
85	RAMYA K L	19ECE085	PASS	PASS
86	ROHITH GOWDA K S	19ECE086	PASS	PASS
87	SAFINATAJ	19ECE087	PASS	PASS
88	SAGAR A N	19ECE088	PASS	PASS
89	SAGAR B S	19ECE089	PASS	FAIL
90	SAGAR C S	19ECE090	PASS	PASS
91	SANDHYA C	19ECE091	PASS	PASS
92	SANJAY H B	19ECE092	PASS	PASS
93	SANTHOSH B M	19ECE093	PASS	PASS
94	SHASHANK T P	19ECE094	PASS	PASS
95	SHIFA MOHAMADI	19ECE095	PASS	PASS
96	SHIVA KUMAR H K	19ECE096	PASS	PASS
97	SHIVA KUMAR J	19ECE097	PASS	PASS
98	SHREELEKHA S	19ECE098	PASS	PASS
99	SHWETHA N	19ECE099	PASS	PASS
100	SINCHANA N L	19ECE100	PASS	PASS
101	SNEHA B S	19ECE101	PASS	PASS
102	SRINIDHI B N	19ECE102	PASS	PASS
103	SUDEEP R	19ECE103	PASS	PASS
104	SUDEEP V J	19ECE104	PASS	PASS
105	TEJASGOWDA H S	19ECE105	PASS	PASS
106	TEJASWINI R	19ECE106	PASS	PASS
107	THRIPURA S G	19ECE107	PASS	PASS
108	THUSHTI K	19ECE108	PASS	PASS
109	UMME SHAMSHIYA	19ECE109	PASS	PASS
110	VARSHINI S	19ECE110	PASS	PASS
111	VARUN L	19ECE111	PASS	PASS
112	VIDYASHREE B T	19ECE112	PASS	PASS
113	VINAY S S	19ECE113	PASS	PASS
114	VIVEK GOWDA D S	19ECE114	PASS	PASS
115	YASHWANTH A S	19ECE115	PASS	PASS

Total number of Student	115	115
Number of student Pass	111	113
Number of student Fail	4	2
Total Percentage	97%	98%

HOD
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Nagamangala Taluk, Mandya District.

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO Attainment (18 Scheme)

Course Code	Course Name	Staff Name	Academic Year	Sem	Programme
18PHY12	Engineering Physics	SHANKARA S R	2019	I	B.E/CV

Course Outcome	60%	30%	10%	
	CIE	SEE	CES	TOTAL
CO1	2.5	0.61	2.69	1.95
CO2	2.61	0.61	2.56	2.01
CO3	2.09	0.61	2.53	1.69
CO4	1.85	0.61	2.44	1.54
CO5	2.48	0.61	2.78	1.95

CO	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18C102.1	1.95	3	2										
18C102.2	2.01	2	2	1									
18C102.3	1.69	3	2										
18C102.4	1.54	3	2										
18C102.5	1.95	3	2										
SUM		14	10	1									
AVG		2.8	2	1									
Weighted Sum		25.41	18.28	2.01									
PO Attainment		1.69	1.22	0.67									

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

Course Coordinator

HOD

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BGS Institute of Technology
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Nagamangala Taluk, Mandya Distric

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Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO Attainment (18 Scheme)

Course Code	Course Name	Staff Name	Academic Year	Sem	Programme
18PHY12	Engineering Physics	SHANKARA S R /RANJITHA K N	2019	I	B.E/E&C

Course Outcome	60%	30%	10%	
	CIE	SEE	CES	TOTAL
CO1	2.14	1.44	2.70	1.99
CO2	2.44	1.44	2.60	2.16
CO3	2.17	1.44	2.60	1.99
CO4	1.83	1.44	2.73	1.80
CO5	2.2	1.44	2.56	2.01

CO	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18C102.1	1.99	3	2										
18C102.2	2.16	2	2	1									
18C102.3	1.99	3	2										
18C102.4	1.80	3	2										
18C102.5	2.01	3	2										
SUM		**14**	**10**	**1**									
AVG		**2.8**	**2**	**1**									
Weighted Sum		**27.69**	**19.90**	**2.16**									
PO Attainment		**1.85**	**1.33**	**0.72**									

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

Course Coordinator

HOD

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Dept. of Pre Engineering
BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taluk, Mandya District

BGS INSTITUTE OF TECHNOLOGY
Department of Engineering Physics

CO-PO Attainment(18 Scheme)

Course Code	Course Name	Staff Name	Academic Year	Sem	Programme
18PHYL16	Engineering Physics Lab	SHANKARA S R	2019	I	B.E/CV

Course Outcome	60%	30%	10%	
	CIE	SEE	CES	TOTAL
CO1	2.91	1.69	2.61	2.51
CO2	2.91	1.69	2.48	2.50
CO3	2.91	1.69	2.57	2.51
CO4	2.91	1.69	2.5	2.50
CO5	2.91	1.69	2.59	2.51
CO6	2.91	1.69	2.64	2.52

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18C102.1	2.51	3	1							1			
18C102.2	2.50	3	1							1			
18C102.3	2.51	3	1							1			
18C102.4	2.50	3	1							1			
18C102.5	2.51	3	1							1			
18C102.6	2.52	3	2	1		1	1			1			
SUM		**15**	**7**	**1**		**1**	**1**			**6**			
AVG		**3**	**1.17**	**1**		**1**	**1**			**1**			
Weighted Sum		**48.15**	**18.73**	**2.68**		**2.68**	**2.68**			**2.68**			
PO Attainment		**2.51**	**0.98**	**0.84**		**0.84**	**0.84**			**0.84**			

Course Owner

HOD

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Dept. of Pre Engineering
BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taluk, Ma...

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO Attainment (18 Scheme)

Course Code	Course Name	Staff Name	Academic Year	Sem	Programme
18PHYL16	Engineering Physics Lab	SHANKARA S R /RANJITHA K N	2019	I	B.E/EC

Course Outcome	60%	30%	10%	
	CIE	SEE	CES	TOTAL
CO1	2.99	2.04	2.87	2.69
CO2	2.99	2.04	2.59	2.67
CO3	2.99	2.04	2.63	2.67
CO4	2.99	2.04	2.77	2.68
CO5	2.99	2.04	2.75	2.68
CO6	2.99	2.04	2.74	2.68

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

CO	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18C102.1	2.69	3	1							1			
18C102.2	2.67	3	1							1			
18C102.3	2.67	3	1							1			
18C102.4	2.68	3	1							1			
18C102.5	2.68	3	1							1			
18C102.6	2.68	3	2	1		1	1			1			
SUM		**15**	**7**	**1**		**1**	**1**			**6**			
AVG		**3**	**1.17**	**1**		**1**	**1**			**1**			
Weighted Sum		**48.15**	**18.73**	**2.68**		**2.68**	**2.68**			**2.68**			
PO Attainment		**2.68**	**1.04**	**0.89**		**0.89**	**0.89**			**0.89**			

Course Coordinator

HOD

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B G Nagara- 571448
Nagamangala Taluk, Mandya District.

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BGS INSTITUTE OF TECHNOLOGY

BG Nagara –571448, Nagamangala Taluk

ACADEMIC AUDIT for the Academic year 2019-20	**(ODD/EVEN)** ✓
Name of the Faculty with Designation	SHANKARA S.R.
Course Name with code	① Engg. Physics & 18PHY-22 ② Engg. Physics Lab & 18PHYL-26

Sl. No.	Contents	Semester	
1	Faculty profile	**Theory**	**Lab**
2	Vision and Mission of the Institute, Department, ~~PEOs,~~ ~~PSOs,~~ POs	✓	✓
3	Calendar of Events (University, Institute and Department)	✓	✓
4	Timetable (Class and Individual)	✓	✓
5	Syllabus copy, CO – PO – ~~PSO~~ Mapping (with justification)	✓	✓
6	Lesson Plan	✓	
7	Previous Year University QPs & Question Bank	✓	
8	Notes	✓	✓
9	Assignments	✓	
10	Assessment Tools & procedure for assessment of COs (IA Test, Assignment, Quizzes, SEE)	✓	
11	Innovative teaching methods	✓	
12	List of slow learners & remedial classes	✓	
13	Procter Details (for allotted students)	✓	
14	Report of guest lectures for the course if any		
15	Feedback report		
16	Course End Survey	✓	✓
17	CO attainment	✓	✓
18	Result Analysis	✓	✓
19	PO / ~~PSO~~ attainment	✓	✓
20	Review of attainment (course attainment)		

Faculty : Shankara

HOD :

Internal Auditor : Rahul

External Auditor : Kiran

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Department of Engineering Physics

Academic year 2019-20	**(ODD / EVEN)** (For E&C. Programme)
Name of the Faculty with Designation	SHANKARA S.R. Asst. Professor
Course Name with code	Engg. Physics Theory & 18PHY-12

Feed Back Report					**No. of Students participated=40**					
Feedback Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Av. Rating	70%	74%	70%	73%	70%	70%	73%	72%	73%	74%
Overall Feedback										

Course End Survey						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Av. Rating	2.70	2.60	2.60	2.73	2.56	

CO Attainment						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Attainment	1.99	2.16	1.99	1.80	2.01	

PO / PSO Attainment														
PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Attainment	1.85	1.33	0.72											

Analysis of CO, PO Attainment [Review of attainment (course attainment)]

CO attainment is satisfactory and suggest to improve PO2 and PO3 by taking special classes.

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Department of Engineering Physics

Academic year 2019-20 (ODD / EVEN) ✓ (For EPC Programme)	
Name of the Faculty with Designation	SHANKARA S.R. Asst. Professor
Course Name with code	Engg. Physics Lab & 18PHYL-16

Feed Back Report					No. of Students participated=40					
Feedback Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Av. Rating	75 %	71 %	68 %	75 %	70 %	71 %	73 %	69 %	72 %	77 %
Overall Feedback										

Course End Survey						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Av. Rating	2.87	2.59	2.63	2.77	2.75	2.74

CO Attainment						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Attainment	2.69	2.67	2.67	2.68	2.68	2.68

PO / PSO Attainment														
PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Attainment	2.68	1.04	0.89		0.89	0.89			0.89					

Analysis of CO, PO Attainment [Review of attainment (course attainment)]

CO attainment is satisfactory and PO attainment is also satisfactory.

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BGS Institute of Technology

Department of Engineering Physics

Academic year 2019-20 (ODD / EVEN) (For CV Programme)	
Name of the Faculty with Designation	SHANKARA S.R. Asst. Professor
Course Name with code	Engg. Physics Theory & 18PHY-12

Feed Back Report **No. of Students participated=40**

Feedback Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Av. Rating	70%	74%	70%	75%	69%	72%	72%	72%	73%	74%

Overall Feedback

Course End Survey

CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Av. Rating	2.69	2.56	2.53	2.44	2.78	

CO Attainment

CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Attainment	1.95	2.01	1.69	1.54	1.95	

PO / PSO Attainment

PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Attainment	1.69	1.28	0.67											

Analysis of CO, PO Attainment [Review of attainment (course attainment)]

CO attainment is satisfactory and suggest to improve PO2 and PO3 by taking extra (special) classes.

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BGS Institute of Technology

Department of Engineering Physics

Academic year 2019-20 (ODD / EVEN ✓) (For CV Programme)

Name of the Faculty with Designation	SHANKARA S.R. Asst. Professor
Course Name with code	Engg. Physics Lab & 18PHYL – 16

Feed Back Report No. of Students participated=40

Feedback Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Av. Rating	74%	69%	68%	74%	69%	72%	73%	68%	73%	74%

Overall Feedback

Course End Survey

CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Av. Rating	2.61	2.48	2.57	2.50	2.59	2.64

CO Attainment

CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Attainment	2.51	2.50	2.51	2.50	2.51	2.52

PO / PSO Attainment

PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Attainment	2.51	0.98	0.84		0.84	0.84			0.84					

Analysis of CO, PO Attainment [Review of attainment (course attainment)]

CO attainment is satisfactory and PO attainment is also satisfactory.

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BGS Institute of Technology

Department of Engineering Physics

Academic Year 2019-20 (ODD/EVEN)

Result Analysis CIE

	Test-1	Test-2	Test-3	IA
22 (More than 76%)	23	14	10	20
12-22 (41% to 75%)	31	21	41	34
12 (less than 40%)	04	23	17	04
TOTAL no of students				

For E&C Programme

Action taken for Slow learners:

Test-1

↳ After the first interval the slow learners are identified and Remedial classes are conducted as per the schedule.

Test-2

↳ Remedial classes are continued.

Result Analysis SEE

Course name with Code	Total Appeared	FCD	FC	Pass %	Failed
Engg. Physics Theory 18PHY-12	58	23	09	24	02

Remarks

Result is very good

Faculty

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Department of Engineering Physics

Academic Year 2019-20 (ODD/EVEN)

Result Analysis CIE

	Test-1	Test-2	Test-3	IA
22 (More than 76%)	22	02	04	14
12-22 (41% to 75%)	20	11	22	29
12 (less than 40%)	05	34	21	04
TOTAL no of students				

For C.V. Programme

Action taken for Slow learners:

Test-1 After the first internal the slow learners are identified
↳ and Remedial classes are conducted as per the schedule

Test-2

↳ Remedial classes are continued.

Result Analysis SEE

Course name with Code	Total Appeared	FCD	FC	Pass %	Failed
Engg. Physics Theory 18PHY-12	47	06	10	21	10

Remarks

Suggest to improve the Result.

Faculty

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B G S INSTITUTE OF TECHNOLOGY

BG Nagara-571448, Mandya

Department of Engineering Physics

COURSE FILE

2019 BATCH – II SEM

Course Coordinator	:	**SHANKARA S R**
Designation	:	**Assistant Professor**
Course Name	:	**Engineering Physics**
Course Code	:	**18PHY12/22**

Signature of Course Coordinator

Signature of HOD

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Nagamangala Taluk, Mandya District.

II Jai Sri Gurudev II

B G S INSTITUTE OF TECHNOLOGY

B G NAGAR-571448

Vision of the Institute

BGSIT is committed to the cause of creating tomorrow's engineers by providing quality education inculcating ethical values.

Mission of the Institute

- Imparting quality technical education by nurturing a conducive learning environment.
- Offering professional training to meet industry requirements.
- Providing education with a moral - cultural base and spiritual touch.

Principal
BGS Institute of Technology
B G Nagara - 571448,
Nagamangala Tq, Mandya Dist.

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BGS INSTITUTE OF TECHNOLOGY
Department of Engineering Physics

VISION

To enrich young minds with the knowledge of engineering physics by providing quality education and inculcating ethical values.

MISSION

1. To stimulate their technical knowledge by imparting basics of Engineering Physics.
2. To inculcate analytical thinking in students thereby enabling them to contribute to the betterment of society.

Course Learning Objectives

1. Students will demonstrate and understand the impact of physics concepts on applications for society.
2. Learn the basic concepts of physics, which are very much essential for understanding and solving challenges.
3. Gain the knowledge of newer concepts in physics for the better appreciation in technology.

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Nagamangala Tq. Mandya Dist.

Program outcomes

1. Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

2. Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3. Design/ Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations.

4. 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.

5. Modern Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The Engineer and Society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

7. Environment and Sustainability: Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

9. Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

10. 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, and give and receive clear instructions.

11. 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.

12. 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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19 - 2 Sem

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Sri Adichunchanagiri Shikshana Trust ®

BGS INSTITUTE OF TECHNOLOGY

BG Nagara, Nagamangala Taluk, Mandya District, Karnataka State, India - 571448

CALENDAR OF EVENTS FOR BE II and IV SEMESTERS FOR THE ACADEMIC YEAR 2019-20

FEBRUARY

Mon	Tue	Wed	Thu	Fri	Sat	Sun
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	

Number of Working Days - 17

MARCH

Mon	Tue	Wed	Thu	Fri	Sat	Sun
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Number of Working Days - 25

APRIL

Mon	Tue	Wed	Thu	Fri	Sat	Sun
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Number of Working Days - 23

MAY

Mon	Tue	Wed	Thu	Fri	Sat	Sun
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Number of Working Days - 24

JUNE

Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Number of Working Days - 12

ACTIVITIES

10 - Registration & Commencement of 2nd and 4th Semester Classes
21 - Maha Shivaratri

19, 20, 21 - Test 1
25 - Chandramana Ugadi
27 - Test 1 Progress Report Dispatch
28 - Class Teacher's Meeting

6 - Mahaveera Jayanti
10 - Good Friday
14 - Dr. B R Ambedkar Jayanti
20, 21, 22 - Test 2
29 - Test 2 Progress Report Dispatch
30 - Class Teacher's Meeting

1 - May Day
25 - Kutub A Ramzan
28, 29, 30 - Test 3

1-6 Lab Internals
8 - Test 3 Progress Report Dispatch
9 - Class Teacher's Meeting
10-Submission of IA and Attendance to ACU
13 - Last Working Day

BGSIT IS COMMITTED TO THE CAUSE OF CREATING TOMORROW'S ENGINEERS BY PROVIDING QUALITY EDUCATION INCULCATING ETHICAL VALUES.

Practical Examinations	15-6-2020 to 24-6-2020
Theory Examinations	25-6-2020 to 15-7-2020
Commencement of ODD Semester	3/8/2020

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Nagamangala Taluk, Mandya District.

Dr. B.K.Raghavendra
Academic Incharge

Dr. B.K.Narendra
Principal

" Jai Sri Gurudev "

B.G.S.Institute of Technology, B.G.Nagara-571448

Department of Pre - engineering

Time Table For Second Semester

Section-D | **PERIOD FROM : 10-FEB-2020 T0 14-JUNE-2020** | **Room No - 203**

Computer Science Engg.

Day \ Time	9.00AM-9.55AM	9.55AM-10.50AM		11.00AM-11.55AM	11.55AM-12.50PM		1.45PM-2.40PM	2.40PM-3.35PM	3.35PM-4.30PM
Monday	18CIV-24 (GR)	LAB D1 (PHYL) / D2 (ELEL) / D3 (CAED)				LUNCH BREAK	18MAT-21 (CSM)	18ELE-13 (SKJ)	
Tuesday	18MAT-21 (CSM)	18PHY-22 (SRS)	TEA	18ELE-13 (SKJ)	18CIV-24 (GR)		PLACEMENT TRAINING		
Wednesday	18MAT-21 (CSM)	LAB D2 (PHYL) / D3 (ELEL) / D1 (CAED)					18CIV-24 (GR)	18PHY-22 (SRS)	
Thursday	18PHY-22 (SRS)	LAB D3 (PHYL) / D1 (ELEL) / D2 (CAED)					18ELE-13 (SKJ)	18MAT-21 (CSM)	18CIV-24 (GR)
Friday	CAED THEORY SHARATH N								
Saturday	18ELE-13 (SKJ)	18PHY-22 (SRS)		18CIV-24 (GR)	18MAT-21 (CSM)		18ELE-13 (SKJ)	18CIV-24 (GR)	18MAT-21 (CSM)

Sl No	Subject Code	Subject Title	Staff Name
1	18MAT-21	Engineering Mathematics - II	Chaithra S M (CSM)
2	18PHY-22	Engineering Physics	Shankara S R(SRS)
3	18ELE-23	Basic Electrical Engineering	Goutham V (GV)
4	18CIV-24	Civil Engineeringg and Mechanics	Gomathi R (G R)
5	18CED-25	Computer Aided Engineering Drawing	Sharath N(SN)
6	18CHEL-26	Physics Laboratory	Shankara S R(SRS)
7	18ELEL-27	Electrical Laboratory	Goutham V (GV)

Prepared By
Shankara S R

Verified by
Dr Yuvaraja B K
HOD
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Nagamangala Taluk, Mandya District.

Principal
Dr Narendra B K
PRINCIPAL
B.G.S. INSTITUTE OF TECHNOLOGY
B.G. NAGAR - 571 448

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Department of Pre - engineering

Time Table For Second Semester

Section-F **PERIOD FROM : 10-FEB-2020 T0 14-JUNE-2020** **Room No - 306**

Civil

Day / Time	9.00AM-9.55AM	9.55AM-10.50AM	TEA BRE	11.00AM-11.55AM	11.55AM-12.50PM	LUNCH BREAK	1.45PM-2.40PM	2.40PM-3.35PM	3.35PM-4.30PM
Monday	18MAT-21 (BKY)	18ELE-23 (MKM)		18CIV-24 (UA)	18PHY-22 (SRS)		LAB F1(PHYL) / F2 (ELEL) / F3 (CAED)		
Tuesday	PLACEMENT TRAINING			18CIV-24 (UA)	18MAT-21 (BKY)		LAB F2(PHYL) / F3 (ELEL) / F1 (CAED)		
Wednesday	CAED THEORY MAHENDRA H S (HSM)								
Thursday	18MAT-21 (BKY)	18ELE-23 (MKM)	AK	18CIV-24 (UA)	18PHY-22 (SRS)		18CIV-24 (UA)	18ELE-23 (MKM)	18PHY-22 (SRS)
Friday	18ELE-23 (MKM)	LAB F3(PHYL) / F1 (ELEL) / F2 (CAED)					18PHY-22 (SRS)	18MAT-21 (BKY)	
Saturday	18MAT-21 (BKY)	18ELE-23 (MKM)		18CIV-24 (UA)	18PHY-22 (SRS)		18ELE-23 (MKM)	18CIV-24 (UA)	

Sl No	Subject Code	Subject Title	Staff Name
1	18MAT-21	Engineering Mathematics - II	Yuvaraja B K (BKY)
2	18PHY-22	Engineering Physics	Shankara S R (SRS)
3	18ELE-23	Basic Electrical Engineering	Mouna K M (MKM)
4	18CIV-24	Civil Engineeringg and Mechanics	Uma A (UA)
5	18CED-25	Computer Aided Engineering Drawing	Mahendra H S (HSM)
6	18CHEL-26	Physics Laboratory	Shankara S R (SRS)
7	18ELEL-27	Electrical Laboratory	Mouna K M (MKM)

Prepared By
Shankara S R

Verified by
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Semester	I / II	Course Title	Engineering Physics	Course Code	18PHY12/22
Teaching Period	50 Hours	L – T – P – TL	4 – 1 – 0 – 5	SEE	3 Hours
CIE	40 Marks	SEE	60 Marks	Total	100 Marks
CREDITS – 04					

COURSE OBJECTIVES:

This course will enable students to learn the basic concepts in Physics which are very much essential in understanding and solving engineering related challenges.

COURSE CONTENTS:

::MODULE – 1:: (10 Hours)

Oscillations and Waves:

Free Oscillations: Definition of SHM, derivation of equation for SHM, Mechanical simple harmonic oscillators (mass suspended to spring oscillator), complex notation and phasor representation of simple harmonic motion. Equation of motion for free oscillations, Natural frequency of oscillations.

Damped and forced oscillations: Theory of damped oscillations: over damping, critical & under damping, quality factor. Theory of forced oscillations and resonance, Sharpness of resonance. One example for mechanical resonance.

Shock waves: Mach number, Properties of Shock waves, control volume. Laws of conservation of mass, energy and momentum. Construction and working of Reddy shock tube, applications of shock waves. Numerical problems.

::MODULE – 2:: (10 Hours)

Elastic properties of materials:

Elasticity: concept of elasticity, plasticity, stress, strain, tensile stress, shear stress, compressive stress, strain hardening and strain softening, failure (fracture/fatigue), Hooke's law, different elastic moduli: Poisson's ratio, Expression for Young's modulus (Y), Bulk modulus (K) and Rigidity modulus (n) in terms of α and β. Relation between Y, n and K.

Bending of beams: Neutral surface and neutral plane, Derivation of expression for bending moment of a beam with circular and rectangular cross section. Single cantilever derivation of expression for Young's modulus.

Torsion of cylinder: Expression for couple per unit twist of a solid cylinder (Derivation), Torsional pendulum-Expression for period of oscillation.

Numerical problems.

::MODULE – 3:: (10 Hours)

Crystal structure and Optical fibers:

Crystal structure: Space lattice, Bravais lattice–Unit cell, Primitive cell. Lattice parameters. Crystal systems. Direction and planes in a crystal. Miller indices. Expression for inter – planar spacing. Co-ordination number. Atomicpacking factors (SC,FCC,BCC). Bragg's law, Determination of crystal structure using Bragg's X–ray difractometer. Polymarphism and Allotropy. Crystal Structure of Diamond.

Optical fibers: Propagation mechanism, angle of acceptance. Numerical aperture. Modes of propagation and Types of optical fibers. Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient, Discussion of block diagram of point to point communication. Applications.

Numerical problems.

::MODULE – 4:: (10 Hours)

Quantum Mechanics and Lasers:

Quantum Mechanics: Introduction to Quantum mechanics, Wave nature of particles, Heisenberg's uncertainty principle and applications (non confinement of electron in the nucleus), Schrodinger time independent wave equation, Significance of Wave function, Normalization, Particle in a box, Energy eigen values of a particle in a box and probability densities.

Lasers: Review of spontaneous and stimulated processes, Einstein's coefficients (Derivation of expression for energy density). Requisites of a Laser system. Conditions for laser action. Principle, Construction and working of CO_2 and semiconductor Lasers. Application of Lasers in Defense (Laser range finder), Engineering (Data storage).
Numerical problems.

::MODULE – 5:: (10 Hours)

Material Science:
Quantum Free electron theory of metals: Review of classical free electron theory, mention of failures. Assumptions of Quantum Free electron theory, Mention of Expression for density of states, Fermi-Dirac statistics (qualitative), Fermi factor, Fermi level, Derivation of the expression for Fermi energy, Success of QFET.
Physics of Semiconductor: Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band, Hole concentration in valance band (Mention the expression), Conductivity of semiconductors(Derivation).
Dielectric materials: Polar and non-polar dielectrics, internal fields in a solid, Clausius - Mossotti equation, (Derivation), mention of solid, liquid and gaseous dielectrics with one example each.
Numerical problems.

COURSE OUTCOMES:
Upon completion of this course, students will be able to

1. **Memorize** the setup of differential equations for the types of oscillations and analyze the solutions and also to **recognize** the importance of shock waves and their applications.
2. **Describe** the Elastic properties and Electrical properties of the materials and identify their applications in Engineering.
3. **Study** of Crystal structure and applications are to boost the technical skills and its applications.
4. **Explain** the principle, conditions , requisites and generation of laser and its different applications mainly optical fiber communication through the study of construction, working and types of optical fibers
5. **Realize** the various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models.

RECOMMENDED LEARNING RESOURCES:
Text Books:

1. MN Avadhanulu and PG Kshirsagar, "A Text book of Engineering Physics", 10th revised Ed, S. Chand and Company Ltd, New Delhi.
2. Arthur Beiser, "Concepts of Modern Physics", 6th Ed., Tata McGraw Hill Edu Pvt Ltd, New Delhi, 2006.
3. BB Laud, "Lasers and Non-Linear Optics", 3rd Ed., New Age International Publishers, 2011.
4. Gaur and Gupta, "Engineering Physics", Dhanpat Rai Publications, 2017.

Reference Books:

1. M. K. Verma, "Introduction to Mechanics", 2nd Ed., University Press (India) Pvt. Ltd., Hyderabad, 2009.
2. O. Svelto, "Principles of Lasers", Springer Science & Business Media, 2010.
3. B. G. Streetman, "Solid State Electronic Devices", Prentice Hall of India, 1995.
4. MK Harbola, "Engineering Mechanics", 2nd Ed., Cengage publications, New Delhi, 2009.
5. Chintoo S. Kumar, K. Takayama and K. P. J. Reddy, "Shock Waves made simple", Wiley India Pvt. Ltd., New Delhi, 2014.
6. David Griffiths, "Introduction to Electrodynamics", 4th Ed., Cambridge University Press, 2017,

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Dept. of Pre Engineering
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Nagamangala Taluk, Mandya District.

Semester	I / II	Course Title	Engineering Physics Lab	Course Code	18PHYL16/26
Teaching Period	42 Hours	L – T – P – TL	0 –0 – 3 – 3	SEE	3 Hours
CIE	40 Marks	SEE	60 Marks	Total	100 Marks
CREDITS – 02					

COURSE OBJECTIVES:

- To realize experimentally, the mechanical, electrical and thermal properties of materials, concept of waves and oscillations.
- Design simple circuits and hence study the characteristics of semiconductor devices.

COURSE CONTENTS:

1. Determination of spring constants in Series and Parallel combinations.
2. n & I by Torsional pendulum.
3. Single Cantilever Experiment.
4. Radius of curvature of plano convex lens using Newton's rings.
5. LCR Resonance (Series and Parallel).
6. Study of Zener diode characteristics.
7. Acceptance angle and Numerical aperture of an optical fiber.
8. Wavelength of semiconductor laser using Laser diffraction.
9. Estimation of Fermi Energy of Copper.
10. Study of Transistor characteristics.
11. Study of Photodiode characteristics.
12. Calculation of Dielectric constant by RC charging and discharging.

COURSE OUTCOMES:

Upon completion of this course, students will be able to:

1. **Demonstrate** the phenomenon of interference and diffraction using simple experiments.
2. **Interpret** the characteristics of bipolar junction transistors and photo-diode and also to **Analyze** the resonance concept and its applications in electrical circuits.
3. **Determine** the strength of the given elastic materials using bending and torsion methods and also the force constant of springs.
4. **Calculate** the electrical properties like Dielectric Constant of the Dielectric material, Fermi energy of a metal through simple experiments and **Compare** the theoretical and experimental values.
5. **Visualize** laser source and application of laser in the optical fiber and diffraction experiments to **calculate** the related quantities.
6. **Practice** the measurement of quantities, honest recording, representing and analyzing the data and **expressing** the final results.

CONDUCTION OF PRACTICAL EXAMINATION:

- 10 experiments are mandatory. Student has to perform two experiments in the SEE.
- Remaining two experiments must be introduced as compulsory demo experiment.

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COURSE BOOK

Period of the Semester : From 10 Feb 2020 **To** 31 Jul 2020

Dept-Sem-Sec: PHY-2-D

Subject with Code: ENGINEERING PHYSICS 18PHY22

Time Slot	
MON:	**TUE :** 09:55 - 10:50
WED: 14:40 - 15:35	**THU :** 09:00 - 09:55
FRI :	**SAT :** 09:55 - 10:50

Name of the Teacher : Mr Shankar S R

Period	Planned			Execution		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
Module 1						
1	11 Feb 2020	Definition of SHM, derivation of equation for SHM		11 Feb 2020	Definition of SHM, derivation of equation for SHM	
2	12 Feb 2020	Mechanical simple harmonic oscillators (mass suspended to spring oscillator)		12 Feb 2020	Mechanical simple harmonic oscillators (mass suspended to spring oscillator)	
3	13 Feb 2020	Equation of motion for free oscillations		13 Feb 2020	Equation of motion for free oscillations	
4	15 Feb 2020	Natural frequency of oscillations.		15 Feb 2020	Natural frequency of oscillations.	
5	18 Feb 2020	Theory of damped oscillations: over damping, critical & under damping		18 Feb 2020	Theory of damped oscillations: over damping, critical & under damping	
6	19 Feb 2020	quality factor, Theory of forced oscillations and resonance		19 Feb 2020	quality factor, Theory of forced oscillations and resonance	
7	20 Feb 2020	Sharpness of resonance, One example for mechanical resonance.		20 Feb 2020	Sharpness of resonance, One example for mechanical resonance.	
8	22 Feb 2020	Mach number, Properties of Shock waves, control volume		22 Feb 2020	Mach number, Properties of Shock waves, control volume	
9	25 Feb 2020	Laws of conservation of mass, energy and momentum, Construction and working of Reddy shock tube		25 Feb 2020	Laws of conservation of mass, energy and momentum, Construction and working of Reddy shock tube	
10	26 Feb 2020	applications of shock waves, Numerical problems.		26 Feb 2020	applications of shock waves, Numerical problems.	
Module 2						
11	27 Feb 2020	concept of elasticity plasticity, stress strain tensile stress, shear stress		27 Feb 2020	concept of elasticity plasticity, stress strain tensile stress, shear stress	
12	29 Feb 2020	compressive stress, Hooke 's law		29 Feb 2020	compressive stress, Hooke 's law	
13	3 Mar 2020	different elastic moduli: Poisson 's ratio, Expression for Young 's modulus (Y)		3 Mar 2020	different elastic moduli: Poisson 's ratio, Expression for Young 's modulus (Y)	

Period	Planned			Execution		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
14	4 Mar 2020	Bulk modulus (K) and Rigidity modulus (n) in terms of • and •, Relation between Y n and K.		4 Mar 2020	Bulk modulus (K) and Rigidity modulus (n) in terms of • and •, Relation between Y n and K.	
15	5 Mar 2020	Neutral surface and neutral plane		5 Mar 2020	Neutral surface and neutral plane	
16	7 Mar 2020	Derivation of expression for bending moment of a beam with circular and rectangular cross section		7 Mar 2020	Derivation of expression for bending moment of a beam with circular and rectangular cross section	
17	10 Mar 2020	Single cantilever derivation of expression for Young 's modulus.		10 Mar 2020	Single cantilever derivation of expression for Young 's modulus.	
18	11 Mar 2020	Expression for couple per unit twist of a solid cylinder (without derivation)		11 Mar 2020	Expression for couple per unit twist of a solid cylinder (without derivation)	
19	12 Mar 2020	Torsional pendulum-Expression for period of oscillation		12 Mar 2020	Torsional pendulum-Expression for period of oscillation	
20	14 Mar 2020	Numerical problems.		14 Mar 2020	Numerical problems.	
Module 3						
21	17 Mar 2020	Space lattice, Bravais lattice –Unit cell, Primitive cell		17 Mar 2020	Space lattice, Bravais lattice –Unit cell, Primitive cell	
22	18 Mar 2020	Lattice parameters, Crystal systems, Direction and planes in a crystal		18 Mar 2020	Lattice parameters, Crystal systems, Direction and planes in a crystal	
23	24 Mar 2020	Miller indices, Expression for inter – planar spacing, Co-ordination number		24 Mar 2020	Miller indices, Expression for inter – planar spacing, Co-ordination number	
24	26 Mar 2020	Atomic packing factors (SC,FCC,BCC)		26 Mar 2020	Atomic packing factors (SC, FCC, BCC)	
25	28 Mar 2020	Bragg 's law, Determination of crystal structure using Bragg 's X –ray difractometer.		28 Mar 2020	Bragg 's law, Determination of crystal structure using Bragg 's X –ray difractometer.	

Period	Planned			Execution		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
26	31 Mar 2020	Propagation mechanism, angle of acceptance		31 Mar 2020	Propagation mechanism, angle of acceptance	
27	1 Apr 2020	Numerical aperture, Modes of propagation and Types of optical fibers		1 Apr 2020	Numerical aperture, Modes of propagation and Types of optical fibers	
28	2 Apr 2020	Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient, Discussion of block diagram of point to point communication		2 Apr 2020	Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient, Discussion of block diagram of point to point communication	
29	4 Apr 2020	Applications		4 Apr 2020	Applications	
30	7 Apr 2020	Numerical problems .		7 Apr 2020	Numerical problems .	
Module 4						
31	23 Apr 2020	Introduction to Quantum mechanics, Wave nature of particles		23 Apr 2020	Introduction to Quantum mechanics, Wave nature of particles	
32	25 Apr 2020	Heisenberg 's uncertainty principle and applications (non confinement of electron in the nucleus), Schrodinger time independent wave equation		25 Apr 2020	Heisenberg 's uncertainty principle and applications (non confinement of electron in the nucleus), Schrodinger time independent wave equation	
33	28 Apr 2020	Significance of Wave function, Normalization		28 Apr 2020	Significance of Wave function, Normalization	
34	29 Apr 2020	Particle in a box		29 Apr 2020	Particle in a box	
35	30 Apr 2020	Energy eigen values of a particle in a box and probability densities.		30 Apr 2020	Energy eigen values of a particle in a box and probability densities.	
36	2 May 2020	Review of spontaneous and stimulated processes, Einstein 's coefficients (Derivation of expression for energy density)		2 May 2020	Review of spontaneous and stimulated processes, Einstein 's coefficients (Derivation of expression for energy density)	

Period	Planned			Execution		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
37	5 May 2020	Requisites of a Laser system, Conditions for laser action		5 May 2020	Requisites of a Laser system, Conditions for laser action	
38	5 May 2020	Principle, Construction and working of CO2 and semiconductor Lasers		5 May 2020	Principle, Construction and working of CO2 and semiconductor Lasers	
39	5 May 2020	Application of Lasers in industrial field		5 May 2020	Application of Lasers in industrial field	
40	5 May 2020	Numerical problems		5 May 2020	Numerical problems	
Module 5						
41	6 May 2020	Review of classical free electron theory, mention of failures		6 May 2020	Review of classical free electron theory, mention of failures	
42	7 May 2020	Assumptions of Quantum Free electron theory, Mention of Expression for density of states		7 May 2020	Assumptions of Quantum Free electron theory, Mention of Expression for density of states	
43	9 May 2020	Fermi-Dirac statistics (qualitative), Fermi factor		9 May 2020	Fermi-Dirac statistics (qualitative), Fermi factor	
44	12 May 2020	Fermi level, Derivation of the expression for Fermi energy		12 May 2020	Fermi level, Derivation of the expression for Fermi energy	
45	13 May 2020	Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band		13 May 2020	Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band	
46	14 May 2020	Hole concentration in valance band (Mention the expression)		14 May 2020	Hole concentration in valance band (Mention the expression)	
47	16 May 2020	Conductivity of semiconductors (Derivation)		16 May 2020	Conductivity of semiconductors (Derivation)	
48	19 May 2020	Polar and non-polar dielectrics, internal fields in a solid		19 May 2020	Polar and non-polar dielectrics, internal fields in a solid	
49	20 May 2020	Clausius - Mossotti equation, (Derivation) mention of solid		20 May 2020	Clausius - Mossotti equation, (Derivation) mention of solid	

Period	*Planned*			*Execution*		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
50	21 May 2020	liquid and gaseous dielectrics with one example each, Numerical problems		21 May 2020	liquid and gaseous dielectrics with one example each, Numerical problems	

Module No.	*# of Classes Planned(till date)*	*Planned Effort(till date)*	*# of Classes Executed(till date)*	*Actual Effort (till date)*	*% Coverage*
2	10	9hrs 10min	10	9hrs 10min	100.0
3	10	9hrs 10min	10	9hrs 10min	100.0
4	10	9hrs 10min	10	9hrs 10min	100.0
5	10	9hrs 10min	10	9hrs 10min	100.0
1	10	9hrs 10min	10	9hrs 10min	100.0

Faculty in charge

Signature of Principal (&remark if any)

Principal
BGS Institute of Technology
B G Nagara - 571448,
Nagamangala Tq, Mandya Dist.

HOD's Signature

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Dept. of Pre Engineering
BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taiuk, Mandya District.

BGS Institute of Technology

Mandya

COURSE BOOK

Period of the Semester : **From** 10 Feb 2020 **To** 31 Jul 2020

Dept-Sem-Sec: PHY-2-F

Subject with Code: ENGINEERING PHYSICS 18PHY22

Time Slot	
MON: 11:55 - 12:50	**TUE :**
WED:	**THU :** 11:55 - 12:50
FRI : 13:45 - 14:40	**SAT :** 11:55 - 12:50

Name of the Teacher : Mr Shankar S R

Period	Planned			Execution		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
Module 1						
1	13 Feb 2020	Definition of SHM, derivation of equation for SHM		13 Feb 2020	Definition of SHM, derivation of equation for SHM	
2	14 Feb 2020	Mechanical simple harmonic oscillators (mass suspended to spring oscillator)		14 Feb 2020	Mechanical simple harmonic oscillators (mass suspended to spring oscillator)	
3	15 Feb 2020	Equation of motion for free oscillations		15 Feb 2020	Equation of motion for free oscillations	
4	17 Feb 2020	Natural frequency of oscillations.		17 Feb 2020	Natural frequency of oscillations.	
5	20 Feb 2020	Theory of damped oscillations: over damping, critical & under damping		20 Feb 2020	Theory of damped oscillations: over damping, critical & under damping	
6	22 Feb 2020	quality factor, Theory of forced oscillations and resonance		22 Feb 2020	quality factor, Theory of forced oscillations and resonance	
7	24 Feb 2020	Sharpness of resonance, One example for mechanical resonance.		24 Feb 2020	Sharpness of resonance, One example for mechanical resonance.	
8	24 Feb 2020	Mach number, Properties of Shock waves, control volume		24 Feb 2020	Mach number, Properties of Shock waves, control volume	
9	24 Feb 2020	Laws of conservation of mass, energy and momentum, Construction and working of Reddy shock tube		24 Feb 2020	Laws of conservation of mass, energy and momentum, Construction and working of Reddy shock tube	
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12	28 Feb 2020	compressive stress, Hooke 's law		28 Feb 2020	compressive stress, Hooke 's law	
13	29 Feb 2020	different elastic moduli: Poisson 's ratio, Expression for Young 's modulus (Y)		29 Feb 2020	different elastic moduli: Poisson 's ratio, Expression for Young 's modulus (Y)	

Period	Planned			Execution		
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21	16 Mar 2020	Space lattice, Bravais lattice –Unit cell, Primitive cell		16 Mar 2020	Space lattice, Bravais lattice –Unit cell, Primitive cell	
22	23 Mar 2020	Lattice parameters, Crystal systems, Direction and planes in a crystal		23 Mar 2020	Lattice parameters, Crystal systems, Direction and planes in a crystal	
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35	30 Apr 2020	Energy eigen values of a particle in a box and probability densities.		30 Apr 2020	Energy eigen values of a particle in a box and probability densities.	
36	2 May 2020	Review of spontaneous and stimulated processes, Einstein 's coefficients (Derivation of expression for energy density)		2 May 2020	Review of spontaneous and stimulated processes, Einstein 's coefficients (Derivation of expression for energy density)	

Period	Planned			Execution		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
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41	7 May 2020	Review of classical free electron theory, mention of failures		7 May 2020	Review of classical free electron theory, mention of failures	
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43	9 May 2020	Fermi-Dirac statistics (qualitative), Fermi factor		9 May 2020	Fermi-Dirac statistics (qualitative), Fermi factor	
44	11 May 2020	Fermi level, Derivation of the expression for Fermi energy		11 May 2020	Fermi level, Derivation of the expression for Fermi energy	
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Period	Planned			Execution		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
50	22 May 2020	liquid and gaseous dielectrics with one example each, Numerical problems		22 May 2020	liquid and gaseous dielectrics with one example each, Numerical problems	REF 1 REF 2 REF 3 REF 4 REF 5 REF 6

Module No.	# of Classes Planned(till date)	Planned Effort(till date)	# of Classes Executed(till date)	Actual Effort (till date)	% Coverage
1	10	9hrs 10min	10	9hrs 10min	100.0
2	10	9hrs 10min	10	9hrs 10min	100.0
3	10	9hrs 10min	10	9hrs 10min	100.0
4	10	9hrs 10min	10	9hrs 10min	100.0
5	10	9hrs 10min	10	9hrs 10min	100.0

Faculty in charge

Signature of Principal (&remark if any)

Principal
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B G Nagara - 571448,
Nagamangala Tq, Mandya Dist.

HOD's Signature

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BGS Institute of Technology
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Nagamangala Taluk, Mandya District.

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO & CO-PSO mapping (18 Scheme)

Programme	Course Code	Subject	Credits	L-T-P-TL	Assessment		Exam Duration
					SEE	CIA	
B.E	18PHY12/22	Engineering Physics	04	4-1-0-5	60	40	3Hrs

Co's

18C102.1	**Memorize** the setup of differential equations for the types of oscillations and analyze the solutions and also to **recognize** the importance of shock waves and their applications.
18C102.2	**Describe** the Elastic properties and Electrical properties of the materials and identify their applications in Engineering.
18C102.3	**Study** of Crystal structure and applications are to boost the technical skills and Its applications.
18C102.4	**Explain** the principle, conditions , requisites and generation of laser and its different applications mainly optical fiber communication through the study of construction, working and types of optical fibers.
18C102.5	**Realize** the various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
17C102.1	3	2												
17C102.2	2	2	1											
17C102.3	3	2												
17C102.4	3	2												
17C102.5	3	2												
AVG	**2.8**	**2**	**1**											

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

Course Coordinator

HOD

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Nagamangala Taluk. Mandya Dist

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO & CO-PSO mapping (18 Scheme)

Programme	Course Code	Subject	Credits	L-T-P-TL	Assessment		Exam Duration
					SEE	CIA	
B.E	18PHY16/26	Engineering Physics Lab	02	0-0-3-3	60	40	3Hrs

Co's

18C102.1	**Demonstrate** the phenomenon of interference and diffraction using simple experiments.
18C102.2	**Interpret** the characteristics of bipolar junction transistors and photo-diode and also to **Analyze** the resonance concept and its applications in electrical circuits.
18C102.3	**Determine** the strength of the given elastic materials using bending and torsion methods and also the force constant of springs.
18C102.4	**Calculate** the electrical properties like Dielectric Constant of the Dielectric material, Fermi energy of a metal through simple experiments and **Compare** the theoretical and experimental values.
18C102.5	**Visualize** laser source and application of laser in the optical fiber and diffraction experiments to **calculate** the related quantities.
18C102.6	**Practice** the measurement of quantities, honest recording, representing and analyzing the data and **expressing** the final results.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
17C102.1	3	1							1					
17C102.2	3	1							1					
17C102.3	3	1							1					
17C102.4	3	1							1					
17C102.5	3	1							1					
17C102.6	3	2	1		1	1			1					
AVG	**3**	**1.17**	**1**		**1**	**1**			**1**					

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

Course Coordinator

HOD

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Nagamangala Taluk, Mandya District.

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

LABORATORY RUBRICS

Programme	Course Code	Subject	Credits	L-T-P-TL	Assessment		Exam Duration
					SEE	CIA	
B.E	18PHY16/26	Engineering Physics Lab	02	0-0-3-3	60	40	3Hrs

Maximum Marks: 40

Continuous Internal Evaluation	Excellent (80%-100%)	Good (80%-60%)	Average (40%-50%)
a. Observation write up and punctuality (05)	Students should write the experiments in the Observation book neatly and attend the labs regularly	Students should write the experiments in the Observation book and attend the labs.	Improper maintenance of observation books and being irregular to the labs.
b. Conduction of experiment and output (10)	Students should conduct the experiments following the given procedure, plot the graph, perform calculation and show the accurate results with S.I unit.	Students should conduct the experiments following the given procedure, plot the graph and perform calculation with average results.	Improper conduction of experiments, graph plotting and results without S.I. unit.
c. Viva voce (05)	They should answer all the questions.	If they answer some of the questions.	If they doesn't answer the questions.
d. Record write up (10)	They should write records neatly, legibly and with suitable circuit diagrams.	They should write records with suitable circuit diagrams.	Improper/poor maintenance of record.
e. Internal Test (10)	Students should write the given experiments containing Formula, Tabular column, Nature of the graph, conduct the experiment and show the results with S.I. unit.	Students must write the given experiments, conduct the experiment and show the results.	If the student write the experiment but fails to conduct it.

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I - Sem 2019 Batch

18PHY12/22

First Semester BE Degree Examination January 2020
(CBCS Scheme)

Time: 3 Hours Max Marks: 100 marks

Sub: Engineering Physics

Q P Code: 60003/60013

Instructions: 1. Answer **five full** questions.
2. Choose one full question from each module.
3. Your answer should be specific to the questions asked.
4. Write the same question numbers as they appear in this question paper.
5. Write Legibly

Module – 1

1	a	Define SHM and mention any two examples. Derive the differential equation for SHM using Hooke's law.	8 marks
	b	With neat diagram, explain the construction and working of Reddy's shock tube.	8 marks
	c	A car has a spring system that supports the in-built mass 1000 kg. When a person with a weight 980 N sits at the C of G, the spring system sinks by 2.8 cm. When the car hits a bump, it starts oscillating vertically. Find the period and frequency of oscillation	4 marks

Or

2	a	Explain the basics laws of conservation of mass, energy and momentum.	6 marks
	b	What are forced oscillations? Derive the expressions for amplitude of forced oscillations.	10 marks
	c	A mass of 2 kg suspended by a spring of force constant 51.26 N/m is executing damped simple harmonic oscillations with a damping of 5 kg/s. Identify whether it is the case of under damping or of over damping required for the oscillations to be critically damped (Ignore the mass of the spring).	4 marks

Module – 2

3	a	State and explain Hooke's law. Explain the nature of elasticity with the help of stress-strain diagram.	8 marks
	b	Define bending moment. Derive the expression for bending moment in terms of moment of inertia.	8 marks
	c	Calculate the extension produced in a wire of length 2 m and radius 0.013×10^{-2} m due to a force of 14.7 N applied along its length. Given, Young's modulus of the material of the wire, $Y = 2.1 \times 10^{11}$ N/m^2	4 marks

Or

4	a	Define Young's modulus, Bulk modulus and Rigidity modulus.	8 marks
	b	Define Single Cantilever. Derive the expression for young's modulus of the material of single cantilever for rectangular cross section.	8 marks
	c	Calculate the torque required to twist a wire of length 1.5 m, radius 0.0425×10^{-2} m, through an angle ($\pi/45$) radian, if the value of rigidity modulus of its material is 8.3×10^{10} N/m^2.	4 marks

PTO

Module – 3

5	a	Define Lattice, Space lattice and Unit cell. Explain the seven crystal systems.	10 marks
	b	Explain the different types of Optical fibers with neat diagram.	6 marks
	c	Find the interplanar spacing for a crystal having a wavelength of 0.7 Å for the second order diffraction glancing at an angle of 10°.	4 marks

Or

6	a	Define APF. Find the APF for SCC, BCC and FCC lattice.	10 marks
	b	Derive the expression for Numerical aperture in terms of R.I. of core and cladding material of optical fiber.	6 marks
	c	Calculate the numerical aperture and acceptance angle for a fiber with core and cladding of refractive index 1.50 and 1.45 respectively.	4 marks

Module – 4

7	a	Obtain the expression for time independent Schrodinger wave equation in one dimensional motion.	6 marks
	b	Explain the construction and working of CO_2 LASER with the help of energy level diagram.	10 marks
	c	An electron is bound in an One-dimensional potential well of infinite height and width of 1 Å. Calculate its energy values in the ground state and also in the first two excited states.	4 marks

Or

8	a	State and explain Heisenberg's uncertainty principle. Show that electrons do not exist inside the nucleus of an atom.	8 marks
	b	Derive the expression for energy density of radiation at equilibrium condition in terms of Einstein's coefficients.	8 marks
	c	Find the ratio of population of the two energy levels in a medium in thermal equilibrium if the transition between them produces light of wavelength 694.3nm. Assume the ambient temperature as 27^0C.	4 marks

Module – 5

9	a	Define Fermi energy and Fermi factor. Discuss the probability of occupation of various energy states at high and low temperatures.	10 marks
	b	Derive the expression for electrical conductivity of intrinsic semiconductor.	6 marks
	c	The charge carrier density of intrinsic germanium is $2.372 \times 10^{-19}/m^3$. Assuming electron and hole mobility's as $3.38 m^2V^{-1}s^{-1}$ and $0.18\ m^2V^{-1}s^{-1}$ respectively, calculate the resistivity of intrinsic germanium at 27^0C.	4 marks

Or

10	a	Write the assumption of Quantum free electron theory. Derive the expression for Fermi energy at 0° K.	8 marks
	b	What are dielctrics and internal field. Derive Clausius-Mossotti equation.	8 marks
	c	If a NaCl crystal is subjected to an electric field of 1000 V/m and the resulting polarization is 4.3×10^{-9} C/m^2, calculate the dielectric constant of NaCl.	4 marks

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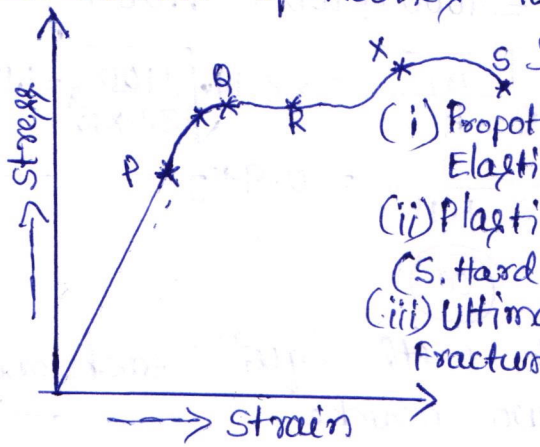
CBCS Scheme ( )

DEPARTMENT: PHYSICS

Scheme & Solution

Semester: First | **Subject Title: Engineering Physics** | **Subject Code: 18PHY-12**

Question Number	Module – 1 Solution	Marks Allocated
1. a)	Definition of S.H.M. →	02
	Two Examples →	1+1
	Explanation with Hooke's law →	02
	$F = -kx$ →	01
	$\frac{d^2x}{dt^2} + \frac{k}{m} \cdot x = 0$ @ $\frac{d^2x}{dt^2} + \omega^2 \cdot x = 0$ →	01
		(08)
b)	Fig with explanation for construction →	04
	Explanation for working of Reddy shock tube. →	04
		(08)
c)	$x = 0.028$ m, Mass of car (m) = 1000 kg	
	Person's weight, $W = 980$ N	
	$T = ?$ & $f = ?$	
	$F = kx \Rightarrow k = \frac{980}{0.028} = 3.5 \times 10^4$ N/m	01
	$F = m \cdot g \Rightarrow$ Person's mass (m) = $\frac{F}{g}$ →	01
	$m = \frac{980}{9.8} = 100$ kg	
	Total mass = 1000 + 100 = 1100 kg	
	$T = 2\pi \times \sqrt{\frac{m}{k}} = 2 \times 3.14 \times \sqrt{\frac{1100}{3.5 \times 10^4}} = 1.11$ sec	01
	$f = \frac{1}{T} = \frac{1}{1.11} = 0.9$ Hz →	01
		(04)
	(08)	
2. a)	Statement with equ^n. each one carries two marks →	2+2+2 = (06)

Question Number	Solution	Marks Allocated
b)	Definition of forced oscillations →	02
	Resultant force $= -r.\frac{dx}{dt} - kx + F\sin pt$	01
	Resultant force $= m.\frac{d^2x}{dt^2}$ →	01
	upto $\frac{d^2x}{dt^2} + 2b.\frac{dx}{dt} + \omega^2 x = \frac{F}{m}.\sin(pt)$ →	02
	General sol^{n} equ^{n}, $x = a.\sin(pt-\alpha)$	01
	From $\frac{dx}{dt} = a.p.\cos(pt-\alpha)$ to $a = \frac{F/m}{\sqrt{4b^2p^2 + (\omega^2 - p^2)}}$ →	03
		(10)
c)	$m = 2kg$, $k = 51.26\ N/m$, $r = 5\ kg/s$	
	$\omega = \sqrt{\frac{k}{m}} \Rightarrow \omega^2 = \frac{k}{m} = 25.63$ → (01) →	01
	$2b = \frac{r}{m} = b = \frac{r}{2m}$ →	01
	$b^2 = \frac{r^2}{4m^2} = 1.5625$ → (02) →	01
	Comparing equ^{n} (1) & (2) $b^2 < \omega^2 \Rightarrow$ ∴ It is the case of Underdamping →	01
		(04)
	Module – 2	
3. a)	Statement of Hooke's law →	02
		
	S Discussion of	
	(i) Propotional limit & Elastic limit	02
	(ii) Plastic behaviour (S. Hard & S. Soft)	02
	(iii) Ultimate strength Fracture point	02
		(08)

Question Number	Solution	Marks Allocated
b)	Fig with explain of a bending beam	02
	change in length $= r\theta$, linear strain $= \frac{r}{R}$	02
	$Y = \frac{\text{Longitudinal stress}}{\text{Linear strain}} = \frac{F/a}{r/R}$ →	01
	Moment of this force about neutral axis $= F \times r = \frac{Y \cdot a r^2}{R}$	01
	For entire beam $= \sum \frac{Y}{R} \cdot a r^2$ →	01
	Bending moment for rectangular body $= \frac{Y}{R} \cdot I_g = \frac{Y}{R} \times \frac{b d^3}{12}$ →	01
		(08)
c)	$L = 2m$, $R = 0.013 \times 10^{-2} m$, $F = 14.7 N$ →	01
	$Y = 2.1 \times 10^{11} N/m^2$	
	$Y = \frac{F/a}{x/L} \Rightarrow x = \frac{F.L}{a.Y}$ $(\because a = \pi R^2)$	01
	Substitution & Calculation → $x = 2.6 \times 10^{-3} m$	02
		(04)
	(08)	
A. a)	Definition of Young's modulus with equation. →	03
	Definition of Bulk modulus with equation. →	03
	Definition of Rigidity modulus with equation. →	02
		(08)
b)	Definition for Single Cantilever →	01
	Bending moment $= W \times (L - x)$ →	01
	$\frac{1}{R} = \frac{W(L-x)}{Y \cdot I_g}$ →	01
	$\frac{1}{R} = \frac{d^2y}{dx^2}$ →	01
	$\frac{dy}{dx} = \frac{W}{Y \cdot I_g} \cdot \left[Lx - \frac{x^2}{2} \right]$ →	01
	$y = \frac{W}{Y \cdot I_g} \cdot \left[\frac{L \cdot x^2}{2} - \frac{x^3}{6} \right]$ →	01

Question Number	Solution	Marks Allocated
	Depression produced at the loaded end, $y_0 = \frac{WL^3}{3YI_g}$ →	01
	Finally, $Y = \frac{4WL^3}{y_0 b d^3}$ for rectangular cross-section → (General, $Y = \frac{W \cdot L^3}{3 y_0 \cdot I_g}$)	01
		(08)
c)	$L = 1.5\,m$, $R = 0.0425 \times 10^{-2}\,m$	
	$\theta = \pi/45$ rad, $\eta = 8.3 \times 10^{10}\,N/m^3$	
	$Y = ?$	
	Couple per unit twist is given by, $C = \frac{\pi \eta R^4}{2L} = 2.8357 \times 10^{-3}$	02
	Torque required, $Y = C \cdot \theta$	02
	$\therefore Y = 1.98 \times 10^{-4}\,N.m$	(04)
	Module – 3	
5. a)	Definition of Lattice, Space lattice, and unit cell →	1+1+1
	Seven Crystal System ~~ex~~ explanation with diagram	(03) + 07
		(10)
b)	Types of optical fibers, Three types each carries two marks. (Diagram with Explanation) →	(06)
c)	$\lambda = 0.7 \times 10^{-10}\,m$, $n = 2$, $\theta = 10^\circ$, $d = ?$ →	01
	$2d \sin\theta = n\lambda$ →	01
	$d = \frac{n\lambda}{2\sin\theta} = 4.03 \times 10^{-10}\,m$ →	02
	(08)	(04)
6. a)	Definition for A.P.F →	01
$a = 2R$	A.P.F for SCC → 0.52	
$a = \frac{4}{\sqrt{3}} \cdot R$	A.P.F. for BCC → 0.68 With fig 3+3+3 →	09
$a = 2\sqrt{2} \cdot R$	A.P.F for FCC → 0.74	10

Question Number	Solution	Marks Allocated
	b) Diagram, $n_0 \cdot \sin(\theta_0) = n_1 \cdot \sin(\theta_1) \rightarrow$	03
	$n_0 \cdot \sin(90-\theta_1) = n_2 \cdot \sin(90^\circ)$	
	$\cos(\theta_1) = \frac{n_2}{n_1}$	
	$\sin(\theta_0) = \sqrt{1-\frac{n_2^2}{n_1^2}} = \frac{1}{n_0} \times \sqrt{n_1^2 - n_2^2}$	03
	$\therefore \boxed{N.A = \sqrt{n_1^2 - n_2^2}}$	06
	c) $n_1 = 1.50$, $n_2 = 1.45$, $N.A = ?$	
	$\theta_a = ?$	
	$N.A = \sqrt{n_1^2 - n_2^2} \longrightarrow$	01
	$N.A = 0.384 \longrightarrow$	01
	$N.A = \sin(\theta_a) \longrightarrow$	01
	$\theta_a = 22.58^\circ \longrightarrow$	01
		04
	Module – 4	
7.	a) $\psi = A \cdot e^{i(kx-\omega t)}$ to $\frac{d^2\psi}{dx^2} = -\frac{\omega^2}{v^2} \cdot \psi$	03
	Total Energy, $E = K.E + P.E$ to	03
	$\frac{d^2\psi}{dx^2} + \frac{8\pi^2 m}{h^2} \cdot (E-V) \cdot \psi = 0$	06
	b) Figure with Explanation (Construction part) $\longrightarrow$	05
	Using Energy level diagram explanation of Working function $\longrightarrow$	05
		10
	c) $a = 1 \times 10^{-10}$ m, $E_0 = ?$, $E_1 = ?$, $E_2 = ?$	
	$E_n = \frac{n^2 h^2}{8ma^2} \longrightarrow$	01
	$E_0 \Rightarrow n=1 \quad \therefore E_0 = 37.64$ eV $\longrightarrow$	01
	$E_1 \Rightarrow n=2 \quad \therefore E_1 = 4(E_0) = 150.54$ eV	01
	$E_2 \Rightarrow n=3 \quad \therefore E_2 = 9(E_0) = 338.7$ eV	01
		04

Question Number	Solution	Marks Allocated
8. a)	Statement and Explanation of Heisenberg's Uncertainty Principle	→ 02
	Einstein's theory of relativity $E^2 = c^2 \cdot (p^2 + (m_0 c^2))$	→ 02
	$\Delta P_x \geq 1.1 \times 10^{-20}$ N. sec	→ 01
	Upto $E \geq 20.6$ MeV @ 9.7 MeV	→ 02
	Conclusion	→ 01
		(08)
b)	Expression for (i) Rate of induced absorption (ii) Rate of spontaneous emission (iii) Rate of stimulated emission	03
	$B_{12} N_1 U_\gamma = A_{21} \cdot N_2 + B_{21} \cdot N_2 \cdot U_\gamma$	→ 01
	Upto $U_\gamma = \frac{A_{21}}{B_{21}} \cdot \left[\frac{1}{\frac{B_{12}}{B_{21}} \cdot e^{h\gamma/kT} - 1}\right]$	→ 03
	$U_\gamma = \frac{A}{B \cdot (e^{h\gamma/kT} - 1)}$	→ 01
		(08)
c)	$N_2 = N_1 \cdot e^{-h\gamma/kT}$	→ 01
	$\frac{N_2}{N_1} = e^{-\frac{hc}{\lambda kT}}$	→ 01
	Substitution & Calculation $\frac{N_2}{N_1} = e^{-69.14} = 9.39 \times 10^{-31}$	→ 02
		(04)
	Module – 5	
9. a)	Definition of Fermi Energy, $E_F(0) = \frac{h^2}{8m} \times \left(\frac{3n}{\pi}\right)^{2/3}$	→ 02
	Definition of Fermi factor, $f(E) = \frac{1}{e^{\frac{E-E_F}{kT}} + 1}$	→ 02
	(i) $E < E_F$ at $T = 0K$, $f(E) = 1$	→ 01
	(ii) $E > E_F$ at $T = 0K$, $f(E) = 0$	→ 01
	(iii) $E = E_F$ at $T > 0K$, $f(E) = 0.5$	→ 01
	Graphical fig with conclusion	→ 01 + 02
		(10)

Question Number	Solution	Marks Allocated
	b) Consideration & $I = N_e \cdot e A v$ $\longrightarrow$	02
	$J = I/A \Rightarrow N_e \cdot e v$ $\longrightarrow$	01
	$J = \sigma \cdot E$ $\longrightarrow$	01
	upto $\sigma_e = N_e \cdot e \mu_e$, $\sigma_h = N_h \cdot e \mu_h$ $\longrightarrow$	01
	$\sigma = e \cdot (N_e \cdot \mu_e + N_h \cdot \mu_h)$	
	For Intrinsic semiconductor $N_e = N_h = n_i$ $\longrightarrow$	01
	$\therefore \sigma_i = n_i \cdot e (\mu_e + \mu_h)$	06
	c) $n_i = 2.372 \times 10^{-19}/m^3$, & $\mu_e = 3.38\ m^2/V.sec$	
	$\mu_h = 0.18\ m^2/V.sec$	
	$\sigma_i = n_i \cdot e (\mu_e + \mu_h)$ $\longrightarrow$	01
	$\rho_i = \frac{1}{n_i \cdot e (\mu_e + \mu_h)}$ $\longrightarrow$	01
	sub. & calculation $\longrightarrow$	02
	$\rho_i = \frac{1}{1.35 \times 10^{-37}} = 7.41 \times 10^{36}\ \Omega.m$	04
	(08)	
10	a) Any two assumptions of Q.F.E.T $\longrightarrow$	02
	$N(E) \cdot dE = g(E) \cdot dE \times f(E)$ $\longrightarrow$	01
	$f(E) = 1$, $g(E) \cdot dE = \frac{8\sqrt{2}\pi m^{3/2}}{h^3} \cdot E^{1/2} \cdot dE$	02
	then Integrating & Simplify we get $E_F(0) = \frac{h^2}{8m} \times \left(\frac{3n}{\pi}\right)^{2/3}$ $\longrightarrow$	03
		(08)
	b) Definition for dielectrics and Internal field $\longrightarrow$	02
	consideration & $\mu = \alpha_e \cdot E_i$ $\longrightarrow$	02
	upto $E_i = \frac{P}{N \cdot \alpha_e}$ $\longrightarrow$	01
	upto $E = \frac{P}{\varepsilon_0 (\varepsilon_r - 1)}$ $\longrightarrow$	01
	upto $\frac{1}{N \cdot \alpha_e} = \frac{1}{\varepsilon_0} \cdot \left[\frac{1}{(\varepsilon_r - 1)} + 3\right]$ $\longrightarrow$	01

Question Number	Solution	Marks Allocated
	$\frac{\varepsilon_r - 1}{\varepsilon_r + 2} = \frac{N \cdot \alpha_e}{3\varepsilon_0}$ ⟶	01
c)	$E = 1000\ V/m$, $P = 4.3 \times 10^{-8}\ C/m^2$	(08)
	$\varepsilon_r = ?$	
	$P = \varepsilon_0 (\varepsilon_r - 1) \cdot E$ ⟶	01
	$\varepsilon_r - 1 = \frac{P}{\varepsilon_0 \cdot E}$ ⟶	01
	Substitution and calculation →	02
	$\varepsilon_r - 1 = 4.855$, $\boxed{\varepsilon_r = 5.855}$	(04)

BGSIT BG Nagara	Doc. Title: Internal Test Question Paper Page 1 of 1	Date: 05.04.2020	Doc. No.: 06#Form#02b Rev. No. 00

INTERNAL TEST QUESTION PAPER FORMAT- CBCS SCHEME (VTU)

Name of the Faculty: SHANKARA S R
Signature:

BGS Institute of Technology
Department: Engineering Physics
Test: I

USN:

Semester: II **Section**: D,E & F
Subject Name & Code: Engg.Physics & 18PHY22

Instructions

Duration: 60 minutes **Max. Marks**: 30

i) Select one question from each part.
ii) All main questions carry equal marks.

Question Number	Questions	Marks	CO	Levels
	PART – A			
1	a) Explain the following parameters. (i) Acceptance angle (ii) Numerical aperture (iii) V-Number (iv) RRID OR Fractional index change v) Attenuation.	10	CO3	L2
	b) Explain the basics of point to point communication system with neat diagram.	5	CO3	L2
	OR			
2	a) Explain the different types of Optical fiber with suitable diagram and Derive an expression for numerical aperture in terms of R.I of core & clad.	10	CO3	L2
	b) Calculate the V-number for a fiber or core diaeter 40 μm & with refractive indices of 1.55 & 1.50 respectively for core and cladding when the wave length of the propagating wave is 1400 nm. Also calculate the number of modes that the fiber can support for propagation. Assue that the fiber is in air.	5	CO3	L3
	PART – B			
3	a) Derive an Expression for energy density under the condition of thermal equilibrium in terms of Einstein's co-efficient.	10	CO4	L2
	b) Explain stimulated absorption and spontaneous emission.	5	CO4	L3
	OR			
4	a) State Heisenberg's Uncertainty principle and show that electron cannot exist inside the nucleus of an atom using Heisenberg's Uncertain ty principle.	10	CO4	L2
	b) Drive an expression for time independent Schrodinger wave equation in one dimensional motion	5	CO4	L2

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CBCS Scheme ([redacted] **)**

DEPARTMENT: PHYSICS

Scheme & Solution Test – 01

Semester: Second **Subject Title: Engineering Physics** **Subject Code: 18PHY-22**

Question Number	Solution	Marks Allocated
	Part - A	
1 (a)	(i) Definition for acceptance angle → 02	
	(ii) Definition for Numerical aperture → 02	
	(iii) Definition for V-Number → 02	
	(iv) Definition for RRID (or) fraction -al index change → 02	
	(v) Definition for attenuation → 02	(10)
(b)	Block diagram of point to point communication system → 02	
	Explanation for point to point communication system → 03	(05)
2 (a)	(i) Step Index single mode O.F → 02	
	(ii) Step Index multimode O.F → 02	
	(iii) graded Index multimode O.F → 02	(06)
	Fig with explanation → 02	
	$n_0 \sin(\theta_0) = n_1 \sin(\theta_1)$ →	01
	$n_1 \sin(90-\theta_1) = n_2 \sin(90)$ →	
	$\sin(\theta_0) = \frac{\sqrt{n_1^2 - n_2^2}}{n_0}$ →	01
	For air medium, $n_0 = 1$	
	$\therefore N.A = \sqrt{n_1^2 - n_2^2}$ →	(04)
		=> (10)

CBCS Scheme (Adichunchanagiri University)

DEPARTMENT: PHYSICS

Scheme & Solution

Semester: Second **Subject Title: Engineering Physics** **Subject Code: 18PHY-22**

Question Number	Solution	Marks Allocated
(b)	for data → 01	
	$V = \frac{\pi d}{\lambda} \cdot \sqrt{n_1^2 - n_2^2}$ → 01	
	$V = \frac{3.14 \times 40 \times 10^{-6}}{1400 \times 10^{-9}} \times \sqrt{(1.55)^2 - (1.50)^2}$ → 01	
	$V = 35$ → 01	
	No^{r} of modes$(M_n) = \frac{V^2}{2}$ $= \frac{1225}{2}$ $= 612.5$ → 01	
		(05)
	Part-B	
3 (a)	Rate of stimulated absorption. → 02 $= B_{12} \cdot N_1 \cdot U_\nu$	
	Rate of spontaneous emission, → 02 $= A_{12} \cdot U_\nu$	
	Rate of stimulated emission, → 02 $= B_{21} \cdot N_2 \cdot U_\nu$	
	simplification & final → 04 $U_\nu = \frac{A}{B} \cdot \left[\frac{1}{e^{h\nu/kT} - 1}\right]$	
		(10)

Question Number	Solution	Marks Allocated
(b)	Explanation of stimulated absorption → 02. ½	
	Explanation of spontaneous emission → 02. ½	(5)
4 (a)	For statement of Heisenberg's uncertainity principle → 02	
	Explanation → 02	
	$E = mc^2$ → 01	
	$p = mv$ → 01	
	$\Delta x \leq 10^{-14}$ m → 01	
	$\Delta P \cdot \Delta x \geq \frac{h}{4\pi}$ → 01	
	$P \geq 0.5 \times 10^{-20}$ N·sec $E \geq 20$ MeV → 01	
	Final conclusion → 01	(10)
(b)	$\psi = A \cdot e^{i(kx - \omega t)}$ → 01	
	$\frac{d^2\psi}{dx^2} = \frac{1}{v^2} \cdot \frac{d^2\psi}{dt^2}$ → 01	
	$\frac{d^2\psi}{dx^2} = -k^2 \cdot \psi$ → 01	
	$p^2 = (E - V) \cdot 2m$ → 01	
	$\frac{d^2\psi}{dx^2} + \frac{8\pi^2 m}{h^2}(E - V) \cdot \psi = 0$ → 01	(05)

BGSIT BG Nagara	Doc. Title: Internal Test Question Paper		Doc. No.: 06#Form#02b
	Page 1 of 1	Date: 09.06.2020	Rev. No. 00

INTERNAL TEST QUESTION PAPER FORMAT- CBCS SCHEME (VTU)

Name of the Faculty: SHANKARA S R
Signature:

BGS Institute of Technology
Department: Engineering Physics
Test: II

USN:

Semester: II **Section:** D,E & F
Subject Name & Code: Engg.Physics & 18PHY22

Instructions

Duration: 60 minutes **Max. Marks:** 30

i) Select one question from each part.
ii) All main questions carry equal marks.

Question Number	Questions	Marks	CO	Levels
	PART – A			
1	a) With a neat diagram explain the construction and working function of Reddy shock tube.	10	CO1	L2
	b) What are shock waves? Mention any four applications of Shock waves.	5	CO1	L1
	OR			
2	a) What are damped oscillations? Give the theory of damped oscillations and hence discuss the case of critical damping.	10	CO1	L2
	b) A vibrating system of natural frequency 500 Hz, is forced to vibrate with a periodic force/unit mass of amplitude $100x10^{-5}$ Newton/kg in the presence of a damping/unit mass of $0.01x10^{-3}$ rad/sec. Calculate the maximum amplitude of vibrate of the system .	5	CO1	L3
	PART – B			
3	a) Derive the expression for Fermi energy at absolute zero Kelvin.	8	CO5	L2
	b) Derive Clausius-Mossotti equation.	7	CO5	L2
	OR			
4	a) Discuss the probability of occupation of various energy states by electrons at $T=0^0K$ and $T>0^0K$, on the basis of Fermi factor.	8	CO5	L2
	b) Calculate the Fermi energy in eV for a metal at zero Kelvin, whose density is $10500kg/m^3$, atomic weight is 107.9, and it has one conduction electron per atom. (Given $N_A = 6.025x10^{26}$/k mole)	7	CO5	L3

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CBCS Scheme ( )

DEPARTMENT: PHYSICS

Scheme & Solution Test - 02

Semester: Second **Subject Title: Engineering Physics** **Subject Code: 18PHY-22**

Question Number	Solution	Marks Allocated
	Part - A	
1 a)	Neat diagram ⟶	02
	Explain the construction ⟶	04
	Explain the working function ⟶	04
		(10)
b)	Defination for Shock waves ⟶	01
	i) Medical field for eye defect	
	ii) For wood preservation	⟶ 04
	iii) For pencil industry	
	iv) For Defence field	
		(05)
2. a)	Defination for Damped oscillations ⟶	02
	Restoring force $\propto$ Displacement	
	$F_r \propto x \Rightarrow F_r = -kx$ — (1)	
	Frictional force $\propto$ velocity	⟶ 02
	$F_f \propto \frac{dx}{dt} \Rightarrow F_f = -\gamma \cdot \frac{dx}{dt}$ — (1)	
	Resulting force $= F_r + F_f$	
	$m \cdot \frac{d^2x}{dt^2} = -kx - \gamma \cdot \frac{dx}{dt}$	⟶ 02
	$\frac{d^2x}{dt^2} + 2b \cdot \frac{dx}{dt} + \omega^2 \cdot x = 0$ ⟶	01
	General solution for the above Equation ⟶ $x = A \cdot e^{\alpha t}$ ⟶	01
	$x = \frac{x_0}{2}\left\{\left[1 + \frac{b}{\sqrt{b^2-\omega^2}}\right] \cdot e^{(-b+\sqrt{b^2-\omega^2})t}\right.$ +	

Question Number	Solution	Marks Allocated
	$\left[1-\frac{b}{\sqrt{b^2-\omega^2}}\right]\left\{e^{(-b-\sqrt{b^2-\omega^2})t}\right\}$ →	02
		(10)
b)	For given data →	01
	Formula, $a_{max}=\frac{F/m}{2b\omega}$ →	01
	$b=\frac{\gamma}{2m}=0.005\times10^{-3}$ →	01
	$\omega=2\pi V$ →	01
	$a_{max}=0.318\,m$ →	01
		(05)
	PART-B	
3. a)	$N(E).dE=g(E).dE\times f(E)$ →	02
	$f(E)=1$, $g(E).dE=\frac{8\sqrt{2}.\pi m^{3/2}}{h^3}E^{1/2}.dE$ →	02
	then integrating & simplify we get,	
	$E_F(0)=\frac{h^2}{8m}\times\left(\frac{3n}{\pi}\right)^{2/3}$ →	04
		(08)
b)	Consideration and $\mu=\alpha_e.E_i$ →	01
	$E_i=\frac{P}{N.\alpha_e}$ →	01
	$E=\frac{P}{\varepsilon_0(\varepsilon_r-1)}$ →	01
	upto $\frac{1}{N\alpha_e}=\frac{1}{\varepsilon_0}\cdot\left[\frac{1}{(\varepsilon_r-1)}+3\right]$ →	02
	$\frac{\varepsilon_r-1}{\varepsilon_r+2}=\frac{N.\alpha_e}{3\varepsilon_0}$	02
		(07)

Question Number	Solution	Marks Allocated
4. a)	Fermi factor, $f(E) = \frac{1}{e^{\frac{E-E_F}{kT}} + 1}$ →	02
	i) $E < E_F$ at $T = 0K$, $f(E) = 1$ →	01
	ii) $E > E_F$ at $T = 0K$, $f(E) = 0$ →	01
	iii) $E = E_F$ at $T > 0K$, $f(E) = 0.5$ →	01
	Graphical fig with conclusion →	03
		(08)
b)	For given data →	01
	$E_F(0) = \frac{h^2}{8m} \times \left(\frac{3n}{\pi}\right)^{2/3}$ →	01
	$n = \frac{\text{no of free } e^- \text{/atom} \times N_A \times D}{M}$ →	02
	$n = 5.86 \times 10^{28}/m^3$	
	$E_F(0) = 5.50 eV$ →	03
		(07)

Dept. of Engg. Phys.
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Nagamangala Tq, Mandya Dist.
Karnataka (INDIA)

BGSIT BG Nagara	Doc. Title: Internal Test Question Paper		Doc. No.: 06#Form#02b
	Page 1 of 1	Date: 24.07.2020	Rev. No. 00

INTERNAL TEST QUESTION PAPER FORMAT- CBCS SCHEME (VTU)

Name of the Faculty: SHANKARA S R
Signature:

BGS Institute of Technology
Department: Engineering Physics

Test: III

USN:

Semester: II **Section:** D,E & F

Subject Name & Code: Engg.Physics & 18PHY22

Instructions

Duration: 60 minutes **Max. Marks:** 30

i) Select one question from each part.
ii) All main questions carry equal marks.

Question Number	Questions	Marks	CO	Levels
	PART – A			
1	a) State Hooke's law. Explain the nature of elasticity with the help of stress – strain diagram.	10	CO2	L2
	b) Define Young's modulus, Bulk modulus and Rigidity modulus.	5	CO2	L1
	OR			
2	a)Derive an expression for the Young's modulus Y of the material of a single cantilever.	10	CO2	L2
	b) What are torsional oscillations? Give the expression for time period of torsional oscillations. Mention the applications of torsional oscillations.	5	CO2	L1
	PART – B			
3	a) What is meant by Fermi energy & Fermi factor? Derive the expression for electrical conductivity in intrinsic semiconductor.	10	CO5	L2
	b) b) A body of mass 500gm is attached to a spring and the system is driven by an external periodic force of amplitude 15N and frequency 0.796Hz. The spring extends by a length of 88mm under the given load. Calculate the amplitude of oscillation, if the resistance coefficient of the medium is 5.05 kg/s. Ignore the mass of the spring.	5	CO1	L2
	OR			
4	a) What are forced oscillations? Give the theory of forced oscillations.	10	CO1	L2
	b) Find the relaxation time of conduction electrons in a metal of resistivity 1.54×10^{-8} Ωm. If the metal has 5.8×10^{28} conduction electrons per m^3	5	CO5	L3

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Karnataka (INDIA)

CBCS Scheme (Visvesvaraya Technological University)

DEPARTMENT: PHYSICS

Scheme & Solution Test – 03

Semester: Second **Subject Title: Engineering Physics** **Subject Code: 18PHY-22**

Question Number	Solution	Marks Allocated
	Part - A	
1 (a)	For statement of hooke's law → 02 stress-strain diagram → 02 Explanation for nature of elas-ticity → 06	(10)
(b)	Defination for young's modulus → 01 Defination for bulk modulus → 02 Defination for Rigidity modulus → 02	(05)
2 (a)	fig with explanation → 02 Bending moment = force × Perpendicular distance → 01 $\frac{1}{R} = \frac{d^2y}{dx^2}$, R → is the radius of the circle to which the bend beam → 01 $\frac{dy}{dx} = \frac{W}{4I_g}\left[Lx - \frac{x^2}{2}\right] + C_1$ → 02	

Question Number	Solution	Marks Allocated
	$y = \frac{w}{4 I_g}\left(\frac{Lx^2}{2} - \frac{x^3}{6}\right) + C_2$ → 02	
	$\boxed{y = \frac{WL^3}{3 y_0 I_g}}$ → 02	(10)
(b)	Defination for torsional oscillation → 02	
	$T = 2\pi \times \sqrt{\frac{I}{C}}$ → 01	
	Mention any two applications → 02	(05)
	Part-B	
3 (a)	Defination for fermi energy → 02	
	Defination for fermi factor → 02	
	current flowing through the semi-conductor, $I = \frac{Q}{t} = n_e e \cdot V_d \cdot A$ → 01	
	$J = (n_e \cdot e \mu_e) \cdot E$ → 01	
	Electrical conductivity due to e^-	
	$\sigma_e = n_e \cdot e \mu_e$ → 01	
	Electrical conductivity due to holes	
	$\sigma_h = p_h \cdot e \mu_h$ → 01	
	$\sigma_i = e(n_e \mu_e + p_h \mu_h)$ → 01	
	$\therefore \sigma_i = n_i e(\mu_e + \mu_h)$ → 01	(10)

Question Number	Solution	Marks Allocated
(b)	angular frequency of the applied force, $P = 2\pi\nu = 5$ rad/s	→ 01
	force constant $k = \frac{F}{x} = 55.68$ N/m	→ 01
	Natural frequency of the oscillation $\omega = \sqrt{\frac{k}{m}} = 10.55$ rad/s	→ 01
	Damping factor $b = \frac{\gamma}{2m} = 0.05$ rad/s	→ 01
	formula, $a = \frac{F/m}{\sqrt{(\omega^2 - p^2) + 4 \cdot b^2 p^2}} = 0.3$ m	→ 01
		(05)
4 (a)	Defination for forced oscillation	→ 02
	Theory of forced vibrations	→ 01
	Resultant force $= -\gamma \frac{dx}{dt} - kx + F \sin pt$ → Resultant force $= m \frac{d^2x}{dt^2}$ →	01
	$\frac{d^2x}{dt^2} + \frac{\gamma}{m}\frac{dx}{dt} + \frac{k}{m}x = \frac{F}{m}\sin(pt)$	→ 01
	$\frac{d^2x}{dt^2} + 2b\frac{dx}{dt} + \omega^2 x = \frac{F}{m}\sin(pt)$	→ 01

Question Number	Solution	Marks Allocated
	$x = a\sin(pt - \alpha)$ ⟶	01
	$\frac{d^2x}{dt^2} = -ap^2\sin(pt-\alpha)$ ⟶	
	$-ap^2\sin(pt-\alpha) + 2bap\cos(pt-\alpha) + \omega^2 a\sin(pt-\alpha) = \frac{F}{m}\sin pt$	→ 01 m
	$-ap^2 + a\omega^2 = \frac{F}{m}\cos\alpha$ ⟶	01
	$\left\{a = \frac{F/m}{\sqrt{4b^2p^2 + (\omega^2 - p^2)^2}}\right\}$ ⟶	01
		(10)
(b)	$\sigma = \frac{ne^2}{me}\cdot\tau$ ⟶	01
	$\frac{1}{\rho} = \frac{ne^2}{me}\cdot\tau$ ⟶	01
	$\tau = \frac{me}{\rho ne^2}$ ⟶	01
	$\tau = \frac{9.1\times10^{-31}}{1.54\times10^{-8}\times5.8\times10^{28}\times(1.6\times10^{-19})^2}$ →	01
	$\left\{\tau = 3.979\times10^{-14}\ \text{Sec}\right\}$ ⟶	01
		(05)

|| Jai Sri Gurudev||

B G S INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

Academic Year: 2019 – 2020 (EVEN SEM) **For the Period:** 15/04/2020 to 22/04/2020

Assignment I

Faculty Name: SHANKARA S R
Semester: II
Section: D, E AND F
Course Name: ENGINEERING PHYSICS
Course Code: 18PHY-22

Sl. No.	Questions	COs
1	Explain the following parameters. (i) Acceptance angle (ii) Numerical aperture (iii) V-Number (iv) RRID	3
2	Derive an expression for numerical aperture in terms of R.I of core & clad.	3
3	Explain the different types of Optical fiber with suitable diagram.	3
4	Explain the basics of point to point communication system.	3
5	Explain the spontaneous emission and stimulated emission process.	4
6	What are the requirements of the laser system?	4
7	Derive an Expression for energy density under the condition of thermal equilibrium in terms of Einstein's co-efficient.	4
8	Explain the construction and working function of CO_2 laser with energy level diagram.	4
9	Explain the construction and working function of semiconductor laser.	4
10	Explain the application of laser in industrial field.	4
11	State and explain Heisenberg's Uncertainty principle.	4
12	Show that electron cannot exist inside the nucleus of an atom using Heisenberg's Uncertainty principle.	4
13	Drive an expression for time independent Schrodinger wave equation in one dimensional motion.	4
14	Find the Eigen values and Eigen function for the particle in a one-dimensional potential well of infinite height.	4

Signature of Course Coordinator

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B G Nagar 57
Nagamangala Tq, Mandy
Karnataka INDIA

Signature of HOD

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Nagamangala Taiuk, Mandya District.

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B G S INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

Academic Year: 2019 – 2020 (EVEN SEM) For the Period: 20/05/2020 to 25/05/2020

Assignment II

Faculty Name: SHANKARA S R
Semester: II
Section: D E AND F
Course Name: ENGINEERING PHYSICS
Course Code: 18PHY-22

Sl. No.	Questions	COs
1	What are shock waves? Mention the applications of shock waves.	1
2	With a neat diagram explain the construction and working of Reddy shock tube.	1
3	What is mach number? Distinguish between acoustic, ultrasonic, subsonic and supersonic waves.	1
4	State the laws of conservation of mass, energy and momentum.	1
5	Define simple harmonic motion. Derive the differential equation for simple harmonic motion using Hooke's law.	1
6	What are damped oscillations? Give the theory of damped oscillations and hence discuss the case of critical damping.	1
7	Give the theory of forced vibrations and hence obtain the expression for amplitude.	1
8	Write short notes on (i) Damped oscillations (ii) Forced oscillations (iii) Resonance (iv) Sharpness of resonance (v) Quality factor.	1
9	Explain the failures of Classical free electron theory.	5
10	What is meant by Fermi energy and Fermi factor.	5
11	Discuss the variation of Fermi factor with energy at different temperature.	5
12	Derive the expression for Fermi energy at absolute Zero Kelvin.	5
13	What are dielectric materials. Give the relation between polarization & dielectric constant.	5
14	Derive the expression for Clausius-Mossotti equation.	5

Signature of Course Coordinator

Signature of HOD

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B G S INSTITUTE OF TECHNOLOGY

DEPARTMENT OF PHYSICS

Academic Year: 2019 – 2020 (EVEN SEM) **For the Period:** 16/06/2019 to 23/06/2019

Assignment III

Faculty Name: SHANKARA S R
Semester: II
Section: D,E&F
Course Name: ENGINEERING PHYSICS
Course Code: 18PHY-22

Sl. No.	Questions	COs
1	State Hooke's law. Explain different types of stress and strain.	2
2	Explain the nature of elasticity with the help of stress – strain diagram.	2
3	Define the different types of elasticity.	2
4	Define Poission's ratio.	2
5	Derive the relation between Y, η and σ where the symbols have their usual meaning.	2
6	Derive the relation between Young's modulus, Bulk modulus and Rigidity modulus.	2
7	Explain the neutral surface and neutral axis.	2
8	Define beam. Derive the expression for bending moment of a beam for a rectangular cross section.	2
9	What is meant by single cantilever? Derive the expression for Young's modulus for rectangular beam.	2
10	Give the expression for twisting couple acting on the entire solid cylinder and couple per unit twist. Explain each term.	2
11	What are torsional oscillations? Give the expression for time period of torsional oscillations. Mention the applications of torsional oscillations.	2

Signature of Course Coordinator

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BGS Institute of Technology
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Nagamangala Taiuk, Mandya District

Register Numbers for **Computer Science & Engineering** students of 2019-20 admissions

Sl No	Name	Register Number
1	ABHISHEK N S	19CSE001
2	AKASH K R	19CSE002
3	AKSHITHA K A	19CSE003
4	ANUSHA M S	19CSE004
5	ARBEENA KHANUM	19CSE005
6	BEERENDRA PRASAD N M	19CSE006
7	BHANUSHREE	19CSE007
8	CHAITHANYA S B	19CSE008
9	CHANDANA K	19CSE009
10	CHARAN M	19CSE010
11	CHETAN KUMAR S	19CSE011
12	CHITRASHREE N	19CSE012
13	DARSHAN B S	19CSE013
14	DARSHAN H R	19CSE014
15	DASHAMI H S	19CSE015
16	DEEPIKA M D	19CSE016
17	DHANUSH GOWDA K N	19CSE017
18	DHANUSH N RAO	19CSE018
19	DHANYASHREE H R	19CSE019
20	GAGAN P R	19CSE020
21	GAJENDRA SHETTY T U	19CSE021
22	GOWDA SAHANA KUMAR	19CSE022
23	GOWDA SANJAY KRISHNA	19CSE023
24	GOWTHAMI S	19CSE024
25	HARSHITHA B	19CSE025
26	HEMA H C	19CSE026
27	HEMAVATHI L N	19CSE027
28	INDUSHREE H S	19CSE028
29	JEEVAN P	19CSE029
30	KARTHIK M N	19CSE030
31	KAVANA K	19CSE031
32	KAVYA K J	19CSE032
33	KAVYA R S	19CSE033
34	KEERTHANA G R	19CSE034
35	KEERTHANA SARATHI S	19CSE035
36	KEERTHANA V	19CSE036
37	KIRAN F TAVARI	19CSE037
38	KOUSHIK A S	19CSE038
39	KRUTHIKA D Y	19CSE039
40	KUMARA A B	19CSE040
41	MAHALAKSHMI K S	19CSE041
42	MANOJ M R	19CSE042
43	MOHAMMED AZHAR	19CSE043

Register Numbers for **Computer Science & Engineering** students of 2019-20 admissions

Sl No	Name	Register Number
44	MONALISA M GOWDA	19CSE044
45	MONIKA G	19CSE045
46	MONISH T R	19CSE046
47	MUSKAAN MOHAMMADI	19CSE047
48	MUSKAAN SAHER	19CSE048
49	NAGASHREE C C	19CSE049
50	NANDAN GOWDA P	19CSE050
51	NAVYA D K	19CSE051
52	NAYANA R	19CSE052
53	NIKHIL G S	19CSE053
54	POOJA K V	19CSE054
55	POORNACHANDRA H C	19CSE055
56	PRAJWAL B N	19CSE056
57	PRAKRUTHI R	19CSE057
58	PRIYANKA H K	19CSE058
59	RACHANA K N	19CSE059
60	RAKSHITH N G	19CSE060
61	REVANTH N R	19CSE061
62	RUCHITHA M V	19CSE062
63	S V KIRAN SHETTALLI	19CSE063
64	SAGAR S R	19CSE064
65	SANGEETHA C K	19CSE065
66	SANIYA SABA	19CSE066
67	SATHVIK S A	19CSE067
68	SHIFA NAAZ R	19CSE068
69	SHRAVYA J M	19CSE069
70	SHUBHA KHADRI L	19CSE070
71	SINCHANA B P	19CSE071
72	SINCHANA C	19CSE072
73	SINDHUSHREE C N	19CSE073
74	SUHAS DEVANGA H K	19CSE074
75	SUMAN GOWDA K B	19CSE075
76	SUNIL R	19CSE076
77	SUSHEELKUMAR H S	19CSE077
78	SUVIN T S	19CSE078
79	TEJAS	19CSE079
80	THEJAS A	19CSE080
81	THEJASWINI K R	19CSE081
82	THRUPTHI M N	19CSE082
83	UMME HANI N	19CSE083
84	VARSHA H C	19CSE084
85	VARSHINI J	19CSE085
86	VIBHA B	19CSE086

Register Numbers for **Computer Science & Engineering** students of 2019-20 admissions

Sl No	Name	Register Number
87	VIDYA R GOWDA	19CSE087
88	VIDYASHREE M	19CSE088
89	VIJAY A S	19CSE089
90	YASHASWINI T P	19CSE090

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Registrar (Evaluation)

Register Numbers for **Mechanical Engineering** students of 2019-20 admissions

Sl No	Name	Register Number
1	AJAY A C	19MEE001
2	AKASH M	19MEE002
3	AKSHAY	19MEE003
4	BAHUGUNA V	19MEE004
5	DARSHAN B G	19MEE005
6	DEEPAK GOWDA M	19MEE006
7	GANESHCHAR B	19MEE007
8	JEEVITHA M T	19MEE008
9	KIRAN B	19MEE009
10	KIRAN GOWDA H K	19MEE010
11	LIKHITH S J	19MEE011
12	LOHITH K H	19MEE012
13	LOKESH N M	19MEE013
14	MADAN K N	19MEE014
15	MANJUNATH B	19MEE015
16	MANOJ P	19MEE016
17	MOHAMMED SHAHID PASHA	19MEE017
18	MOHANKUMAR G T	19MEE018
19	NAMITHGOWDA D R	19MEE019
20	NANDAN B S	19MEE020
21	NIKHILGOWDA H N	19MEE021
22	OMKAR A	19MEE022
23	PAVANKUMAR C G	19MEE023
24	RAKSHITH GOWDA G S	19MEE024
25	RAKSHITHGOWDA B	19MEE025
26	RAVIKUMAR C P	19MEE026
27	SHASHANK K R	19MEE027
28	SINCHANA ARADHYA S B	19MEE028
29	SUBRAMANIAN V	19MEE029
30	SUDEEP D C	19MEE030
31	SURAJPRASAD R	19MEE031
32	VARUN K S	19MEE032
33	VARUN M S	19MEE033
34	VINAY M	19MEE034

Registrar (Evaluation)

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||Jai Sri Gurudev||

Sri Adichunchanagiri Shikshana Trust ®

B.G.S. INSTITUTE OF TECHNOLOGY

PROCTOR DETAILS

SL NO	NAME OF THE STUDENT	USN	STUDENT	PARENTS	E - Mail ID
1	AISHWARYA T	19CVE001	6361642757	9964580612	aishnayak211@gmail.com
2	AJAY H.J	19CVE002	9740252964	9741533264	ajayg3162@gmail.com
3	ARUNKUMAR B.R	19CVE003	8747937968	9535147214	arunhunsuru@gmail.com
4	CHANDAN A.N	19CVE004	8431364797	9900569199	chandannagarajugowda@gmail.com
5	CHANDANA T R	19CVE005	6363598815	9483680142	rameshsughunacd@gmail.com
6	DARSHAN GOWDA R	19CVE006	9632437748	9448610048	darshangowda2129@gmail.com
7	DARSHAN M L	19CVE007	6360105185	9980204344	Darshandarshu419@gmail.com
8	DHANUSH P K	19CVE008	8970321962	8970321962	dhanushpk2002@gmail.com
9	DURGESH MASTAPPA NAIK	19CVE009	9113509810	7975319832	durgeshkodsul@gmail.com
10	FARHAN AHMED	19CVE010	8050536312	8197300598	sharifarhan0@gmail.com
11	GOUTHAM D G	19CVE011	9945976936	9663936246	teju7740@gmail.com
12	HARSHITH M GOWDA	19CVE012	6363065644	9164807585	hmgowda119@gmail.com
13	K R MAHENDRA	19CVE013	9900290776	7259651936	Chinnumahendra309@gmail.com
14	KAVANA B P	19CVE015	8105103438	8183037565	kavanabp2@gmail.com
15	KISHOR R	19CVE016	6363465567	9482454990	kishorrgowda.01@gmail.com

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|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

Sl No	Name	Register Number	Engg. Physics Result	Engg. Physics Lab Result
1	ABHISHEK N S	19CSE001	PASS	PASS
2	AKASH K R	19CSE002	PASS	PASS
3	AKSHITHA K A	19CSE003	PASS	PASS
4	ANUSHA M S	19CSE004	PASS	PASS
5	ARBEENA KHANUM	19CSE005	PASS	PASS
6	BEERENDRA PRASAD N M	19CSE006	PASS	PASS
7	BHANUSHREE	19CSE007	PASS	PASS
8	CHAITHANYA S B	19CSE008	PASS	PASS
9	CHANDANA K	19CSE009	PASS	PASS
10	CHARAN M	19CSE010	PASS	PASS
11	CHETAN KUMAR S	19CSE011	PASS	PASS
12	CHITRASHREE N	19CSE012	PASS	PASS
13	DARSHAN B S	19CSE013	PASS	PASS
14	DARSHAN H R	19CSE014	PASS	PASS
15	DASHAMI H S	19CSE015	PASS	PASS
16	DEEPIKA M D	19CSE016	PASS	PASS
17	DHANUSH GOWDA K N	19CSE017	PASS	PASS
18	DHANUSH N RAO	19CSE018	PASS	PASS
19	DHANYASHREE H R	19CSE019	PASS	PASS
20	GAGAN P R	19CSE020	PASS	PASS
21	GAJENDRA SHETTY T U	19CSE021	PASS	PASS
22	GOWDA SAHANA KUMAR	19CSE022	PASS	PASS
23	GOWDA SANJAY KRISHNA	19CSE023	PASS	PASS
24	GOWTHAMI S	19CSE024	PASS	PASS

25	HARSHITHA B	19CSE025	PASS	PASS
26	HEMA H C	19CSE026	PASS	PASS
27	HEMAVATHI L N	19CSE027	PASS	PASS
28	INDUSHREE H S	19CSE028	PASS	PASS
29	JEEVAN P	19CSE029	PASS	PASS
30	KARTHIK M N	19CSE030	PASS	PASS
31	KAVANA K	19CSE031	PASS	PASS
32	KAVYA K J	19CSE032	PASS	PASS
33	KAVYA R S	19CSE033	PASS	PASS
34	KEERTHANA G R	19CSE034	PASS	PASS
35	KEERTHANA SARATHI S	19CSE035	PASS	PASS
36	KEERTHANA V	19CSE036	PASS	PASS
37	KIRAN F TAVARI	19CSE037	PASS	PASS
38	KOUSHIK A S	19CSE038	PASS	PASS
39	KRUTHIKA D Y	19CSE039	PASS	PASS
40	KUMARA A B	19CSE040	PASS	PASS
41	MAHALAKSHMI K S	19CSE041	PASS	PASS
42	MANOJ M R	19CSE042	PASS	PASS
43	MOHAMMED AZHAR	19CSE043	PASS	PASS
44	MONALISA M GOWDA	19CSE044	PASS	PASS
45	MONIKA G	19CSE045	PASS	PASS
46	MONISH T R	19CSE046	PASS	PASS
47	MUSKAAN MOHAMMADI	19CSE047	PASS	PASS
48	MUSKAAN SAHER	19CSE048	PASS	PASS
49	NAGASHREE C C	19CSE049	PASS	PASS
50	NANDAN GOWDA P	19CSE050	PASS	PASS
51	NAVYA D K	19CSE051	PASS	PASS
52	NAYANA R	19CSE052	PASS	PASS
53	NIKHIL G S	19CSE053	PASS	PASS
54	POOJA K V	19CSE054	PASS	PASS

55	POORNACHANDRA H C	19CSE055	PASS	PASS
56	PRAJWAL B N	19CSE056	PASS	PASS
57	PRAKRUTHI R	19CSE057	PASS	PASS
58	PRIYANKA H K	19CSE058	PASS	PASS
59	RACHANA K N	19CSE059	PASS	PASS
60	RAKSHITH N G	19CSE060	PASS	PASS
61	REVANTH N R	19CSE061	PASS	PASS
62	RUCHITHA M V	19CSE062	PASS	PASS
63	S V KIRAN SHETTALLI	19CSE063	PASS	PASS
64	SAGAR S R	19CSE064	PASS	PASS
65	SANGEETHA C K	19CSE065	PASS	PASS
66	SANIYA SABA	19CSE066	PASS	PASS
67	SATHVIK S A	19CSE067	FAIL	PASS
68	SHIFA NAAZ R	19CSE068	PASS	PASS
69	SHRAVYA J M	19CSE069	PASS	PASS
70	SHUBHA KHADRI L	19CSE070	PASS	PASS

Total number of Student	70	70
Number of student Pass	70	70
Number of student Fail	NILL	NILL
Total Percentage	**100%**	**100%**

HOD
Dept. of Pre Engineering
BGS Institute of Technology
B.G. Nagara- 571448
Nagamangala Taluk, Mandya District

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

Sl No	Name	Register Number	Engg. Physics Result	Engg. Physics Lab Result
1	AJAY A C	19MEE001	PASS	PASS
2	AKASH M	19MEE002	PASS	PASS
3	AKSHAY	19MEE003	PASS	PASS
4	BAHUGUNA V	19MEE004	PASS	PASS
5	DARSHAN B G	19MEE005	PASS	PASS
6	DEEPAK GOWDA M	19MEE006	PASS	PASS
7	GANESHCHAR B	19MEE007	PASS	PASS
8	JEEVITHA M T	19MEE008	PASS	PASS
9	KIRAN B	19MEE009	PASS	PASS
10	KIRAN GOWDA H K	19MEE010	PASS	PASS
11	LIKHITH S J	19MEE011	PASS	PASS
12	LOHITH K H	19MEE012	PASS	PASS
13	LOKESH N M	19MEE013	PASS	PASS
14	MADAN K N	19MEE014	PASS	PASS
15	MANJUNATH B	19MEE015	PASS	PASS
16	MANOJ P	19MEE016	PASS	PASS
17	MOHAMMED SHAHID PASHA	19MEE017	PASS	PASS
18	MOHANKUMAR G T	19MEE018	PASS	PASS
19	NAMITHGOWDA D R	19MEE019	PASS	PASS
20	NANDAN B S	19MEE020	PASS	PASS
21	NIKHILGOWDA H N	19MEE021	PASS	PASS
22	OMKAR A	19MEE022	PASS	PASS
23	PAVANKUMAR C G	19MEE023	PASS	PASS
24	RAKSHITH GOWDA G S	19MEE024	PASS	PASS
25	RAKSHITHGOWDA B	19MEE025	PASS	PASS

26	RAVIKUMAR C P	19MEE026	**PASS**		**PASS**
27	SHASHANK K R	19MEE027	**PASS**		**PASS**
28	SINCHANA ARADHYA S B	19MEE028	**PASS**		**PASS**
29	SUBRAMANIAN V	19MEE029	**PASS**		**PASS**
30	SUDEEP D C	19MEE030	**PASS**		**PASS**
31	SURAJPRASAD R	19MEE031	**PASS**		**PASS**
32	VARUN K S	19MEE032	**PASS**		**PASS**
33	VARUN M S	19MEE033	**PASS**		**PASS**
34	VINAY M	19MEE034	**PASS**		**PASS**

Total number of Students	34	34
Number of students Pass	34	34
Number of students Fail	NILL	NILL
Total Percentage	**100%**	**100%**

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BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taluk, Mandya District

BGS Institute of Technology

BG Nagara, Karnataka-571448

BRANCH: Computer Science Engineering

Result Analysis

Sl. No.	Name of the Student	Register Number	18PHY-22	18PHYL-26
1	ABHISHEK N S	19CSE001	PASS	PASS
2	AKASH K.R	19CSE002	PASS	PASS
3	AKSHITHA K A	19CSE003	PASS	PASS
4	ANUSHA M S	19CSE004	PASS	PASS
5	ARBEENA KHANUM	19CSE005	PASS	PASS
6	BEERENDRA PRASAD N M	19CSE006	PASS	PASS
7	BHANUSHREE	19CSE007	PASS	PASS
8	CHAITHANYA S.B	19CSE008	PASS	PASS
9	CHANDANA K	19CSE009	PASS	PASS
10	CHARAN M	19CSE010	PASS	PASS
11	CHETAN KUMAR S	19CSE011	PASS	PASS
12	CHITRASHREE N	19CSE012	PASS	PASS
13	DARSHAN B.S	19CSE013	PASS	PASS
15	DASHAMI H S	19CSE015	PASS	PASS
16	DEEPIKA M D	19CSE016	PASS	PASS
18	DHANUSH N RAO	19CSE018	PASS	PASS
19	DHANYASHREE H.R	19CSE019	PASS	PASS
20	GAGAN P.R	19CSE020	PASS	PASS
21	GAJENDRA SHETTY T.U	19CSE021	PASS	PASS
22	GOWDA SAHANA KUMAR	19CSE022	PASS	PASS
23	GOWDA SANJAY KRISHNA	19CSE023	PASS	PASS
24	GOWTHAMI S	19CSE024	PASS	PASS
25	HARSHITHA B	19CSE025	PASS	PASS
26	HEMA H.C	19CSE026	PASS	PASS
27	HEMAVATHI L N	19CSE027	PASS	PASS
28	INDUSHREE H S	19CSE028	PASS	PASS
29	JEEVAN P	19CSE029	PASS	PASS
30	KARTHIK M N	19CSE030	PASS	PASS
31	KAVANA K	19CSE031	PASS	PASS
32	KAVYA K J	19CSE032	PASS	PASS
33	KAVYA R S	19CSE033	PASS	PASS
34	KEERTHANA G.R	19CSE034	PASS	PASS
35	KEERTHANA SARATHI S	19CSE035	PASS	PASS
36	KEERTHANA V	19CSE036	PASS	PASS
37	KIRAN F TAVARI	19CSE037	PASS	PASS
38	KIRAN SHETTALLI S.V	19CSE038	PASS	PASS
39	KOUSHIK A.S	19CSE039	PASS	PASS
40	KRUTHIKA D.Y	19CSE040	PASS	PASS
41	KUMARA A.B	19CSE041	PASS	PASS
42	MAHALAKSHMI K S	19CSE042	PASS	PASS
43	MANOJ M R	19CSE043	PASS	PASS

BGS Institute of Technology

BG Nagara, Karnataka-571448

BRANCH: Computer Science Engineering

Result Analysis

Sl. No.	Name of the Student	Register Number	18PHY-22		18PHYL-26
44	MOHAMMED AZHAR	19CSE044	PASS		PASS
45	MONALISA M GOWDA	19CSE045	PASS		PASS
46	MONIKA G	19CSE046	PASS		PASS
47	MONISH T R	19CSE047	PASS		PASS
48	MUSKAAN MOHAMMADI	19CSE048	PASS		PASS
49	MUSKAAN SAHER	19CSE049	PASS		PASS
50	NAGASHREE C C	19CSE050	PASS		PASS
51	NANDANGOWDA P	19CSE051	PASS		PASS
52	NAVYA D K	19CSE052	PASS		PASS
53	NIKHIL G S	19CSE053	PASS		PASS
54	POOJA K V	19CSE054	PASS		PASS
55	POORNACHANDRA H.C	19CSE055	PASS		PASS
56	PRAJWAL B.N	19CSE056	PASS		PASS
57	PRAKRUTHI R	19CSE057	PASS		PASS
58	PRIYANKA H K	19CSE058	PASS		PASS
59	RACHANA K.N	19CSE059	PASS		PASS
60	SHIFA NAAZ R	19CSE068	PASS		PASS
61	SUMAN GOWDA K B	19CSE075	PASS		PASS

Total Number of students	61		61
Number of students Pass	61		61
Number of students Fail	NILL		NILL
Total Percentage	100%		100%

HOD
Dept. of Pre Engineering
BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taluk, Mandya District.

BGS Institute of Technology

BG Nagara, Karnataka-571448

BRANCH: CSE / MECHANICAL

Result Analysis

Sl. NO	Name of the Student	Register Number	18PHY-22	18PHYL-26
1	AJAY A.C	19MEE001	PASS	PASS
2	AKASH M	19MEE002	PASS	PASS
3	AKSHAY	19MEE003	PASS	PASS
4	BAHUGUNA V	19MEE004	PASS	PASS
5	DARSHAN B.G	19MEE005	PASS	PASS
6	DEEPAK GOWDA M	19MEE006	PASS	PASS
7	GANESHCHAR B	19MEE007	PASS	PASS
8	JEEVITHA M T	19MEE008	PASS	PASS
9	KIRAN B	19MEE009	PASS	PASS
10	KIRAN GOWDA H K	19MEE010	PASS	PASS
11	LIKHITH S.J	19MEE011	PASS	PASS
12	LOHITH K.H	19MEE012	PASS	PASS
13	LOKESH N M	19MEE013	PASS	PASS
14	MADAN K.N	19MEE014	PASS	PASS
15	MANJUNATH B	19MEE015	PASS	PASS
16	MANOJ P	19MEE016	PASS	PASS
17	MOHAMMED SHAHID PA	19MEE017	PASS	PASS
18	MOHANKUMAR G.T	19MEE018	PASS	PASS
19	NAMITHGOWDA D R	19MEE019	PASS	PASS
20	NANDAN B S	19MEE020	PASS	PASS
21	NIKHIL GOWDA H N	19MEE021	PASS	PASS
22	OMKAR A	19MEE022	PASS	PASS
23	PAVANKUMAR C G	19MEE023	PASS	PASS
24	RAKSHITH GOWDA G S	19MEE024	PASS	PASS
25	RAKSHITHGOWDA B	19MEE025	PASS	PASS
26	RAVIKUMAR C.P	19MEE026	PASS	PASS
27	SHASHANK K R	19MEE027	PASS	PASS
28	SINCHANA ARADHYA S	19MEE028	PASS	PASS
29	SUBRAMANIAN V	19MEE029	PASS	PASS
30	SUDEEP D.C	19MEE030	PASS	PASS
31	SURAJPRASAD R	19MEE031	PASS	PASS
32	VARUN K.S	19MEE032	PASS	PASS
33	VARUN M S	19MEE033	PASS	PASS
34	VINAY M	19MEE034	PASS	PASS
35	NAYANA R	19CSE052	PASS	PASS
36	RAKSHITH N.G	19CSE060	PASS	PASS
37	REVANTH N.R	19CSE061	PASS	PASS
38	RUCHITHA M.V	19CSE062	PASS	PASS
39	SAGAR S.R	19CSE064	PASS	PASS
40	SANGEETHA C.K	19CSE065	PASS	PASS
41	SANIYA SABA	19CSE066	PASS	PASS
42	SATHVIK S A	19CSE067	PASS	PASS
43	SHRAVYA J.M	19CSE069	PASS	PASS
44	SHUBHA KHADRI L	19CSE070	PASS	PASS
45	SINCHANA B P	19CSE071	PASS	PASS
46	SINCHANA C	19CSE072	PASS	PASS
47	SINDHUSHREE C N	19CSE073	PASS	PASS
48	SUHAS DEVANGA H K	19CSE074	PASS	PASS
49	SUNIL R	19CSE076	PASS	PASS
50	SUSHEELKUMAR H S	19CSE077	PASS	PASS
51	SUVIN T.S	19CSE078	PASS	PASS
52	TEJAS	19CSE079	PASS	PASS
53	THEJAS A	19CSE080	PASS	PASS
54	THEJASWINI K.R	19CSE081	PASS	PASS

BGS Institute of Technology

BG Nagara, Karnataka-571448

BRANCH: CSE / MECHANICAL

Result Analysis

Sl. NO	Name of the Student	Register Number	18PHY-22	18PHYL-26
55	THRUPTHI M N	19CSE082	PASS	PASS
56	UMME HANI N	19CSE083	PASS	PASS
57	VARSHA H C	19CSE084	PASS	PASS
58	VARSHINI J	19CSE085	PASS	PASS
59	VIBHA B	19CSE086	PASS	PASS
60	VIDYA R GOWDA	19CSE087	PASS	PASS
61	VIDYASHREE M	19CSE088	PASS	PASS
62	VIJAY A S	19CSE089	PASS	PASS
63	YASHASWINI T P	19CSE090	PASS	PASS

Total Number of students	63	63
Number of students Pass	63	63
Number of students Fail	NILL	NILL
Total Percentage	100%	100%

HOD
Dept. of Pre Engineering
BGS Institute of Technology

||Jai Sri Gurudev||

BGS INSTITUTE OF TECHNOLOGY

BG Nagara –571448, Nagamangala Taluk

ACADEMIC AUDIT for the Academic year 2019-20	**(ODD/EVEN)**
Name of the Faculty with Designation	SHANKARA S.R. Asst. Professor
Course Name with code	① Engg. Physics & 18PHY-12 ② Engg. Physics Lab & 18PHYL-16

Sl. No.	Contents	Semester	
		Theory	Lab
1	Faculty profile		
2	Vision and Mission of the Institute, Department, ~~PEOs, PSOs~~, POs	✓	✓
3	Calendar of Events (University, Institute and Department)	✓	✓
4	Timetable (Class and Individual)	✓	✓
5	Syllabus copy, CO – PO – ~~PSO~~ Mapping (with justification)	✓	✓
6	Lesson Plan	✓	✓
7	Previous Year University QPs & Question Bank	✓	✓
8	Notes	✓	
9	Assignments	✓	
10	Assessment Tools & procedure for assessment of COs (IA Test, Assignment, Quizzes, SEE)	✓	
11	Innovative teaching methods	✓	
12	List of slow learners & remedial classes	✓	
13	Procter Details (for allotted students)	✓	
14	Report of guest lectures for the course if any		
15	Feedback report		
16	Course End Survey	✓	✓
17	CO attainment	✓	✓
18	Result Analysis	✓	✓
19	PO / ~~PSO~~ attainment	✓	✓
20	Review of attainment (course attainment)		

Faculty : SKeerkar

HOD :

Internal Auditor : Rank

External Auditor : Kiran

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Dept. of Pre Engineering
BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taiuk, Mandya District.

||Jai Sri Gurudev||

BGS Institute of Technology

Department of Engineering Physics

Academic year ~~2018-19~~ 2019-20 (ODD / EVEN) ✓	(For M.E. Programme)
Name of the Faculty with Designation	SHANKARA S.R. Asst. Professor
Course Name with code	Engg. Physics Theory & 18PHY12 - 202

Feed Back Report									No. of Students participated= 30	
Feedback Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Av. Rating	73%	78%	75%	76%	75%	76%	76%	77%	77%	78%
Overall Feedback										

Course End Survey						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Av. Rating	2.44	2.32	2.56	2.59	2.38	

CO Attainment						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Attainment	2.92	2.91	2.92	2.92	2.81	

PO / PSO Attainment														
PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Attainment	2.70	1.93	0.97											

Analysis of CO, PO/PSO Attainment [Review of attainment (course attainment)]

CO attainment is satisfactory

PO attainment is also satisfactory

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Dept. of Pre Engineering
BGS Institute of Technology
B G Nagara- 571448
N... Taluk. Mandya District.

||Jai Sri Gurudev||

BGS Institute of Technology

Department of Engineering Physics

Academic year ~~2018-19~~ 2019-20 ✓ (ODD / EVEN)	(For M.E. Programme)
Name of the Faculty with Designation	SHANKARA S.R. Asst. Professor
Course Name with code	Engg. Physics Lab & 18PHYL-26

Feed Back Report					No. of Students participated= 30					
Feedback Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Av. Rating	78%	75%	77%	75%	78%	78%	75%	78%	75%	78%
Overall Feedback										

Course End Survey						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Av. Rating	2.50	2.38	2.53	2.47	2.44	2.56

CO Attainment						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Attainment	2.70	2.68	2.70	2.69	2.69	2.70

PO / PSO Attainment														
PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Attainment	2.69	1.05	0.9		0.9	0.9			0.9					

Analysis of CO, PO/PSO Attainment [Review of attainment (course attainment)]

CO. attainment is satisfactory

PO. attainment is also satisfactory

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Dept. of Pre Engineering
BGS Institute of Technology
B.G Nagara- 571448

||Jai Sri Gurudev||

BGS Institute of Technology

Department of Engineering Physics

Academic year ~~2018-19~~ 2019-20 ✓ (ODD / EVEN)	(For C.S. Programme)
Name of the Faculty with Designation	SHANKARA S.R. Asst. Professor
Course Name with code	Engg. Physics Lab & 18PHYL-26

Feed Back Report	No. of Students participated= 30									
Feedback Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Av. Rating	78 %	75 %	77 %	75 %	78 %	78 %	75 %	78 %	75 %	78 %
Overall Feedback										

Course End Survey						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Av. Rating	2.62	2.41	2.56	2.44	2.62	2.50

CO Attainment						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Attainment	2.82	2.79	2.81	2.80	2.82	2.80

PO / PSO Attainment														
PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Attainment	3	1.17	1		1	1			1					

Analysis of CO, PO/PSO Attainment [Review of attainment (course attainment)]

CO, attainment is satisfactory

PO, attainment is also satisfactory

HOD
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BGS Institute of Technology
Nagara- 571 448
District.

||Jai Sri Gurudev||

BGS Institute of Technology

Department of Engineering Physics

Academic year ~~2018-19~~ 2019-20 (ODD / EVEN) ✓	(C.C.S. Programme)
Name of the Faculty with Designation	SHANKARA S.R. Asst. Professor
Course Name with code	Engg. Physics Theory & 18PHY-22

Feed Back Report	No. of Students participated= 30									
Feedback Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Av. Rating	74%	78%	75%	76%	74%	77%	76%	78%	76%	78%
Overall Feedback										

Course End Survey						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Av. Rating	2.56	2.66	2.53	2.49	2.58	

CO Attainment						
CO's	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Attainment	2.93	2.95	2.94	2.94	2.95	

PO / PSO Attainment														
PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Attainment	2.75	1.96	0.98											

Analysis of CO, PO/PSO Attainment [Review of attainment (course attainment)]

CO attainment is satisfactory
PO attainment is also satisfactory

HOD
Dept. of Pre Engineering
BGS Institute of Technology
B G Nagara- 571448

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO Attainment (18 Scheme)

rse Code	Course Name	Staff Name	Academic Year	Sem	Programme
18PHY22	Engineering Physics	SHANKARA S R	2019	II	B.E/CS

Course Outcome	60%	30%	10%	
	CIE	SEE	CES	TOTAL
CO1	2.97	2.97	2.56	2.93
CO2	2.99	2.97	2.66	2.95
CO3	3.0	2.97	2.53	2.94
CO4	3.0	2.97	2.49	2.94
CO5	3.0	2.97	2.58	2.95

	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18C102.1	2.93	3	2										
18C102.2	2.95	2	2	1									
18C102.3	2.94	3	2										
18C102.4	2.94	3	2										
18C102.5	2.95	3	2										
SUM		**14**	**10**	**1**									
AVG		**2.8**	**2**	**1**									
Weighted Sum		**41.18**	**29.42**	**2.95**									
PO Attainment		**2.75**	**1.96**	**0.98**									

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

Course Coordinator

HOD

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Dept. of Pre Engineering
BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taluk, Mandya District.

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO Attainment (18 Scheme)

Course Code	Course Name	Staff Name	Academic Year	Sem	Programme
18PHY22	Engineering Physics	SHANKARA S R	2019	II	B.E/ME

Course Outcome	60%	30%	10%	
	CIE	SEE	CES	TOTAL
CO1	2.99	2.94	2.44	2.92
CO2	2.99	2.94	2.32	2.91
CO3	2.97	2.94	2.56	2.92
CO4	2.96	2.94	2.59	2.92
CO5	2.81	2.94	2.38	2.81

	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18C102.1	2.92	3	2										
18C102.2	2.91	2	2	1									
18C102.3	2.92	3	2										
18C102.4	2.92	3	2										
18C102.5	2.81	3	2										
SUM		14	10	1									
AVG		2.8	2	1									
Weighted Sum		40.53	28.96	2.91									
PO Attainment		2.70	1.93	0.97									

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

Course Coordinator

HOD

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BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taiuk, Mandya District.

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Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO Attainment (18 Scheme)

Course Code	Course Name	Staff Name	Academic Year	Sem	Programme
18PHYL26	Engineering Physics Lab	SHANKARA S R	2019	II	B.E/CS

Course Outcome	60%	30%	10%	
	CIE	SEE	CES	TOTAL
CO1	3.0	2.51	2.62	2.82
CO2	3.0	2.51	2.41	2.79
CO3	3.0	2.51	2.56	2.81
CO4	3.0	2.51	2.44	2.80
CO5	3.0	2.51	2.62	2.82
CO6	3.0	2.51	2.50	2.80

CO	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18C102.1	2.82	3	1							1			
18C102.2	2.79	3	1							1			
18C102.3	2.81	3	1							1			
18C102.4	2.80	3	1							1			
18C102.5	2.82	3	1							1			
18C102.6	2.80	3	2	1		1	1			1			
SUM		15	7	1		1	1			6			
AVG		3	1.17	1		1	1			1			
Weighted Sum		50.52	19.64	2.8		2.8	2.8			16.84			
PO Attainment		2.81	1.09	0.93		0.93	0.93			0.93			

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

Course Coordinator

HOD

HOD

Dept. of Pre Engineering
BGS Institute of Technology
B G Nagara- 571448
Nagamangala Taluk, Mandya District.

|| Jai Sri Gurudev ||

Adichunchanagiri Shikshana Trust (R)

BGS INSTITUTE OF TECHNOLOGY

Department of Engineering Physics

CO-PO Attainment (18 Scheme)

Course Code	Course Name	Staff Name	Academic Year	Sem	Programme
18PHYL26	Engineering Physics Lab	SHANKARA S R	2019	II	B.E/ME

Course Outcome	60%	30%	10%	
	CIE	SEE	CES	TOTAL
CO1	3.0	2.15	2.50	2.70
CO2	3.0	2.15	2.38	2.68
CO3	3.0	2.15	2.53	2.70
CO4	3.0	2.15	2.47	2.69
CO5	3.0	2.15	2.44	2.69
CO6	3.0	2.15	2.56	2.70

	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
18C102.1	2.70	3	1							1			
18C102.2	2.68	3	1							1			
18C102.3	2.70	3	1							1			
18C102.4	2.69	3	1							1			
18C102.5	2.69	3	1							1			
18C102.6	2.70	3	2	1		1	1			1			
SUM		**15**	**7**	**1**		**1**	**1**			**6**			
AVG		**3**	**1.17**	**1**		**1**	**1**			**1**			
Weighted Sum		**48.48**	**18.86**										
PO Attainment		**2.69**	**1.05**	**0.9**		**0.9**	**0.9**			**0.9**			

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution

Course Coordinator

HOD

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