BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT
YELAHANKA – BENGALURU - 64

DEPARTMENT OF PHYSICS

COURSE FILE

SEMESTER **II**

COURSE NAME **: Engineering Physics**

COURSE CODE **: 18PHY26**

COURSE COORDINATOR **: Dr. RL, YAS, DN, CK, KRA, DB and BRB**

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BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT

Avalahalli, Yelahanka, Bengaluru-560 064

DEPARTMENT OF PHYSICS

CALENDAR OF EVENTS

Calendar of events for the academic session 19th May 2021 to 30th September 2021 (Even semester)

Week No.	Month	Day						No. of Working days	Activities
		Mon	Tue	Wed	Thu	Fri	Sat		
1.	May	-	-	19	20	21	22	04	**19th – Commencement of odd semester**
2.	May	24	25	26	27	28	29	06	
3.	May/June	31	1	2	3	4	5	06	
4.	June	7	8	9	**10 AM**	11	12	06	**10th – Academic monitoring I**
5.	June	14	15	16	17	18	19	06	
6.	June	21	22	23	**24 DM**	25	26	06	
7.	June/July	**28 T_1**	**29 T_1**	**30 T_1**	1	2	3	06	**28th, 29th & 30th : First IA test**
8.	July	**5 AM**	6	7	8	9	10	06	**5th – Academic monitoring II**
9.	July	12	13	14	15	16	17	06	
10.	July	19	20	**21 H**	**22 AM**	**23 DM**	24	05	**21st - Bakrid** **22nd – Academic monitoring III**
11.	July	26	27	28	29	30	31	06	
12.	August	**2 T_2**	**3 T_2**	**4 T_2**	5	6	7	06	**2nd , 3rd & 4th : Second IA test**
13.	August	9	10	11	12	13	14	06	
14.	August	16	17	18	**19 AM**	**20 H**	21	05	**19th – Academic monitoring IV** **20th - Moharam**
15.	August	23	24	25	26	**27 IT**	28	06	
16.	Aug./Sept.	30	31	1	**2 AM**	3	**4 DM**	06	**2nd – Academic monitoring V**
17.	September	**6 T_3**	**7 T_3**	**8 T_3**	9	**10 H**	11	05	**6th , 7th & 8th : Third IA test** **10th – Ganesh chaturthi**
18.	September	13	14	15	16	17	18	06	
19.	September	20	21	22	23	24	25	06	
20.	September	27	28	29	**30 LWD**			04	

H : Holiday PTM : Parents teachers meet IT: Invited Talk DM: Department meeting

T1 : First test T2 : Second test T3 : Third test LWD : Last working day

Total No. of Working Days = 113

COUSE DESIGN, DELIVERY AND ASSESSMENT

Course code and title: 18PHY12	Course Credits: **(3:2:0) 3**
CIE: **40 Marks**	SEE: **100 Marks**
No. of Theory hours: **50**	Lab support: As Necessary
Prepared by: **Dr. R. LOKESH**	
Reviewed by:	

Course Preamble:

Prerequisites: None

Course Objectives:

- To impart knowledge in basic concepts of oscillations & waves, lasers, quantum mechanics, fiber optics and Electromagnetic waves.
- To categorize the materials based on elastic, electrical and structural properties.
- To familiarize the applications of elastic materials, electromagnetic waves, shockwaves, lasers, optical fibers, Magnetic materials and conducting materials relevant to engineering branches.

Syllabus/Course contents

Module-1 Oscillations and Waves **10hr**

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-2Elastic properties of materials **10hr**

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 and p. Relation between, n and, Limits of Poisson's ratio.

Bending of beams: Neutral surface and neutral plane, Derivation of expression for bending moment. 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 Maxwell's equations, EM waves and Optical fibers **10hr**

Maxwell's equations: Fundamentals of vector calculus. Divergence and curl of electric field and magnetic field (static), Gauss 'divergence theorem and Stokes' theorem. Description of laws of electrostatics, magnetism and Faraday's laws of EMI. Current density & equation of Continuity; displacement current (with derivation) Maxwell's equations in vacuum.
EM Waves: The wave equation in differential form in free space (Derivation of the equation using Maxwell's equations), Plane electromagnetic waves in vacuum, their transverse nature, polarization of EM waves (Qualitative).
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. Merits and demerits Numerical problems.

Module-4 Quantum Mechanics and Lasers **10hr**

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 col and semiconductor Lasers. Application of Lasers in Defense (Laser range finder) and Engineering (Data storage). Numerical problems

Module-5 Material science **10hr**

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 (only mention the expression), Conductivity of semiconductors (derivation), Hall Effect, Expression for Hall coefficient (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. Application of dielectrics in transformers. Numerical problems.

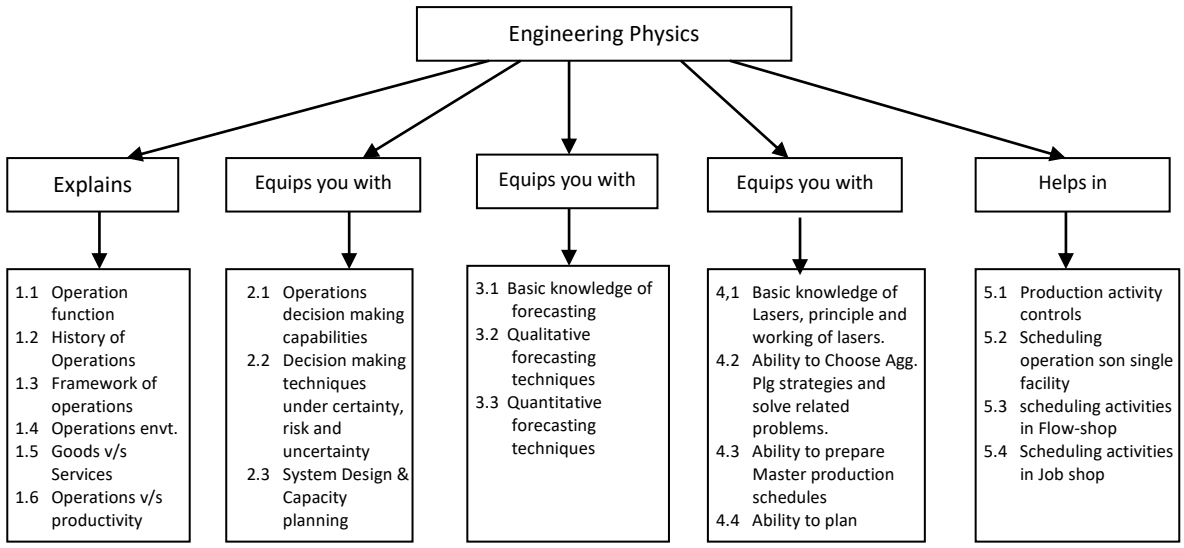
Text Books:

1. A Text book of Engineering Physics- M.N. Avadhanulu and P.G. Kshirsagar, 10th revised Ed, S. Chand & Company Ltd, New Delhi.
2. Engineering Physics-Gaur and Gupta-Dhanpat Rai Publications-2017.
3. Concepts of Modern Physics-Arthur Beiser: 6 th Ed; Tata McGraw Hill Edu. Pvt. Ltd - New Delhi 2006.

Reference Books:

1. Introduction to Mechanics — MK Verma: 2nd Ed, University Press (India) Pvt. Ltd. and Hyderabad 2009
2. Lasers and Non Linear Optics – BB laud, 3rd Ed, New Age International Publishers 2011.
3. Solid State Physics-S O Pillai, 8th Ed- New Age International Publishers-2018
4. Shock waves made simple- Chintoo S Kumar, K Takayama and KPJ Reddy: Willey India Pvt. Ltd. New Delhi2014
5. Introduction to Electrodynamics- David Griffiths: 4th Ed, Cambridge University Press 2017

Concept Map:



Course Contents and Lecture Schedule:

Lesson/ Session No.	Topics	No. of Hours
	MODULE-I	
1.	**1.1Free Oscillations:** Definition of SHM, Characteristics, Examples and Derivation of differential equation of motion for SHM starting from Hookes' law and mention its solution.	1
2.	Mechanical simple harmonic oscillator: Mass suspended to spring (vertical vibrations) - Description, Mention of Expression for time period/frequency, Definition of force constant and its significance	1
3.	Complex notation of simple harmonic motion, Phasor representation of simple harmonic motion. Definition of free oscillations with examples, mention the equation of motion, Natural frequency of vibration – Qualitative discussion.	1
4.	**1.2 Damped oscillations:** Definition with examples. Derivation of decaying amplitude. Discussion of 3 cases- over damping, critical damping and underdamping. Quality factor: Definition, equation and its significance.	1
5.	Numerical problems on T, f and k natural frequency, Numerical problems on damping and quality factor.	1
6.	**1.3 Forced oscillations:** Definition with examples. Derivation of expressions for amplitude and phase of forced vibrations Discussion of 3 cases (i) $p<<\omega$, (ii) $p=\omega$ and (iii) $p>>\omega$ Resonance: Definition, Examples, Condition for resonance and expression for maximum amplitude.	1
7.	Sharpness of Resonance: Definition and significance, mention the effect of damping on sharpness of resonance. Qualitative discussion of Examples of Resonance: Helmholtz Resonator- Description and mention of expression for resonant frequency. Numerical problems on Mach number, damping and quality factor.	1
8.	**1.4 Shock waves:** Definition of Mach number, classification of objects based on Mach number (subsonic, supersonic, Transonic and hypersonic)	1
9.	Definition and properties of shock waves control volume, Laws of conservation of mass, energy and momentum- Statement and equations.	1
10.	Construction and working of Reddy shock tube Applications of shock waves: Qualitative - 5 applications.	1
	MODULE-II	
11.	**2.1 Elasticity:** Explanation of elasticity and plasticity. Concept of stress and strain. Discussion on two types of stresses namely tensile stress and compressive stress.	1
12.	Brief discussion on the effect of stress, temperature, annealing and impurities on elasticity. Strain hardening and softening. State and explain Hookes' law, stress strain curve, elastic and plastic limits.	1
13.	Elastic modulus, definition of three different elastic moduli. Equations for each modulus like & so on. Numerical problems.	1
14.	**2.2 Poisson's ratio:** Definition of lateral strain and linear strain and hence Poisson's ratio $\sigma=\beta/\alpha$. Relation between shear strain, longitudinal and compression strain. Discussion on the limiting values of σ and limitations of Poisson's ratio.	1

15.	Derive the relation between Y, η and σ , Derive the relation between K, Y and σ, Derive the relation between K, η and Y.	1
16.	**2.3 Bending of beams:** Definition of beams, different types of beams and mention their Engineering applications. Definition of neutral surface/plane and neutral axis. Definition of bending moment. Derivation: the expression for bending moment in terms of moment of inertia. Expression for bending moment for circular and rectangular cross sections.	1
17.	Description: single cantilever and hence to derive the expression for Y for rectangular beam.	1
18.	Numerical problems on bending moment, single cantilever. Numerical problems on Y, η and K	1
19.	**2.4 Torsion of a cylinder:** Twisting couple on cylindrical wire, explain torsional oscillations, derive the expression for couple per unit twist for a solid cylinder. Mention the expression for Time period of torsional oscillations$T = 2\pi\sqrt{I_g/C}$.	1
20.	Brief explanation of applications of torsional pendulum. Numerical problems.	1
	Module III	
21.	**3.1 Maxwell's equations**: Fundamentals of vector calculus: Briefly explain scalar product, vector product, ∇ operation, concept of divergence, gradient and curl along with physical significance and examples like Div and curl of E and B.	1
22.	Discuss the three different types of integrations viz linear, surface and volume integrations. Derivation of Gauss divergence theorem, mention Stokes' theorem	1
23.	Explain briefly Gauss flux theorem in electrostatics and magnetism, Ampere's law, Biot-Savart's law and Faraday's laws of electromagnetic induction. Discuss continuity equation, definition of displacement current (Id), expression for displacement current, Maxwell Ampere's law.	1
24.	List of four Maxwell's equations in differential form and in vacuum. **3.2 EM Waves**: Derive wave equation in terms of electric field using Maxwell's equations.	1
25.	Mention of plane electromagnetic waves in vacuum along with the equations for E, B and c in terms of μ0 and ε0 and E and B. Explain the transverse nature of electromagnetic waves, three types of polarization namely linear, elliptical and circular polarization of E.	1
26.	Numerical problems	1
27.	**3.3 Optical fiber:** Description of propagation mechanism of light through an optical fiber. Angle of acceptance and numerical aperture(NA): Theory with condition for propagation	1
28.	Modes of propagation and V number and types of optical fibers (qualitative). Attenuation: Definition of attenuation, name the three types of attenuation, Causes of attenuation: Explain absorption, scattering and radiation losses. Mention the expression for attenuation coefficient	1
29.	Application of optical fiber: Point to point communication: Explain with the help of block diagram. Merits and de merits of optical fiber communication.	1
30.	Numerical problems.	1
	Module IV	

31.	**4.1 Quantum Mechanics:** Introduction to need of Quantum mechanics with a discussion of Planck's equation for energy density. Wave nature of particles–De Broglie hypothesis followed by wavelength equations, extended to accelerated electron.	1
32.	Heisenberg's uncertainty principle-Statement and mention the three uncertainty relations. Applications of uncertainty principle- to show the non-confinement of electrons in the nucleus (by considering diameter of nucleus).	1
33.	Schrodinger's time independent wave equation –Setting up of Schrodinger's time independent wave equation using ψ=Ae i(kx-wt). Significance of Wave function –qualitative statement regarding wave function, Probability density, Max born interpretation, Normalization, and Properties of wave function.	1
34.	Application Schrodinger's wave equation to particle in 1-D potential well of infinite height and obtain the energy Eigen values and Eigen functions. Probability densities.	1
35.	Numerical problems.	1
36.	**4.2 Laser**: Brief discussion of spontaneous and stimulated processes – Explanation of the process of induced absorption, spontaneous and stimulated emission. Einstein's coefficients (expression for energy density) – derivation of energy density in terms of Einstein's co efficients.	1
37.	Requisites of a Laser system – a brief explanation about active medium, resonant cavity and exciting system. Conditions for laser action-To explain population inversion and meta stable state	1
38.	Principle: mention different modes of vibrations of CO2 , explain construction and working of CO2 laser with energy level diagram experimental setup	1
39.	Principle, Construction and working of semiconductor Lasers – Explain principle, construction and working of homo junction semiconductor laser with energy level diagram and experimental setup. Application of Lasers in Defense (Laser range finder) – qualitative explanation about application of laser as laser range finder	1
40.	Application of Lasers in Engineering (Data storage) - qualitative explanation about application of laser in data storage (compact disc, DVD). Numerical problems.	1
Module V		
41	**5.1 Quantum free electron theory:** Review of classical free electron theory (just mention who proposed it and what for it was proposed), mention the expressions for electrical conductivity based on classical free electron theory, and explain the failures of classical free electron theory. Assumptions of quantum free electron theory, definition of density of states and mention the expression for density of states (No derivation).	**1**
42	Qualitative discussion of Fermi level, Fermi energy, Fermi-Dirac statistics, Fermi factor, Fermi factor at different temperatures (3 cases).	**1**
43	Derivation of the expression for Fermi energy at zero Kelvin. Mention the expression Fermi velocity and Fermi temperature. Expression for electrical conductivity in terms of Fermi velocity, mean free path and effective mass (No derivation).	**1**
44	Success of quantum free electron theory (in terms of relation between conductivity and temperature, and relation between conductivity and free electron density, with specific examples) **5.2 Semiconductors:** Fundamentals of semiconductor. Description of Fermi level in intrinsic semiconductor.	**1**
45	Mention of expression for electron and hole concentration in intrinsic	**1**

	semiconductors. Derivation of relation between Fermi energy and energy gap for an intrinsic semiconductor.	
46	Derivation of the expression for electrical conductivity of semiconductors, Explanation of Hall effect with Hall voltage and Hall field, derivation of the expression for Hall coefficient.	**1**
47	**5.3 Dielectrics:** Fundamentals of dielectrics. Polarization, mention the relation between dielectric constant and polarization. Types of polarization. Polar and non-polar dielectrics.	**1**
48	Definition of internal field in case of solids and mention of its expression for one dimensional case. Mention the expressions for internal field for three dimensional cases and Lorentz field. Derivation of Clausius-Mossotti equation.	**1**
49	Description of solid, liquid and gaseous dielectrics with one example each. Qualitative explanation of applications of dielectrics in transformers.	**1**
50	**Numerical problems**	**1**
	Total number of classes	**50**

Course Delivery:

Online class using Google Meet, Chalk & Black board, Student's presentation and interaction, Demonstration, PPT presentation and videos presentation.

Course Outcomes:

CO1: Understand the basics of Fluid mechanics, oscillation, and elasticity and to apply these principles to solve engineering problems.

CO 2: Understand the fundamentals of solid-state physics, Electromagnetic waves and quantum physics and to apply these principles to solve engineering problems.

CO 3: Explain the applications of solid-state physics, quantum physics in the field of engineering

CO 4: Identify potential fields to develop the related technology.

Bloom's Taxonomy:

Remembering (K1)	Understanding (K2)	Applying (K3)	Analyzing (K4)	Evaluating (K5)	Creating (K6)

Mapping Course Outcomes with Program Outcomes:

Course Outcomes	Program Outcomes												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3														
2	3														
3	3														
4	3			1											

Assessment of Course Outcomes:

	What		Frequency	Max Marks	Evidence collected	Course Outcomes
Direct Assessment Methods	CIE	Internal assessment tests	Thrice (Average of all the three tests will be considered)	30	Blue books	1, 2, 3 & 4
		Class-room open book assignment	Twice (Average of the two will be considered)	06	Assignment reports	1&2
		Surprise quiz	One during the course	04	Quiz answers	1,2 & 3
	SEE	Standard examination covering full syllabus	Once at the End of course	60	Conducted by VTU	1, 2 and 3
Indirect Assessment Methods	Students feedback about the Delivery of the course		Twice during the course	-	Feedback reports	1, 2 and 3
	End of course survey (On Course contents, Quality of Delivery and Assessment methods)		Once at the End of course	-	Response through Questionnaire	1, 2 and 3

Course Evaluation:

Questions for CIE and SEE will be designed to evaluate cognitive skills the various educational levels (Bloom's taxonomy) such as:

Sl. No.	Bloom's category	Test 1	Test 2	Test 3	SEE
1.	Remember	40	40	40	
2.	Understand	20	20	20	
3.	Apply	20	20	20	
4.	Analyze	20	20	20	
5.	Evaluate	0	0	0	
6.	Create	0	0	0	

Sample Question Paper for IA/Test 1

BMS Institute of Technology and Management

(Affiliated to VTU, Belagavi)

Department of PHYSICS
UG Program

Term:	**Course: Engineering Physics**	**Course Code:** 18PHY12
CIE: Test I	**Sem:** II	**Section:** K
Max Marks: 50	**Date of Exam:**	**Time:** 1.5 Hr .
Course Faculty:	**Signature:**	

Portions for the IA/Test:

Module-1 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 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 and p. Relation between, n and, Limits of Poisson's ratio. Numerical problems.

Course Outcomes to be assessed in this Internal Assessment:

CO1: Understand the basics of Fluid mechanics, oscillation, and elasticity and to apply these principles to solve engineering problems.

CO 4: Identify potential fields to develop the related technology.

FIRST I.A. QUESTION PAPER (SAMPLE)

Qn. No.		PART A	Marks	CO's &RBT levels
1.	(a)	Define Spring constant. Mention the factors on which spring constant of a spring depends. Two Springs of different spring constants K1, K2 are connected in series, obtain the expression for equivalent spring constant.	6 M	CO: 1 K:1 & 2
	(b)	A mass of 2 Kg suspended by a spring of force constant 51.26 N/m is executing damped SHM with damping of 5Kg/S. Identify to which case of damping oscillations it belongs. Also find the value of damping required for the oscillations to be critically damped. Ignore the mass of spring.	4M	CO: 1 K:4
		OR		
2.	(a)	Give the theory of forced oscillation of a mechanical oscillator and arrive at the expression for displacement of the oscillator executing forced oscillator.	6 M	CO: 1 K:1
	(b)	The distance between the two pressure sensors in shock tube is 100 mm. If time taken by a shock to travel this distance is 195 μs, find the Mach number of the shock wave. What should be the speed of the shock wave if it belongs to Hypersonic wave? Given speed of sound is 340 m/s.	4M	CO: 1 K:4
3.	(a)	State and explain Hooke's law and write a note on different types of moduli of elasticity.	6 M	CO: 1 K:1
	(b)	A rod of cross-sectional area 1cm^2 is rigidly clamped in to ground vertically. A string which can withstand a maximum tension of 2.5 kg is tied to the upper end of the rod and is pulled horizontally. If the length of the rod from ground level is 2 m, calculate the depression produced in the rod just before the sting breaks. Given young's modulus of the material of the rod is 2 x 10^{11} N/m^2.	4M	CO: 1 K:4
		OR		
4.	(a)	A solid cylindrical rod is sheared by its lower end. Obtain the expression for couple per unit twist produced inside the cylinder.	6 M	CO: 1 K:1
	(b)	A metallic disc of 1.5 kg and diameter 10 cm is suspended horizontally by a vertical wire of length 30 cm and diameter 1.5 mm from its center. If this system executes 20 oscillations in 30 seconds, calculate the rigidity modulus of the material of the suspension wire.	4M	CO: 1 K:4
5.	(a)	Distinguish between subsonic and supersonic waves. Mention any four properties of shock waves.	6 M	CO:1 K:1&2
	(b)	A body executes SHM such that its velocity at the mean position is 1m/s and acceleration at one of the extreme position is 1.57 m/s^2. Determine its frequency of oscillation.	4M	CO:1 K:4
		OR		
6.	(a)	An elastic material of cube of unit length is stretched equally from all its direction. Obtain the relation between the bulk modulus of the cube and its Poisson's ratio.	6 M	CO:1 K:1
	(b)	An elastic solid sphere of radius 10.3 cm is subjected to a normal pressure 10 N/m^2 acting all over the surface. Find the percentage change in volume of the sphere. Given bulk modulus of the material of the sphere is 4.58 x$10^{10}$$N/m^2$.	4M	CO:1 K:4
		PART B **Innovative question**		
7.	(a)	Identify any five different types of beams used in real applications. Give examples for each type.	5 M	CO: 3 K:2
	(b)	In a swimming pool, the diving board having young's modulus 1.598 x 10^{10} N/m^2, length 3 m is pivoted to a rigid support such that	5M	CO: 3

<table>
<tr><td></td><td></td><td>distance between the fulcrum and its free end of the board is 2.5 m. The breadth and thickness of the board are 300 mm 50 mm respectively. Three divers I, II and III each of 60 kg, jumps by standing at distances 1.5 m, 2.0 m and 2.5 m from the fulcrum end. Find which one will reach maximum height during diving. Justify your answer with suitable calculation.</td><td></td><td>K:3&4</td></tr>
<tr><td></td><td></td><td colspan="2">Case Study Question</td><td></td></tr>
<tr><td>8.</td><td></td><td>In the construction of a suspension type bridge four different materials are provided with following elastic constants.
<table>
<tr><th>Material</th><th>Young's modulus 10^{10} (N/m^2)</th><th>Rigidity modulus 10^{10} (N/m^2)</th></tr>
<tr><td>1</td><td>7</td><td>3</td></tr>
<tr><td>2</td><td>11</td><td>4.2</td></tr>
<tr><td>3</td><td>9.1</td><td>7</td></tr>
<tr><td>4</td><td>20</td><td>6</td></tr>
</table>
Choose the best material with the help of poisons ratio, among the four for the construction of the bridges and explain with proper reasoning.</td><td>10 M</td><td>CO:3
K:3&4</td></tr>
</table>

BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT

Yelahanka, Bengluru-64.

DEPARTMENT OF PHYSICS

Resources: Teaching and Learning

Sl.No.	Content
1.	YouTube links
2.	Sample Question paper
3.	VTU Question Paper
3.	Quiz Question paper
4.	Assignments
5.	Tutorial sheets

1. **Vector Calculus for Maxwells equations:**

https://www.youtube.com/watch?v=weARzt7Z_04

2. **Optical Fibers:**

https://www.youtube.com/watch?v=i2dZc-t1fDA

3. **LASERS:**

https://www.youtube.com/watch?v=rgvww-Zk9cI

4. **Elastic Properties of Materials:**

https://www.youtube.com/watch?v=YcXiIShVuq4

5. **Bending of beams:**

https://www.youtube.com/watch?v=jLstOAws1iI

6. **Department YouTube Channel link: Theory and Lab related lecture videos**

https://www.youtube.com/channel/UCQu9PainVhtts6CqQY_rHpQ

CBCS SCHEME

USN | 1 | B | Y | 2 | 0 | 1 | S | 1 | 4 | 0 |

18PHY12/22

First/Second Semester B.E. Degree Examination, July/August 2021
Engineering Physics

Time: 3 hrs. Max. Marks: 100

Note : 1. ***Answer any FIVE full questions.***

2. ***Physical constants : $C = 3 \times 10^8$ m/s ; $h = 6.63 \times 10^{-34}$ JS ; $g = 9.8$ m/s^2 ; $\epsilon_O = 8.856 \times 10^{-12}$ F/m ; $M = 9.11 \times 10^{-31}$ kg ; $e = 1.6 \times 10^{-19}$C ; $N_A = 6.02 \times 10^{26}$/K mole ; $K = 1.38 \times 10^{-23}$J/K***

1 a. Define Simple Harmonic motion. Derive the equation of motion for Simple Harmonic motion. Explain how complex notation is used in Simple Harmonic motion. **(10 Marks)**

b. Define Shock waves. Mention its applications. **(06 Marks)**

c. A mass 0.5kg causes an extension 0.03m in a spring and the system is set for oscillations. Find force constant of the spring, angular frequency and period of resulting oscillations. **(04 Marks)**

2 a. What are Damped Oscillations? Give the theory of damped oscillations and discuss the case of over damping. **(10 Marks)**

b. Describe Hand Operated Reddy Shock tube with the help of diagram. **(06 Marks)**

c. A free particle is executing Simple Harmonic motion in straight line. The maximum velocity it attains during any oscillation is 62.8m/s. Find the frequency of oscillation if its amplitude is 0.5m. **(04 Marks)**

3 a. Define Young's modulus, Rigidity modulus and Poisson's ratio. Derive the relation between them. **(10 Marks)**

b. Describe Strain softening and Strain hardening. **(06 Marks)**

c. Calculate the force required to produce an extension of 1mm in steel wire of length 2m and diameter 1mm. If given $Y = 2 \times 10^{11}$ N/m^2. **(04 Marks)**

4 a. State Hook's law. Derive an expression for Couple required to produce unit twist in a uniform cylindrical rod fixed at one end and the Couple being applied at the other end. **(08 Marks)**

b. What is Torsional Pendulum? Give the expression for period of oscillation and write its applications. **(06 Marks)**

c. A solid lead sphere of radius 10.3m is subjected to normal pressure of 10N/m^2 acting all over the surface. Determine the change in its volume. Given Bulk modulus of lead is 4.58×10^{10} N/m^2. **(06 Marks)**

5 a. State and prove Gauss Divergence theorem. **(06 Marks)**

b. Describe three types of optical fibres with one application for each type. **(09 Marks)**

c. Calculate the curl of $\vec{A}$, Given $\vec{A} = (1 + yz^2)\,\hat{a}_x + xy^2 + x^2y\,\hat{a}_z$. **(05 Marks)**

6 a. Discuss Continuity equation and list the four Maxwell's equations. **(10 Marks)**

b. What is Numerical Aperture? Derive and expression for numerical aperture interms of refractive indices of core and cladding. **(06 Marks)**

c. Find the attenuation in an optical fiber of length 500m. When a light signal of power 100mw. Emerges out of the fiber with a power 90mw. **(04 Marks)**

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

7 a. State Heisenberg's uncertainity principle. Show that electron does not exist inside the nucleus by this principle. **(06 Marks)**

b. Explain the terms Spontaneous emission and stimulated emission. Derive the expression for energy density of radiation under equilibrium condition interms of Einstein's coefficients. **(10 Marks)**

c. An electron is bound in an one dimensional potential well of width 1A°, but infinite height. Find its energy values in ground state and in the first two excited states. **(04 Marks)**

8 a. Using time independent wave equation, find Energy Eigen values and Eigen functions for a particle in one dimensional potential well of infinite height. **(09 Marks)**

b. Describe the Construction and working of CO_2 Laser with energy level diagram. **(07 Marks)**

c. The average output Power of Laser source emitting a laser beam of wavelength 6328A° is 5mw. Find the number of Photons emitted per second by the laser source. **(04 Marks)**

9 a. Define Fermi energy and Fermi factor. Derive an expression for Fermi energy at Zero Kelvin. **(09 Marks)**

b. Obtain the expression for electrical conductivity of Semi Conductor. **(07 Marks)**

c. If a NaCℓ crystal is subjected to an electric field of 1000V/m and the resulting Polarization is 4.3×10^{-8} C/m^2. Calculate the dielectric constant of NaCℓ. **(04 Marks)**

10 a. Discuss any two success of Quantum Free Electron theory. **(06 Marks)**

b. State Hall effect. Obtain an expression for Hall Coefficient. **(08 Marks)**

c. Derive Calusius – Mossotti equation. **(06 Marks)**

* * * * *

BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT

Yelahanka, Bengaluru-560 064

Department of Physics

Quiz Test for I.A.

SEM: II **Branch:** **Academic year: 2020-21**

TOPIC: LASERS & QUANTUM MECHANICS (Module 4)

1. **Answer all the questions by using Cross (X) mark in the answer box only. Each correct answer carries one mark.**
2. **If more than one box is marked, it will be treated as invalid.**

Answer Box

Question No.	A	B	C	D	Question No.	A	B	C	D	Question No.	A	B	C	D
1					8					15				
2					9					16				
3					10					17				
4					11					18				
5					12					19				
6					13					20				
7					14					Total				

1.	In Stimulated Emission, which among the following parameters of generated photon is similar to the photon of incident wave? a) Phase b) Frequency c) Polarization & direction of travel d) All of the above
2	What is the need to achieve population inversion? a) To excite most of the atoms b) To bring most of the atoms to ground stat c) To achieve stable condition d) To reduce the time of production of laser
3	Which of the following is a unique property of laser? a) Directional b) Speed c) Coherence d) Wavelength
4	The wavelength of radiation emitted by an diode laser made up of a semiconducting material with band gap energy 2.8eV a) 2.8 Å b) 4.3308 Å c) 5548.4 Å d) 4430.8 Å
5	What is the need to achieve population inversion? a) To excite most of the atoms b) To bring most of the atoms to ground state c) To achieve stable condition d) To reduce the time of production of laser
6	What is the full form of LASER? a) Light Absorbent and Stimulated Emission of Radiations b) Light Absorbing Solar Energy Resource c) Light Amplification by Stimulated Emission of Radiations d) Light Amplification of Singular Emission of Radiations

7	Which of the following is not a characteristic of LASER? a) Monochromatic b) Coherent c) Divergent d) Intense
8	What is the region enclosed by the optical cavity called? a) Optical Region b) Optical System c) Optical box d) Optical Resonator
9	What type of laser is used in CD and DVD players? a) Semiconductor b) Nd-YAG c) Ruby d) Co_2
10	What is the minimum number of energy levels needed for lasing? a) 1 b) 3 c) 2 d) 4
11	Which of the following is correct statement? a) Only charged particles in motion are accompanied by matter waves b) any particle in motion is accompanied by matter waves c) no particle whether at rest or in motion is ever accompanied by matter waves d) only subatomic particle in motion is accompanied by matter waves
12	The wavelength "λ"associated with particle of mass "m" in motion with velocity "v" is given by $a)\frac{h}{mv}$ b) $\frac{mv}{h}$ c) $\frac{hv}{m}$ d) $\frac{m}{hv}$
13	The product of uncertainty between position and momentum is given by a) $\Delta x\ X\ \Delta P$ = h b) $\Delta x\ X\ \Delta P$ = λ c) $\Delta x\ X\ \Delta P$ = h/2**π** d) $\Delta x\ X\ \Delta P$ = h/4**π**
14	The debroblie wavelength associated with a moving particle is generally a) finite monochromatic wave train travelling with a veloctiy lesss than that of light b) an infinite monochromatic wave train travelling with a phase veloctiy greater than that of light c) a wave packet having a group velocity equla to that of the moving particle. d) all of these
15.	The ratio of first excited energy to its third excited energy state of a partilce moving inside a potentail well is a) 1/4 b) 1/9 c) 4 d) 9
16	The probability of finding postion of electron in its first energy state will be maximium at ……..of its lenghts. a) L/2 b) L/4 c) 3L/4 d) both b) and c)

17	De-Broglie wavelength of an electorn vaires with respect to its a) mass b) kinetic energy d) accelarating potentail d) all of these
18	------ -------- are the conditons reqired for laser. a) stimulated emission b) population inversion c) metastable state d) all of these
19	What kind of pumping is used in case of diode laser. a) Optical pumping b) electrical pumping c) theraml pumping d) chemical pumping
20	The uncertainity in case of matter exists because of a) measuring instrument b) observer c) Inherent propety d) none of these

Name of the student/Roll No.:

Signature of the student:

Total Marks scored:

BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(Affiliated to the Visvesvaraya Technological University, Belagavi)

DEPARTMENT OF PHYSICS

Assignment -1 II - M (ME) DATE: 07.07.2021

Answer the following question

1) Define Mechanical SHM. Derive the expressions for K_s and K_p for the mass suspended over a spring.

2) State Hooke's law of elasticity. Obtain the relation between Y, K and σ.

3) What are beams. Derive the expression for Youngs modulus of a single cantilever.

4) Define Numerical aperture. Derive the expression for the same in terms of R.Is of core and cladding by considering surrounding medium as air.

5) Discuss the types of optical fibers.

07/07/2021
Course cordinator

HOD, Physics

BMSITXM
Dept. of physics
Tutorial sheet - Engg.physics (18PHY12/22)

LASERS

1. In a material at 300^0K two energy levels have a wavelength separation of 1μm. Determine ratio of upper to lower level occupation densities when the material is in thermal equilibrium.
2. Calculate the energy difference in eV between the two energy levels of the Ne atoms of a He-Ne gas laser, the transition between which results in the emission of a light of wavelength 632.8nm. Also calculate the number of photons emitted per second, if the optical power output is 2mW.
3. In a He-Ne laser the two plane mirrors forming the resonant cavity are separated by 0.5m. What is the mode separation of longitudinal cavity in terms of frequency.
4. A laser beam can be focused on an area equal to the square of its wavelength. Wavelength of He-Ne laser $\lambda = 6328A^0$. If the laser radiates energy at the rate of 1mW. Find out the intensity of focused beam.
5. The ratio of populations of the upper and lower energy levels is $1.365x10^{-21}$. Find the wavelength of laser light emitted, if the medium is at a temperature of 300K.
6. A ruby laser emits pulses of 20ns duration with an average power per pulse is0.2MW. if the number of photons in each pulse is $7x10^{15}$. Calculate the wavelength of the photons.
7. Find the ratio of population of two energy levels in a laser if the transition between them produces light of wavelength 694.3 nm. Assume the ambient temperature to be 27^0C.

QUANTUM MECHANICS

1. Find the smallest possible uncertainity in the position of an electron moving with velocity $3x10^7$ m/s.
2. An electron is bounded by a potential which closely approaches an infinite potential well of width 0.2nm. Calculate the lowest three permissible quantum energies the electrons can have.
3. An electron is confined to an 1-D potential well of infinite height width 0.1nm. find the number of nodes in its eigen function when its energy is equal to 339.6 eV.
4. Evaluate the normalization constant N for $\Psi = N\, r\, e^{-ar}$ for $0<r<\infty$.
5. If the uncertainty in the location of a particle is equal to its deBroglie wavelength, what is the uncertainty in its velocity?
6. A particle is bound by an infinite potential barrier, if the width of the potential well is 0.2 nm and the mass of particle is $1.67x10^{-27}$Kg. Find the energy state of the particle when its energy is $2.06x10^{-2}$ eV.
7. Map the eigen functions for the above case for n=3 and n=4.
8. A proton is confined in 1-D potential well of width 0.2nm. Calculate its energy in eV when its eigen function has 3 nodes.
9. Evaluate the normalization constant, N, for $\psi = N\sin^2\theta$ for $-\pi/2 \le \theta \le \pi/2$.
10. A neutron is moving in a one-dimensional potential box of width 0.15nm. calculate the energies of the ground and first two excited states.
11. Evaluate the normalization constant, N, for $\psi = N\sin\theta\cos\phi$, for $-\pi/2 \le \theta \le \pi/2$, $0 \le \phi \le 2\pi$.
12. A particle is moving in a one-dimensional potential box of finite height of width 2.5nm. Calculate the probability of finding the particle within an interval 0.5 nm of at the centre of the box when it is in its state of first excited state.
13. An electron is confined in 1-D Potential well of width 0.2nm. Find the number of nodes present in the eigen function when it is having an energy of 84.9eV.
14. The position and momentum of a 1 KeV electrons are simultaneously determined. If its position is located to within 0.1nm, what is the percentage of uncertainty in momentum?
15. An electron is confined to a box of length 10^{-19}m, calculate the minimum uncertainty in its velocity.
16. A particle is confined to an 1-D infinite potential well of width $0.2x10^{-9}$m. it is found that when the energy of the particle is 230eV, its eigen function has 5 antinodes. Find the mass of the particle and show that it can never have energy equal to 1 KeV.

Coordinator

R. Mehl

BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT, YELAHANKA, BANGALORE-64

The list of students provisionally admitted to I year BE for the academic year 2020-21

Batch: 2020 - 21 Branch: AI&ML Sem: I Sec: 'N' Room No. BSN - 504

Group: CHEMISTRY

SL. NO.	USN	NAME OF THE CANDIDATE
1.		A S ADITHIYAA
2.		ANKIT BASAVARAJ HALASAGI
3.		DUBBIREDDY GARI VARUN KUMAR REDDY
4.		HARSHINI BUJUTI
5.		M S KAUSHIK
6.		MANISH A S
7.		MEGHANA RAJU K
8.		MEHREEQ MUSHTAQ MISGAR
9.		PAVITHRA N
10.		RUSHIL BALI
11.		SATVIKA T S
12.		SHASHWATH PUNNESHETTY
13.		SUSHIL SHARMA
14.		VAISHNAVI C
15.		VANDANA KUMAR SWAMY
16.		TILAK C
17.		KRISHEK R
18.		GAGANDEEP GOWDA M L
19.		SANDEEP AROCKIA SAMRAJ X
20.		MAHESH R
21.		SHASHANK R
22.		VARSHITH A
23.		OMKAR N DAIVAJNA
24.		RISHIKA R MANAVI
25.		ABHISHEK SUDHAKAR TOLANUR
26.		SANGEETHA PRABHU
27.		MANASA M
28.		ANIL N
29.		NIKITA RAVI
30.		SAKSHI SUNIL NEELGUND
31.		ANANYA R
32.		ADITI P
33.		N SAHANA
34.		ABHISHEK AMAR
35.		JEEVANA SHRAVYA MADDIPUDI
36.		RAHUL REDDY
37.		SUPREETH GOWDA A
38.		BHUVAN R ARYA
39.		TANU CHOUDHARY
40.		SHASHANK A
41.		KARTHIK P R
42.		NABHANIA TIRUMALE
43.		SAURABH JAYASWAL
44.		G RAHUL SINGH
45.		VAISHNAVI DESHPANDE
46.		PRATHAM SAPRA
47.		ARAVIND SURESH
48.		NAKSHA B P
49.		ADITYA SINGH
50.		RISHABH BOHARA
51.		PRIYANKA S TAHASHEELDAR
52.		T NEEL
53.		SHRIYA J
54.		DHRUV
55.		D RAHUL GUPTA
56.		SANTANU SHEKHAR
57.		KUMAR ANUBHAV
58.		ISHA RAJ
59.		ISHAN ANTHONY
60.		NIDHI

DBMB

BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT
YELAHANKA – BANGALORE - 64

II SEMESTER B.E. TIME TABLE FOR THE ACADEMIC YEAR 2020 - 2021
(Physics group)

SEMESTER : II
BRANCH : ECE
SECTION : H
CLASS ROOM : CR 104

	8. 30 – 9. 30	9. 30 – 10. 30	10. 30 – 10.50	10.50 – 11.50	11.50 – 12.50	12.50 – 1.45	1.45 – 2.40	2.40 –3.35	3.35 – 4.30
MONDAY	PHY	ELE	TEA BREAK	CIV	MAT	LUNCH BREAK	EGDL (Theory)	EGDL (Theory)	Placement Training
TUESDAY	CIV	MAT		Technical English			PHY	PHY (Remedial)	ELE (Remedial)
WEDNESDAY	H2-PHYL H1-ELEL			MAT	ELE		CIV (Tutorial)	MAT (Remedial)	CIV (Remedial)
THURSDAY	EGDL Practice			CIV (Tutorial)	PHY		MAT	EGDL Practice	ELE (Tutorial)
FRIDAY	ELE (Tutorial)	PHY (Tutorial)		H1-PHYL H2-ELEL			PROCTORING		CLUB ACTIVITY
SATURDAY	MAT (Tutorial)	CIV (Tutorial)		PHY (Tutorial)	ELE (Tutorial)	****			

Practical batches: Batch H1: Sl. No: 01-36 Batch H2: Sl. No: 37 Onwards

Subject	Subject code	Theory lecture	Tutorial/ Remedial	Hours/ week
Advanced Calculus and Numerical Methods	18MAT 21	3	2 + 1 R	6
Engg. Physics (PHY)	18PHY 22	3	2 + 1 R	6
Basic Electrical Engineering	18ELE 23	2	3 + 1 R	6
Elements of Civil Engineering and Mechanics	18CIV24	2	3 + 1 R	6

Subject	Subject code	Theory lecture	Practical	Hours/week
Engineering Graphics	18EGDL25	2	2+1	5
Engineering Physics Laboratory	18PHYL26	-	2	2
Basic Electrical Engineering Laboratory	18ELEL 27	-	2	2
Technical English	18EGH28	-	2	2

12/3/21 — Time table officer

12/3/21 — CTTO

15.3.21 — Dean (Academics)

PRINCIPAL

BMS Institute of Technology & Management

Doddaballapura Main Road, Avalahalli, Yelahanka, Bengaluru-560 064

DEPARTMENT OF PHYSICS

I Internal Test

Scheme of Evaluation

Date : 20.06.2021

1(a)

Definition of damped oscillation — 01

Choosing $F = -kx$ — 01

$F = -r\frac{dx}{dt}$ — 01

Soln $y = Ae^{\alpha t}$ — 01

Quadratic eqn $\alpha^2 +$ — 01

Soln: $y = Ae^{\alpha_1 t} + Be^{\alpha_2 t}$ — 01

1(b)

Given

$m_s = 2000\,kg$

$T_1 = 0.8\,S$

$k = ?$

$T_2 = ?$

$m = 60kg$

Let $\omega = \sqrt{\frac{k}{m}}$

& wkt $\omega = \frac{2\pi}{T_1}$

$\Rightarrow$ (i) $T_1 = 2\pi\sqrt{\frac{m}{k}}$

$\Rightarrow 0.8 = 2\times 3.142 \times \sqrt{\frac{2000}{k}}$

$\Rightarrow k = 30842\ N/m$ — 01

(ii) $T_2 = 2\pi\sqrt{\frac{560}{30842}}$

$T_2 = 0.8475$ — 01

mass supported by each shock absorber $= 560\,kg$ — 01

2(a)

Reddy's Shock tube – construction – diagram [Mentioning – material – thickness, length] driver & driven Section, diaphragm & pressure gauge — 03

Principle: change in temp/pressure } Explanation
Breaking of diaphragm } — 03

BMS Institute of Technology & Management

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DEPARTMENT OF PHYSICS

I Internal Test

Scheme of Evaluation

Date: 20.06.2021

	Any two characteristics	02
2(b)	$d = 150 \times 10^{-3}$ mm $t = 0.3 \times 10^{-3}$ s $a = 340$ m/s Shock Speed $= \frac{d}{t} \rightarrow \frac{150 \times 10^{-3}}{0.3 \times 10^{-3}}$ Shock Speed $U_s = 500$ m/s $M = \frac{U_s}{a} = \frac{500}{340} = 1.47$ Mach number of the shock wave is 1.47	01 01 01
3(a)	Describing the two springs system. Variation of displacement across each Spring $F = -k_1 x_1$ $F = -k_2 x_2$ $x = x_1 + x_2 \Rightarrow k_s = \frac{k_1 k_2}{k_1 + k_2}$ k_s value decreases as n - number springs connected in series combination.	01 01 01 01 01
3(b)	Given $k_1 = 2000$ N/m $k_2 = 1500$ N/m $k_3 = 3000$ N/m. $k_4 = k_5 = 500$ N/m. (i)  $k_s \neq k_1 k$ $\frac{1}{k_s} = \frac{1}{k_1} + \frac{1}{k_2} + \frac{1}{k_3}$ $\frac{1}{k_s} = \frac{1}{00} + \frac{1}{1500} + \frac{1}{3000}$ 1 $\frac{1}{k_s} = \frac{1}{600}$ $k_s = 600$ N/m	01 01

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DEPARTMENT OF PHYSICS

I Internal Test

Scheme of Evaluation

Date: 20.06.2021

	$K_p = K_1 + K_2$	01
	$K_p = 500 + 500 = 1000$ N/m	01
	$K_s' = \frac{K_s K_p}{K_s + K_p} = \frac{600 \times 1000}{600 + 1000}$	
	$K_s' = \frac{375}{}$ N/m	01
4(a)	Relation b/n Y, n and σ.	01
	Diagram	01
	description	01
	$p'x = \sqrt{2} L T (\alpha + \beta)$	
	[Total extension along diagonal]	01
	$p'x = \frac{x}{\sqrt{2}}$	01
	after equating. $\eta = \frac{Y\alpha}{2(1+\sigma)}$	01
	$\Rightarrow Y = 2\eta(1+\sigma)$	01
4(b)	Given $\eta = 4.5 \times 10^{10}$ N/m^2 area = 0.5m x 0.5m h = 1 cm F = ? x = 0.015 mm Stress = ? Strain = ? $\eta = \frac{\text{Shear Stress}}{\text{Shear Strain}}$ $\text{Stress} = \frac{F}{a}$ $\text{Strain} = \frac{\text{change in length}}{\text{original length (ht)}}$	

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DEPARTMENT OF PHYSICS

I Internal Test

Scheme of Evaluation

Date: 20.06.2021

	$\text{Strain} = \frac{x}{h} = \frac{0.015 \times 10^{-3}}{1 \times 10^{-2}}$	01
	$\theta = 1.5 \times 10^{-3}$	
	$\text{Shear Stress} = \eta \times \text{Shear Strain}$ $= 4.5 \times 10^{10} \times 1.5 \times 10^{-3}$ $= 6.75 \times 10^{7}\ N/m^2$	01
	$\text{Shear Stress} = \frac{F}{A}$	01
	$F = \text{Stress} \times A$ $= 6.75 \times 10^{7} \times (0.5 \times 0.5)$ $F = 1.69 \times 10^{7}\ N$	
5(a)	Definition of Bending moment	01
	diagram & description	
	$\text{linear Strain} = \frac{r}{R}$	01
	$\text{long Stress} = Y \times \text{linear Strain}$ $= Y \times \frac{r}{R}$	
	$\text{Moment of force} = F \times r = \frac{Yar^2}{R}$	02
	$\text{For Entire beam} = \sum \frac{Yar^2}{R}$	01

(4)

	$\sum mr^2 = \sum mr^2 = I_g$ Moment of the force $= \frac{Y}{R} I_g$.	01
5(b)	Given $k = 85\ N/m$ $r = 0.07\ kg/s$ $a_{max} = ?$ $m = 5\ kg$ $F_{periodic} = F\sin pt$ $= 15 \sin 10t$	$a_{max} = \frac{f}{\sqrt{(\omega^2 - p^2)^2 + 4b^2p^2}}$ where $b = \frac{r}{2m} = \frac{0.07}{2\times(5)} = 7\times10^{-3}$ $f = \frac{F}{m} = \frac{5}{5} = 1\ N/kg$ $\Rightarrow \omega = \sqrt{\frac{k}{m}} = \sqrt{\frac{85}{5}} = 4.123\ Se$ $a_{max} = \frac{1}{\sqrt{[(4.123)^2 - (10)^2]^2 + 4(7\times10^{-3})^2_{100}}}$ $a_{max} = 0.012\ m$
6(a)	Torsion diagram and description. $L\phi = r\theta$ $F = T(2\pi r\, dr)$ $T = \frac{\eta r\theta}{L}$	01 01 01 01

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DEPARTMENT OF PHYSICS

I Internal Test

Scheme of Evaluation

Date: 20.06.2021

Twisting couple acting on the entire cylinder

$$= \frac{\eta \pi R^4 \theta}{2L} \qquad 02$$

$$\therefore C = \frac{\pi \eta R^4}{2L} \qquad 01$$

6(b)

$\theta = \frac{\pi}{45}$

$\eta = 8.3 \times 10^{10} N/m^2$

$$C = \frac{\pi \eta R^4}{2L} \qquad 01$$

$$C = \frac{\pi \times 8.3 \times 10^{10} \times (0.0425 \times 10^{-2})^4}{2 \times 1.5}$$

$$C = 2.83 \times 10^{-3} \qquad 01$$

$$\tau = C\theta \qquad 01$$

$$\tau = 2.83 \times 10^{-3} \times \frac{\pi}{45}$$

$$\tau = 1.98 \times 10^{-4} \text{ Nm} \qquad 01$$

7

(i) Shock absorbers — 01

Amplitude of oscillation changes exponentially [any one case considering 'y' Eqn] — 03

(iii) a) Under damping – shock absorber – mass suspended kept in air

b) over damping – shock absorber / spring – mass suspended kept in thick oil.

c) Critical damping – shock absorber / mechanical Spring – mass suspended kept in water. — 03

BMS Institute of Technology & Management

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DEPARTMENT OF PHYSICS

I Internal Test

Scheme of Evaluation

Date: 20.06.2021

(iii) It depends on
(i) resistive medium of the damping system
(ii) mass suspended

01

(iv) amplitude - decreases - fast - Exponentially. which comes under over damping case.

$$F = -r\frac{dx}{dt}$$

$$\alpha\ 2b = \frac{r}{m}.$$

01

8

Rectangular beam A.

$$I_g|_A = \frac{bd^3}{12} = \frac{(17\times10^{-2})(13.25\times10^{-2})^3}{12} = 0.329\times10^{-4}$$

$$\delta_A = \frac{Wl^3}{3 I_g Y} = \frac{70\times10^3\times(2)^3}{3\times0.329\times10^{-4}\times20\times10^{10}}$$

$$\delta_A = 28.36\text{ mm}$$

03

$$I_g|_B = \frac{bd^3}{12} = \frac{(13.25\times10^{-2})(17\times10^{-2})^3}{12} = 5424.7\times10^{-4}$$

$$\delta_B = \frac{Wl^3}{3 I_g Y} = \frac{70\times10^3\times2^3}{3\times5424.7\times10^{-4}\times20\times10^{10}} = 0.00172\text{ mm}$$

03

BMS Institute of Technology & Management

Doddaballapura Main Road, Avalahalli, Yelahanka, Bengaluru-560 064

DEPARTMENT OF PHYSICS

I Internal Test

Scheme of Evaluation

Date: 20.06.2021

$$I_g|_C = \frac{\pi r^4}{4} =$$

where $t \times b = \pi r^2$

$$13.25 \times 17 \times 10^{-4} = \pi r^2$$

$$r^2 = \frac{13.25 \times 17 \times 10^{-4}}{3.142}$$

$$r = 84.6 \times 10^{-3} \text{ m}$$

(03)

$$I_g|_C = \frac{\pi r^4}{4} = 4023789.79 \times 10^{-12}$$

$$I_g|_C = 0.4023 \times 10^{-4}$$

$$\delta_C = \frac{wl^3}{3 I_g Y} = \frac{70 \times 10^3 \times 2^3}{3 \times 0.4023 \times 10^{-4} \times 20 \times 10^{10}}$$

$$\delta_C = 23.199 \times 10^{-3} \text{ m}.$$

$\delta_A = 28.36 \text{ mm}$

$\delta_B = 0.00172 \text{ mm}$

$\delta_C = 23.199 \text{ mm}.$

on comparision with δ_A, δ_B & δ_C. δ_B is least, hence B is suitable.

(01)

Prepared by 20/06/2021

MODULE CO-ORDINATOR 20/6/2021

Approved by: 20/6/21

ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ
VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

HELLO, 1BYAI

BMS Institute of Technology and Management, BANGALORE

LOGOUT! (logout.php)

Dashboard (dashboard.php) Subject Faculty Allotment (subject_mapping.php) IA Marks Entry (internal_marks_home.php)
HOD Dashboard (hod_dashboard.php) Instruction (instruction.php)

INTERNAL MARKS ENTRY

Semester
2 Semester

SubjectCode
18PHYL26 - Engineering Physics Laboratory

Choose Faculty
1BYPHY0008584 - R LOKESH

GO AHEAD

NOTE: Please Click on Save Button Before Going To Next Page of Marks Entry.

IA Entry for 18PHYL26 -

Show 100 entries Search:

Sl.No.	USN	Student Name	Attendence	Marks Scored	Max Marks	Status
1	1BY20AI001	A S ADITHIYAA	Present	39	40	Frozen
2	1BY20AI002	ABHISHEK AMAR	Present	40	40	Frozen
3	1BY20AI003	ABHISHEK SUDHAKAR TOLANUR	Present	38	40	Frozen
4	1BY20AI004	ADITI P	Present	38	40	Frozen
5	1BY20AI005	ADITYA SINGH	Present	30	40	Frozen
6	1BY20AI006	ANANYA R	Present	36	40	Frozen
7	1BY20AI007	ANIL N	Present	38	40	Frozen
8	1BY20AI008	ANKIT BASAVARAJ HALASAGI	Present	33	40	Frozen
9	1BY20AI009	ARAVIND SURESH	Present	39	40	Frozen
10	1BY20AI010	BHUVAN R ARYA	Present	37	40	Frozen
11	1BY20AI011	D RAHUL GUPTA	Present	31	40	Frozen

Sl.No.	USN	Student Name	Attendence	Marks Scored	Max Marks	Status
12	1BY20AI012	DHRUV	Present	40	40	Frozen
13	1BY20AI013	DUBBI REDDY GARI VARUN KUMAR REDDY	Present	28	40	Frozen
14	1BY20AI014	G RAHUL SINGH	Present	37	40	Frozen
15	1BY20AI015	GAGANDEEP GOWDA M L	Present	26	40	Frozen
16	1BY20AI016	GIRISH N	Present	36	40	Frozen
17	1BY20AI017	HARSHINI BUJUTI	Present	40	40	Frozen
18	1BY20AI018	ISHA RAJ	Present	36	40	Frozen
19	1BY20AI019	ISHAN ANTHONY	Present	29	40	Frozen
20	1BY20AI020	JEEVANA SHRAVYA M	Present	39	40	Frozen
21	1BY20AI021	KARTHIK P R	Present	35	40	Frozen
22	1BY20AI022	KRISHEK R	Present	28	40	Frozen
23	1BY20AI023	KUMAR ANUBHAV	Present	38	40	Frozen
24	1BY20AI024	M S KAUSHIK	Present	38	40	Frozen
25	1BY20AI025	MAHESH R	Present	20	40	Frozen
26	1BY20AI026	MANASA M	Present	37	40	Frozen
27	1BY20AI027	MANISH A S	Present	39	40	Frozen
28	1BY20AI028	MEGHANA RAJU K	Present	40	40	Frozen
29	1BY20AI029	N SAHANA	Present	39	40	Frozen
30	1BY20AI030	NABHANIA TIRUMALE	Present	38	40	Frozen
31	1BY20AI031	NAKSHA B P	Present	38	40	Frozen
32	1BY20AI032	NIDHI	Present	38	40	Frozen
33	1BY20AI033	NIKITA RAVI	Present	40	40	Frozen
34	1BY20AI034	OMKAR N DAIVAJNA	Present	40	40	Frozen
35	1BY20AI035	PAVITHRA N	Present	40	40	Frozen
36	1BY20AI036	PRATHAM SAPRA	Present	38	40	Frozen
37	1BY20AI037	PRIYANKA S TAHASHEELDAR	Present	39	40	Frozen
38	1BY20AI038	RAHUL REDDY	Present	34	40	Frozen

Sl.No.	USN	Student Name	Attendence	Marks Scored	Max Marks	Status
39	1BY20AI039	RAVOORU ARPITHA	Present	38	40	Frozen
40	1BY20AI040	RISHABH BOHARA	Present	32	40	Frozen
41	1BY20AI041	RISHIKA R MANAVI	Present	39	40	Frozen
42	1BY20AI042	RUSHIL BALI	Present	35	40	Frozen
43	1BY20AI043	SAKSHI SUNIL NEELGUND	Present	39	40	Frozen
44	1BY20AI044	SANDEEP AROCKIA SAMRAJ X	Present	35	40	Frozen
45	1BY20AI045	SANGEETHA PRABHU	Present	38	40	Frozen
46	1BY20AI046	SANSKAR AGRAWAL	Present	29	40	Frozen
47	1BY20AI047	SANTANU SHEKHAR	Present	29	40	Frozen
48	1BY20AI048	SATVIKA T S	Present	37	40	Frozen
49	1BY20AI049	SAURABH JAYASWAL	Present	40	40	Frozen
50	1BY20AI050	SHASHANK A	Present	27	40	Frozen
51	1BY20AI051	SHASHANK R	Present	38	40	Frozen
52	1BY20AI052	SHASHWATH P	Present	34	40	Frozen
53	1BY20AI053	SHRIYA J	Present	34	40	Frozen
54	1BY20AI054	SUPREETH GOWDA A	Present	25	40	Frozen
55	1BY20AI055	SUSHIL SHARMA	Present	33	40	Frozen
56	1BY20AI056	T NEEL	Present	26	40	Frozen
57	1BY20AI057	TANU CHOUDHARY	Present	38	40	Frozen
58	1BY20AI058	TILAK C	Present	32	40	Frozen
59	1BY20AI059	VAIBHAV AHUJA	Present	20	40	Frozen
60	1BY20AI060	VAISHNAVI C	Present	10	40	Frozen
61	1BY20AI061	VAISHNAVI DESHPANDE	Present	37	40	Frozen
62	1BY20AI062	VANDANA KUMAR SWAMY	Present	40	40	Frozen
63	1BY20AI063	VARSHITH A	Present	38	40	Frozen
64	1BY20AI064	YATHISH U	Present	35	40	Frozen

Showing 1 to 64 of 64 entries

Previous 1 Next

NOTE:

► The values are already Submitted and Frozen!

BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT - BANGALORE

DEPARTMENT OF PHYSICS

Defined Target

60% target

Grade levels

If 60% of the students scoring 60% of the marks : 3

If 55% of the students scoring 60% of the marks : 2

If 50% of the students scoring 60% of the marks : 1

ACADEMIC YEAR : 2020-2021

I semester **EVEN SEMESTER**

FACULTY INCHARGE: **Dr. Daruka Prasad B**

BRANCH ECE

SECTION H

		CO1																																					
		TEST -1						TEST - 2										TEST - 3											C03 TEST - 3				C04 T-1		T-2			T-3			
SL.NO.	NAME OF THE STUDENT	Q1	Q2	Q3	Q4	Q5	Q6	Q1	Q2	Q3	Q4	Q5	Q6	TOTAL	No. of ques attd	%		Q1	Q2	Q3	Q4	Q5	Q6	TOTAL	No. of ques attd	%	GRADE	Q7	TOTAL	%	GRADE	Q7	Q8	Q7a	Q7b	Q8	Q7	TOTAL	%	GRADE
		10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	120M				10M	10M	10M	10M	10M	10M	60M				10M	10M			10M	10M	5M	5M	10M	10M	50M		
1	Aakash Kumar Singh		10	6			1		9	9			10	45	60	75	3		9	9			10	28	30	93.3333	3	10	10	100	3		9	5	5	10	10	39	78	3
3	Aashritha		10	10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	9	9	90	3	9	9	5	4	9	9	45	90	3
4	Abhay Singh	9		10		10		9		10		10		58	60	97	3	9		10		9		28	30	93.3333	3	10	10	100	3	10	9	5	5	9	10	48	96	3
5	Abhishek K		9		10		10	10		10		9		58	60	97	3	9		10		10		29	30	96.6667	3	8	8	80	3	8	8	4	4	7	8	39	78	3
6	Abhishek Kumar		9	10			10		9	10			10	58	60	97	3		9	10			10	29	30	96.6667	3	9	9	90	3	9	9	5	4	9	9	45	90	3
7	Abhishek Nagesh Shetty	10			9	10		10			9	10		58	60	97	3	10			9	10		29	30	96.6667	3	6	6	60	3	6	10	5	1	10	6	38	76	3
8	Abhishek Yadav	9			8	9		9			8	9		52	60	87	3	9			8	9		26	30	86.6667	3	4	4	40	FALSE	4	7	4		7	4	26	52	FALSE
9	Achyuth Rao H		10		5		10		10		5		10	50	60	83	3		10		5		10	25	30	83.3333	3		0	0	FALSE		9			9		18	36	FALSE
10	ACHYUTHA GOWDA C P	9				10	6	10		9		10		54	60	90	3	9				10	6	25	30	83.3333	3	9	9	90	3	9	9	5	3	9	9	44	88	3
11	A TEJA	10		10			9	10		10			9	58	60	97	3	10		10			9	29	30	96.6667	3	9	9	90	3	9	9	5	4	9	9	45	90	3
12	ADITHYA R	10			9	9		10			9	9		56	60	93	3	10			9	8		27	30	90	3	10	10	100	3	10	10	5	5	10	10	50	100	3
13	ADITYA SRINIVAS K	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	9	9	90	3	9	9	5	4	9	9	45	90	3
14	Aishwarya N		10	10		9			10	10		9		58	60	97	3		10	10		8		28	30	93.3333	3	10	10	100	3	10	10	5	5	10	10	50	100	3
15	Ajay Basha Komali	10		10		10		10		10			10	60	60	100	3	10		10			10	30	30	100	3	9	9	90	3	9	9	5	4	9	9	45	90	3
16	AKHIL MP	10			10	10		10			10	10		60	60	100	3	10			10	9		29	30	96.6667	3	9	9	90	3	9	10	5	4	10	9	47	94	3
17	Akhilesh N	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	9	9	90	3	9	10	5	4	10	9	47	94	3
18	Akshata Dabrabad	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	9	9	90	3	9	9	5	4	9	9	45	90	3
19	Akshatha S	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	9	9	90	3	10	10	5	5	10	9	49	98	3
20	Akshay goudar		8	10			10		8	10			10	56	60	93	3		8	10			10	28	30	93.3333	3	9	9	90	3	9	9	5	4	9	9	45	90	3
21	AKSHAYA SUBRAHMANYA E	10			9	10		10			9	10		58	60	97	3	10			9	10		29	30	96.6667	3	9	9	90	3	9	10	5	4	10	9	47	94	3
22	ALLA VAMSI KRISHNA		9	9		10			9	9		10		56	60	93	3	9	9			10		28	30	93.3333	3	8	8	80	3	8	10	5	3	10	8	44	88	3
23	Aman Kumar		9		10	10			10		10	10		59	60	98	3		10		10	10		30	30	100	3	10	10	100	3	10	10	5	5	10	10	50	100	3
24	AMOGH DIXIT	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	6	6	60	3	6	10	5	1	10	6	38	76	3
25	AMULYA M KAUSHIK		9	10			10		9	10			10	58	60	97	3		9	10			10	29	30	96.6667	3	9	9	90	3	9	9	5	4	9	9	45	90	3
26	Anand A B	10			9	10		10			9	10		58	60	97	3	10			9	10		29	30	96.6667	3	8	8	80	3	8	10	5	3	10	8	44	88	3
27	ANANYA.R		9	10			10		9	10			10	58	60	97	3							0	0	#DIV/0!	#DIV/0!		0	0	FALSE	9	9	5	4	9		36	72	FALSE
28	Aniket Sharma	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	9	10	100	3	9	10	5	4	10	10	48	96	3
29	A SASI SEKHAR		10	9		9		10		9		10		57	60	95	3	10		9		10		29	30	96.6667	3	9	9	90	3	9	10	5	4	10	9	47	94	3
30	Anubhav Kumar		9	10			9		9	10			9	56	60	93	3		9	10			9	28	30	93.3333	3	10	10	100	3	10	10	5	5	10	10	50	100	3
31	APOORV SHANDILYA	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	9	9	90	3	10	10	5	5	10	9	49	98	3
32	Archana B		8	10			10		8	10			10	56	60	93	3		8	10			10	28	30	93.3333	3	9	9	90	3	9	9	5	4	9	9	45	90	3
33	ARUNABH RANJAN	10		9			10	10		9			10	58	60	97	3	10		9			10	29	30	96.6667	3	5	5	50	FALSE	7	10	5	0	10	5	37	74	FALSE
34	Arya Murali		10	10			10		10	10			10	60	60	100	3		10	10			10	30	30	100	3	10	10	100	3	10	9	5	5	9	10	48	96	3
35	Ashish Srinivasan		9	10			10		9	10			10	58	60	97	3		9	10			10	29	30	96.6667	3	9	9	90	3	9	10	5	4	10	9	47	94	3
36	Ashwin Ajay	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	10	10	100	3	9	10	5	4	10	10	48	96	3
37	Asif Ayoub Bhatti		10	9		9		10		9		10		57	60	95	3	10		9		10		29	30	96.6667	3	9	9	90	3	9	10	5	4	10	9	47	94	3
38	ATISH MARAGUR		9	10			9		9	10			9	56	60	93	3		9	10			9	28	30	93.3333	3	10	10	100	3	10	10	5	5	10	10	50	100	3
39	B Meghana		10	10		10			10	10		10		60	60	100	3		10	10		10		30	30	100	3	10	10	100	3	10	10	5	5	10	10	50	100	3
40	Bhaswati Talukdar		9	10			9		9	10			9	56	60	93	3		9	10			9	28	30	93.3333	3	10	10	100	3	10	10	5	5	10	10	50	100	3
41	Bhavitha D S	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	9	9	90	3	10	9	5	5	9	9	47	94	3
42	Bheemireddy Harini	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	10	10	100	3	10	10	5	5	10	10	50	100	3
43	Bhumika R													0	0	#DIV/0!	#DIV/0!							0	0	#DIV/0!	#DIV/0!		0	0	FALSE							0	0	FALSE
44	Bhumika T V	10		10		10		10		10		10		60	60	100	3	10		10		10		30	30	100	3	9	9	90	3	9	10	5	4	10	9	47	94	3
45	Bhuvan A R	10		10		9		10		10		10		59	60	98	3	10		10		10		30	30	100	3	5	5	50	FALSE	5	10	5		10	5	35	70	FALSE
46	Bhuvana H		10	10			10		10	10			10	60	60	100	3		10	10			10	30	30	100	3	10	10	100	3	10	9	5	5	9	10	48	96	3
47	Bittu Kumar		9	10			10		9	10			10	58	60	97	3		9	10			10	29	30	96.6667	3	9	9	90	3	9	10	5	4	10	9	47	94	3
48	Chandana A	10		8			10	10		8			10	56	60	93	3	10		8			10	28	30	93.3333	3	8	8	80	3	8	10	4	4	10	8	44	88	3
49	CHANDNI KUMARI	10		10			10	10		10			10	60	60	100	3	10		10			10	30	30	100	3	9	9	90	3	9	9	5	4	9	9	45	90	3

50	Chandu B R	10			9	9		10			9	9		56	60	93	3	10			9	9		28	30	93.3333	3	5	5	50	FALSE	5	8	5	0	8	5	31	62	FALSE
51	CHARAN G S	8		9		6	9	8		9		6	9	64	80	80	3	8		9		6	9	32	40	80	3	5	5	50	FALSE	5	9	5	0	9	5	33	66	FALSE
52	Chirag Kumar N	10			9	10		10			9	10		58	60	97	3	10			9	10		29	30	96.6667	3	8	8	80	3	8	10	4	4	10	8	44	88	3
53	Deekshitha B S	10		10		10		10		10		9		59	60	98	3	10		10		10		30	30	100	3	10	10	100	3	10	10	5	5	10	10	50	100	3
54	Deepak Darshan P		9	9			10		9	9			10	56	60	93	3		9	9			10	28	30	93.3333	3	5	5	50	FALSE	5	9	5		9	5	33	66	FALSE
55	Deepika R		9	9			10		9	9			10	56	60	93	3		9	9			10	28	30	93.3333	3	5	5	50	FALSE	5	9	5		9	5	33	66	FALSE
56	deepti hp		10	10		10			10	10		10		60	60	100	3		10	10		10		30	30	100	3	10	10	100	3	10	9	5	5	9	10	48	96	3
57	Devaraj	7			9	9		7			9	9		50	60	83	3	7			9	9		25	30	83.3333	3	4	4	40	FALSE	4	8	4		8	4	28	56	FALSE
58	Dharani S							7			9	9		25	30	83	3	7			9	9		25	30	83.3333	3	4	4	40	FALSE			4		8	4	16	32	FALSE
59	Divyashree.S		10	4			10		10	4			10	48	60	80	3		9	4			10	23	30	76.6667	3	10	10	100	3	10	10	5	5	10	10	50	100	3
60	Duggasani venkata pradeep kun	10		10		8		10		10		9		57	60	95	3	10		10		8		28	30	93.3333	3	9	9	90	3	9	9	5	4	9	9	45	90	3
61	Enosh J		10		10	10			10		10	10		60	60	100	3		10		10	10		30	30	100	3	9	9	90	3	9	10	5	4	10	9	47	94	3
62	G MEENAKSHI		10	10		10			10	10		9		59	60	98	3		10	10		10		30	30	100	3	9	9	90	3	9	9	5	4	9	9	45	90	3
63	G THARUN	6		10		9		6		10		9		50	60	83	3	6		10		9		25	30	83.3333	3	3	3	30	FALSE	3	8	3	0	8	3	25	50	FALSE
64	Gagandeep S		10	10		10			10	10		10		60	60	100	3		10	10		10		30	30	100	3	9	9	90	3	9	9	5	4	9	9	45	90	3
65	GANDLAPARTHI NAVYATHA	10			9	9		10			9	9		56	60	93	3	10			9	9		28	30	93.3333	3	10	10	100	3	10	10	5	5	10	10	50	100	3
														No. of 3's			63							No. of 3's			62	No. of 3's			51							No. of 3's			51
														TOTAL % OF no. OF 3's			96.92307692							%			95.385	%			78.4615							%			78.462

Cos	%	ATTAINED (Y/N)	
CO1	96	Y	3
CO2	95	y	3
CO3	78	Y	3
CO4	78	Y	3

BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT - BANGALORE

DEPARTMENT OF PHYSICS

Target : 60%

60%	STUDENTS MUST SCORE	60%	& ABOVE	3
55%	STUDENTS MUST SCORE	60%	& ABOVE	2
50%	STUDENTS MUST SCORE	60%	& ABOVE	1

ACADEMIC YEAR : 2020-2021
I semester (EVEN)
FACULTY INCHARGE: Dr. Daruka Prasad B
Branch: ECE
Section: H
course Engineering Physics
Course code 18PHY12

External examination marks direct assessment

	USN		External exam marks	% of marks	Attainment level
1	1BY20EC001	Aakash Kumar Singh	32	53.33	-
2	1BY20EC002	Aashritha	45	75.00	y
3	1BY20EC003	Abhay Singh	43	71.67	y
4	1BY20EC004	Abhishek K	43	71.67	y
5	1BY20EC005	Abhishek Kumar	35	58.33	-
6	1BY20EC006	Abhishek Nagesh Shetty	45	75.00	y
7	1BY20EC007	Abhishek Yadav	38	63.33	y
8	1BY20EC008	Achyuth Rao H	38	63.33	y
9	1BY20EC009	ACHYUTHA GOWDA C P	44	73.33	y
10	1BY20EC010	A TEJA	45	75.00	y
11	1BY20EC011	ADITHYA R	47	78.33	y
12	1BY20EC012	ADITYA SRINIVAS K	45	75.00	y
13	1BY20EC013	Aishwarya N	45	75.00	y
14	1BY20EC014	Ajay Basha Komali	44	73.33	y
15	1BY20EC015	AKHIL MP	43	71.67	y
16	1BY20EC016	Akhilesh N	44	73.33	y
17	1BY20EC017	Akshata Dabrabad	44	73.33	y
18	1BY20EC018	Akshatha S	45	75.00	y
19	1BY20EC019	Akshay goudar	40	66.67	y
20	1BY20EC020	AKSHAYA SUBRAHMANYA E	43	71.67	y
21	1BY20EC021	ALLA VAMSI KRISHNA	42	70.00	y
22	1BY20EC022	Aman Kumar	45	75.00	y
23	1BY20EC023	AMOGH DIXIT	44	73.33	y
24	1BY20EC024	AMULYA M KAUSHIK	44	73.33	y
25	1BY20EC025	Anand A B	40	66.67	y
26	1BY20EC026	ANANYA.R	48	80.00	y
27	1BY20EC027	Aniket Sharma	40	66.67	y
28	1BY20EC028	A SASI SEKHAR	28	46.67	-
29	1BY20EC029	Anubhav Kumar	47	78.33	y
30	1BY20EC030	APOORV SHANDILYA	45	75.00	y
31	1BY20EC031	Archana B	48	80.00	y
32	1BY20EC032	ARUNABH RANJAN	37	61.67	y
33	1BY20EC033	Arya Murali	45	75.00	y
34	1BY20EC034	Ashish Srinivasan	43	71.67	y
35	1BY20EC035	Ashwin Ajay	28	46.67	-
36	1BY20EC036	Asif Ayoub Bhatti	38	63.33	y
37	1BY20EC037	ATISH MARAGUR	44	73.33	y
38	1BY20EC038	B Meghana	48	80.00	y
39	1BY20EC039	Bhaswati Talukdar	48	80.00	y
40	1BY20EC040	Bhavitha D S	48	80.00	y
41	1BY20EC041	Bheemireddy Harini	48	80.00	y
42	1BY20EC042	Bhumika R	0	0.00	-
43	1BY20EC043	Bhumika T V	42	70.00	y
44	1BY20EC044	Bhuvan A R	39	65.00	y
45	1BY20EC045	Bhuvana H	45	75.00	y
46	1BY20EC046	Bittu Kumar	44	73.33	y
47	1BY20EC047	Chandana A	44	73.33	y
48	1BY20EC048	CHANDNI KUMARI	45	75.00	y
49	1BY20EC049	Chandu B R	39	65.00	y
50	1BY20EC050	CHARAN G S	40	66.67	y
51	1BY20EC051	Chirag Kumar N	42	70.00	y
52	1BY20EC052	Deekshitha B S	44	73.33	y
53	1BY20EC053	Deepak Darshan P	44	73.33	y
54	1BY20EC054	Deepika R	45	75.00	y
55	1BY20EC055	deepti hp	47	78.33	y
56	1BY20EC056	Devaraj	35	58.33	-
57	1BY20EC057	Dharani S	45	75.00	y
58	1BY20EC058	Divyashree.S	38	63.33	y
59	1BY20EC059	Duggasani venkata pradeep kumar Redd	40	66.67	y
60	1BY20EC060	Enosh J	42	70.00	y
61	1BY20EC061	G MEENAKSHI	44	73.33	y
62	1BY20EC062	G THARUN	33	55.00	-
63	1BY20EC063	Gagandeep S	38	63.33	y
64	1BY20EC064	GANDLAPARTHI NAVYATHA	42	70.00	y

	NO. OF Y	%	Attained(Y/N)	GRADE
CO1	57	89	N	3
CO2	57	89	N	3
CO3	57	89	N	3
CO4	57	89	N	3

BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT - BANGALORE

DEPARTMENT OF PHYSICS

ACADEMIC YEAR :

I semester (EVEN SEM)

FACULTY INCHARGE:

Branch:

Section:

Course Engineering Physics course code: 18PHY12

	Internal attainment	External attainment	
CO1	3	3	3
CO2	3	3	3
CO3	3	3	3
CO4	3	3	3
AVERAGE GRADE			12
		Cii	3

	PO1	PO2	PO3	PO4	PO5
CO1	3	3			
CO2	3	3			
CO3	3	3			
CO4	3	3		1	

Final CO-PO mapping:

X – Enter Average attainment for the CO

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3										
CO2	3	3										
CO3	2.4	3										
CO4	1.2	3			1							
Ciii	2.4	3			1							

Final Subject-PO mapping:

Enter Average attainment for the CO

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Engg Physics	2.4	3.00			0.4							