

19<sup>th</sup> May 2025 .

MIT MORADAEAD

1<sup>st</sup> CT

Department of Applied Sciences &amp; Humanities

Course: B. Tech.

Semester: 2<sup>nd</sup>

Session: 2024 – 25

Sections: A,B,C,D

Subject: Physics

Subject Code: BAS 201

MM: 20

Time: 1 Hr

*Lajja  
B7*

Q. No.	1	2	3	4	5	6
SC/ Blm	1 K3	4 K3	3 K2	3 K2	3 K2	4 K2

## PART A

1. Kinetic Energy of an electron is  $4.55 \times 10^{-26}$  J. Calculate momentum and wavelength of electron.

2

## PART B

2. Calculate the numerical aperture, acceptance angle and critical angle of a fibre having core refractive index 1.466 and cladding refractive index 1.446.

3

3. In Newton's ring experiment, the diameters of 4<sup>th</sup> and 12<sup>th</sup> dark rings are 0.400 cm and 0.700 cm respectively. Deduce the diameter of 22<sup>nd</sup> dark ring.

3

## PART C

*Q = SUPAR*

4. Discuss the phenomenon of Fraunhofer diffraction at a single slit and show that the relative intensities of the successive maxima are nearly  $1 : (4/9) \pi^2 : (4/25) \pi^2 : (4/49) \pi^2 \dots$

4

5. Discuss the phenomenon of interference of light due to thin films in reflected light and find the conditions for maxima and minima.

4

6. Describe construction and working of Ruby Laser with neat and labeled diagrams.

4

## OR

- Explain briefly Absorption and stimulated emission. Establish a relation between Einstein's A and B coefficient.

$$R_{12} = R_{21}(sp) + R_{11}(st)$$

*R<sub>12</sub>, R<sub>21</sub>, R<sub>11</sub>, sp, st*

- Write down proper theory wherever necessary.
- Draw Neat & Labeled Diagrams using Pencil only.

*Latit**mgm*

20<sup>th</sup> Jun 2025

MIT MORADABAD

2<sup>nd</sup> CT

Department of Applied Sciences &amp; Humanities

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Semester: 2<sup>nd</sup>

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Q. No.	1	2	3	4	5	6
CO/ Blm	5 K2	2 K3	1 K3	5 K3	2 K4	1 K2

**PART A**

1.	Write a short note on Quantum Dots.	2
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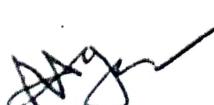
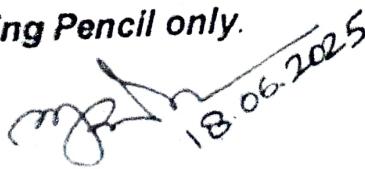
**PART B**

2.	If the earth receives $3 \text{ cal min}^{-1} \text{ cm}^{-2}$ solar energy, what are the amplitude of electric and magnetic field of radiation?	3
3.	An electron is bound in 1-D potential box which has width $2.8 \times 10^{-10} \text{ m}$ . Assuming the height of box to be infinite, calculate the lowest 3 permitted energy values of electron.	3

**PART C**

4.	Explain Type I and Type II superconductors? A superconducting tin has critical temperature of 3.7K in zero magnetic fields and a critical field of 0.306 T at 0 K. Calculate the critical field at 2 K.	4
5.	Write down Maxwell's equations for free space and prove that the electromagnetic waves are transverse in nature.	4
6.	What do you understand physical significance of wave function. Derive Schroedinger Time independent and Time dependent wave equations.  OR  Explain Compton Effect and derive an expression for the Compton shift. X-ray of wavelength $0.015 \text{ Å}$ is scattered at $60^\circ$ . Find the wavelength of scattered X-ray.	4

- Write down proper theory wherever necessary.
- Draw Neat & Labeled Diagrams using Pencil only.



 18.06.2025

*Fajar* (2)

MORADABAD INSTITUTE OF TECHNOLOGY, MORADABAD  
ELECTRICAL ENGINEERING DEPARTMENT  
Class Test-1 (Session 2024-25) (SET-1)

Course: B. Tech

Semester: 1<sup>st</sup>

Section: A, B, C, D

Subject: Fundamentals of Electrical Engineering

Time: 60 Minutes

Subject Code: BEE-201

Max. Marks: 20

S. No.	1	2	3	4	5	6
CO No.	CO3	CO2	CO2	CO1	CO1	CO2
Bloom's Level	K1	K2	K3	K3	K3	K4

Note: 1) This paper contains three sections, Section (A) (B) & (C)      2) All sections are compulsory

**Section (A)**

Attempt this question. This question carries 2 marks.

(1\*2 = 2)

- 1) With the help of examples classified different types of magnetic materials.

**Section (B)**

Attempt all questions. Each question carries 3 marks.

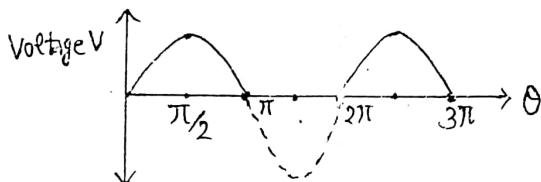
(2\*3 = 6)

- 2) Derive an expression for form factor and peak factor for sinusoidal voltage.

OR

Find rms, average value and peak factor of the voltage waveform shown in figure.

Peak factor =  $\frac{\text{max}}{\text{rms}}$



- 3) The voltage applied to a circuit is  $v = 100 \sin(\omega t + 30^\circ)$  & current flowing in the circuit is  $i = 20 \sin(\omega t + 60^\circ)$ . Determine the impedance, resistance, reactance, power and power factor of the circuit.

OR

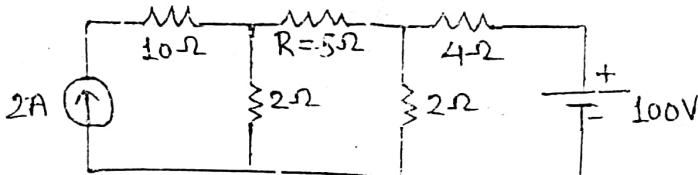
An alternating voltage is given by  $v = 141.4 \sin 314t$ . Find (i) frequency (ii) rms value (iii) average value (iv) the instantaneous value of voltage when 't' is 2 ms (v) the time taken for the voltage to reach 100 V for the first time after passing through zero value.

**Section (C)**

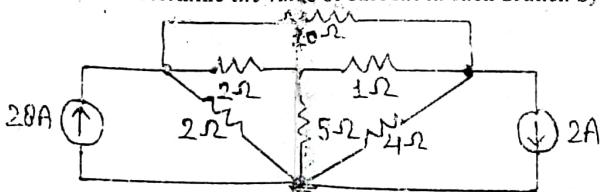
Attempt all questions. Each question carries 4 marks.

(3\*4 = 12)

- 4) (a) Define with examples (i) Unilateral and Bilateral Elements (ii) Active and Passive Elements  
(b) State Kirchhoff voltage law. Calculate the value of current in R ohm resistance by using mesh analysis method.



- 5) State Kirchhoff current law. Determine the value of current in each branch by using nodal analysis method.



- 6) Define the term Resonance. Derive expression for resonant frequency in series R-L-C circuit. Also draw resonance curve.

*Fayin* (M)

**MORADABAD INSTITUTE OF TECHNOLOGY, MORADABAD**  
**ELECTRICAL ENGINEERING DEPARTMENT**  
Class Test-2 (Session 2024-25) (SET-1)

Course: B. Tech

Semester: 2<sup>nd</sup>

Section: A,B,C,D

Subject: Fundamentals of Electrical Engineering

Time: 60 Minutes

Subject Code: BEE-201

Max. Marks: 20

S. No.	1	2	3	4	5	6
CO No.	CO3	CO5	CO4	CO3	CO4	CO5
Bloom's Level	K2	K2	K2	K3	K3	K3

Note:

- 1) This paper contains three sections, Section (A) (B) & (C)      2) All sections are compulsory

**Section (A)**

Attempt this question. This question carries 2 marks.

(1\*2 = 2)

Q1) What are the different types of losses in transformer?

**Section (B)**

Attempt all questions. Each question carries 3 marks.

(2\*3 = 6)

Q2) Write a short notes on ELCB & MCB.

OR

Write advantages of PVC cable and XLPE cable over other cables.

Q3) Draw torque slip characteristics of 3 phase induction motor. A 3 phase, 4 pole 50 Hz induction motor has a full-load slip of 4%. Calculate full-load speed of motor.

OR

Explain the working principle of Synchronous motor. Also write applications of synchronous motor.

**Section (C)**

Attempt all questions. Each question carries 4 marks.

(3\*4 = 12)

Q4) (a) The maximum efficiency of a 100 kVA transformer is 98.40% and operates at 90% full load unity power factor. Calculate the efficiency of a transformer at unity power factor at full load.

OR

Derive the formula for emf equation of normal 2 winding Transformer. Also write working principle of transformer.

Q5) (a) A 20 kW, 200 V shunt generator has an armature resistance of 0.05 ohm and a shunt field resistance of 200 ohm. Calculate the power developed in the armature when it delivers rated output.

OR

Derive EMF equation of DC machine.

(b) Derive the formula for torque developed in DC machine.

OR

Explain double revolving field theory. Write the names of different starting methods of 1-phase I.M.

*safety*

Q6) What is the need of earthing in electrical installation? Write short notes on pipe earthing.

OR

Explain working of Lead Acid & Nickel Iron batteries by writing Complete equations mentioning active materials.

For any query contact to: Mr Saurabh Saxena 9456031300/7895043195

*Pipe earthing  
rod earthing*

Approved

Saurabh  
19/06/25

*magnetic field Rotar  
constant speed.  
efficiency.*

**MORADABAD INSTITUTE OF TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

Course: B.Tech.

Sem: 2<sup>nd</sup>

SESSIONAL TEST -1st (SET-1)

Subject: Programming For Problem Solving

Session: 2024-25

Subject Code: BCS-201

Time: 1 hr.

Sec: A, B, C and D

Max. Marks: 20

Q.No. :	1	2	3	4	5	6
CO No. :	<u>1</u>	<u>1</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>3</u>
Bloom's Level	K2	K2	K2	K3	K3	K3

**CO1:** To develop simple algorithms for arithmetic and logical problems.

**CO2:** To translate the algorithms to programs & execution (in C language).

**CO3:** To implement conditional branching, iteration and recursion.

**Note:** All sections are compulsory.

### SECTION- A

1. Explain the various primitive data types on the bases of range, format specifier and memory size used in C language. 2 marks
2. Explain the digital computer and its components with proper architecture (Block diagram). 3 marks
3. Explain bitwise and ternary operators in detail. What is the importance of precedence order and associativity. 3 marks

### SECTION- B

4. WAP in C to check the entered year is leap year or not. Also write the syntax of if-else statement. 4 marks
5. WAP in C to perform arithmetic calculations (+, -, \*, /) using switch statements. 4 marks
6. WAP in C to check whether the entered positive integer number is prime or not. 4 marks

a>b? b>c : a:=b  
if (n>1){  
cout<<

if (n>1){  
cout<<

**MORADABAD INSTITUTE OF TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**  
**SESSIONAL TEST -2nd (SET-2)**  
 Course: B.Tech. Sem: 2<sup>nd</sup> Session: 2024-25 Subject Code: BCS-201  
 Subject: Programming For Problem Solving

Time: 1 hr.  
See A, B, C and D  
Max. Marks: 20

Q.No. :	1	2	3	4	5	6
CO No. :	3	3	1	4	2	1
Bloom's Level	K3	K2	K3	K3	K2	K3

CO3: To implement conditional branching, iteration and recursion.

CO4: To decompose a problem into functions and synthesize a complete program using divide and conquer approach.

CO5: To use arrays, pointers and structures to develop algorithms and programs.

Note:

1. This paper contains two sections (A) and (B)
2. All sections are compulsory.

### SECTION- A

1. WAP in C to add two nxn matrices and print the sum matrix. 2 marks
2. Explain the difference between structure and union in detail. 3 marks
3. WAP in C to find the factorial of positive integer number using recursive function. 3 marks

### SECTION- B

4. WAP in C to sort the elements of the array using bubble sort method. 4 marks
5. Explain in details the Macro and its types with suitable example of each. 4 marks
6. Explain malloc(), calloc(), realloc() and free() functions used in Dynamic Memory Allocation with suitable example. 4 marks

~~int fib(n){  
 struct{  
 int a, b;  
 } s;  
 s.a = 0;  
 s.b = 1;  
 for(int i = 0; i < n; i++)  
 s = (s.a + s.b);  
 return s.a;  
}~~

~~int fib(n-2){  
 struct{  
 int a, b;  
 } s;  
 s.a = 0;  
 s.b = 1;  
 for(int i = 0; i < n-2; i++)  
 s = (s.a + s.b);  
 return s.a;  
}~~

Fajr  
Set A

**MORADABAD INSTITUTE OF TECHNOLOGY**  
**APPLIED SCIENCES & HUMANITIES DEPARTMENT**  
**SESSIONAL TEST - I**

**Course: B.Tech.**

**Semester: II**

**Session 2024-25**

**Section: A,B,C,D**

**Subject Name: Environment & Ecology**

**Subject Code:(BAS-204)**

**Max. Marks: 20**

**Time: 1 Hour 15 minutes**

Q. No. :	1	2	3	4	5	6
CO No. :	1	2	1	1	2	2
Bloom's Level	K2	K1	K2	K2	K1	K2

**Note:** (1) This paper contains three sections. Section A, Section B & Section C.

**(2) All sections are compulsory.**

**SECTION-A**

**2\*1=2 Marks**

**Q.1 What are ecological pyramids? Discuss.**

**SECTION-B**

**3\*2=6 Marks**

**Q.2 Discuss the Arsenic problem in drinking water. Explain their sources, effects and remedial measures.**

**Q.3 Write a note on sustainable development.**

**SECTION-C**

**4\*3=12 Marks**

**Q.4 Classify the atmosphere on the basis of temperature variation. State the main activities taking place in each of them.**

**Q.5 What do you mean by water borne diseases? Enlist various water borne diseases and their causes.**

**Q.6 What do you mean by material cycles? Describe the Sulphur cycle with neat diagram.**

**MORADABAD INSTITUTE OF TECHNOLOGY**  
 APPLIED SCIENCES & HUMANITIES DEPARTMENT  
 SESSIONAL TEST-II

Course: B.Tech.  
 Session 2024-25

*Faisal* (31)

Semester: II  
 Section: A,B,C,D

Subject Name: Environment & Ecology  
 Subject Code: (BAS-204)  
 Max. Marks: 20

Time: 1 Hour

Q. No. :	1	2	3	4	5	6
CO No. :	2	3	4	4	5	5
Bloom's Level	K2	K2	K1	K2	K3	K2

Note: (1) This paper contains three sections. Section A, Section B & Section C.  
 (2) All sections are compulsory.

SECTION-A		2*1=2 Marks
Q.1. Differentiate between conventional and non-conventional energy sources.		
SECTION-B		3*2=6 Marks
Q.2. What do you understand by water pollution? Suggest various remedial and control measures to minimize water pollution.		
Q.3. Explain acid rain and its effects on environment.		
SECTION-C		4*3=12 Marks
Q.4. Discuss the phenomenon of 'Greenhouse Effect'. What is its effects? What remedial measures you suggest?		
Q.5. What do you mean by NGOs? What are their duties? Write up the details of the work taken up by any two Indian NGOs operating in India.		
Q.6. Explain the aims and objectives of women education. Discuss their implementation and problems of family welfare programme in detail.		
OR		
Discuss the ozone layer formation & ozone layer depletion. Explain the causes & effects of ozone layer depletion.		

empowerment  
 social equality

awarner  
 relief work  
 policy influence  
 CRY  
 SEWA



**MORADABAD INSTITUTE OF TECHNOLOGY**  
APPLIED SCIENCES & HUMANITIES DEPARTMENT  
SESSIONAL TEST - I

Course: B.Tech.

Session 2024-25

Subject Name: MATHS-II

Max. Marks: 20

Semester: II

Section: A, B, C, D, E, F, G, H

Subject Code: (BAS-203)

Time: 1 Hour

Q. No. :	1	2	3	4	5	6
CO No. :	2	1	2	1	3	2
Bloom's Level	K3	K3	K3	K3	K3	K3

Note: (1) This paper contains three sections. Section A, Section B &amp; Section C.

(2) All sections are compulsory.

SECTION-A		2*1=2 Marks
Q.1.	Find the Laplace Transform of $e^{-t}\{1-u(t-2)\}$	
SECTION-B		3*2=6 Marks
Q.2.	Solve $(D^3 - 3D^2 + 3D - 1)y = e^x + 2$	
Q.3.	Find the Laplace transform of $(1+te^{-t})^3$	
	<u>OR</u>	
	Find the Inverse Laplace transform of $\left(\frac{\sqrt{p-1}}{p}\right)^2$	
SECTION-C		4*3=12 Marks
Q.4.	Solve the differential equation: $x^2 \frac{d^2y}{dx^2} + 4x \frac{dy}{dx} + 2y = e^x$	
	<u>OR</u>	
	Solve by the method of Variation of Parameters $\frac{d^2y}{dx^2} + y = \tan x$	
Q.5.	Find the Fourier Series for the function $f(x) = x^2, -\pi \leq x \leq \pi$ .	
	Hence show that $\frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \dots = \frac{\pi^2}{6}$	
Q.6.	By using Convolution theorem, evaluate $L^{-1} \left\{ \frac{1}{p^2(p^2+1)} \right\}$	
	<u>OR</u>	
	Apply Heaviside's Expansion formula evaluate $L^{-1} \left\{ \frac{3p+16}{(p+2)(p-3)} \right\}$	

**MORADABAD INSTITUTE OF TECHNOLOGY**  
 APPLIED SCIENCES & HUMANITIES DEPARTMENT  
 CLASS TEST - II

Course: B.Tech.

Session 2024-25

Subject Name: MATHS-II

Max. Marks: 20

Semester: II

Section: A, B, C, D, E, F, G, H

Subject Code: (BAS-203)

Time: 1 Hour

Q. No. :	1	2	3	4	5	6
CO No. :	4	3	4	4	5	5
Bloom's Level	K3	K3	K3	K3	K3	K3

Note: (1) This paper contains three sections. Section A, Section B & Section C.  
 (2) All sections are compulsory.

Q.1.	SECTION-A		2*1=2 Marks
	Write C-R equations in Polar Coordinates.		
Q.2.	SECTION-B		3*2=6 Marks
	Test the series $\frac{14}{1^3} + \frac{24}{2^3} + \frac{34}{3^3} + \dots + \frac{10n+4}{n^3} + \dots$		
Q.3.	If $u = e^x(x \cos y - y \sin y)$ is a Harmonic Function , Find an Analytic function $f(z) = u + iv$ such that $f(1) = e$		
	<u>OR</u>		
Q.4.	Show that the function $e^x(\cos y + i \sin y)$ is an Analytic Function and Find its derivative.		4*3=12 Marks
	SECTION-C		
Q.5.	Examine the nature of $f(z) = \frac{xy^2(x+iy)}{x^2+y^4}, z \neq 0$ and $f(0) = 0$ in the region including the origin.		
	<u>OR</u>		
Q.6.	Find the bilinear transformation which maps the points $z = 1, -i, -1$ onto $w = i, 0, -i$ .		
	Evaluate $\int \frac{z^2}{(z-1)(z+2)} dz$ Where C is the circle $ Z  = 3$		
	<u>OR</u>		
	Find the Taylor's or Laurent's series which represent the function $\frac{1}{z^2 - 3z + 2}$ in the region		
	(i) $ z  < 1$ (ii) $1 <  z  < 2$ (iii) $ z  > 2$ .		
	Evaluate by Contour Integration $\int_0^{2\pi} \frac{d\theta}{(5+4\cos\theta)}$		
	<u>OR</u>		
	Evaluate by Contour Integration $\int_0^\infty \frac{dx}{(1+x^2)}$		



Paper id: 252256

Fajal

Printed Page: 1 of 3  
Subject Code: BAS201

Roll No: \_\_\_\_\_

**BTECH**  
**(SE VI II) THEORY EXAMINATION 2024-25**  
**ENGINEERING PHYSICS**

TIME: 3 HRS

M.MARKS: 70

**Note:** Attempt all Sections. In case of any missing data; choose suitably.

**SECTION A**

**1. Attempt all questions in brief. 02 x 7 = 14**

Qno.	Question	CO	Level
a.	What do you mean by population inversion? जनसंख्या व्युत्क्रमण से आप क्या समझते हैं?	CO4	K1
b.	What is Wein's displacement law? वेन का विस्थापन नियम क्या है?	CO1	K1
c.	Define Dispersive power of grating. ग्रेटिंग की परिष्कारण क्षमता को परिभाषित करें।	CO3	K1
d.	An electromagnetic wave of frequency $10 \text{ MHz}$ is incident normally on a good conductor (e.g., copper) with conductivity $\sigma = 5.8 \times 10^7 \text{ S/m}$ and relative permittivity $\mu_r = 1$ . What is the skin depth $\delta$ of the wave in the conductor? (Use $\mu_0 = 4\pi \times 10^{-7} \text{ H/m}$ ) एक विद्युत चुंबकीय तरंग जिसकी आवृत्ति $10 \text{ MHz}$ है, सामान्य रूप से एक अच्छे चालक (जैसे कि तांबा) पर आपतित होती है, जिसकी चालकता $\sigma = 5.8 \times 10^7 \text{ S/m}$ और सार्वज्ञ चुंबकीय पाराम्यता $\mu_r = 1$ है। चालक में दूरी की स्किन डेप्थ $\delta$ क्या होती है?	CO2	K3
e.	What is de Broglie wave for a moving particle at temperature T? ताप T पर गतिमान कण के लिए डे-ब्रोली ताप क्या है?	CO1	K2
f.	Show that perfect diamagnetism is an essential property of the superconductor. दर्शाइए कि पूर्ण प्रतिचुम्बकत्व अति चालक का एक आवश्यक गुण है।	CO5	K2
g.	A Fiber made of silicon with a diameter of the core is such that it consists of core and claddings refractive indexes of 1.40 and 1.37. Find the numerical aperture of Fiber. सिलिकोन से बना एक फाइबर जिसका कोर व्यास ऐसा है कि इसमें कोर और क्लैडिंग के अपवर्तनांक 1.40 और 1.37 हैं। फाइबर का संख्यात्मक एपर्चर ज्ञात करें।	CO4	K3

**SECTION B**

**2. Attempt any three of the following: 07 x 3 = 21**

Qno.	Question	CO	Level
a.	Derive the conditions of Maxima & Minima of reflected light in a thin film of uniform thickness. पतली समान मोटाई की फिल्म में परावर्तित प्रकाश में अधिकतम एवं न्यूनतम तापों की विविध व्युत्पन्न करा।	CO3	K2
b.	Derive differential form of Maxwell's equations. मैक्सवेल के समीकरणों का अवकल रूप ज्ञात कीजिए।	CO2	K2
c.	Discuss construction and working of He-Ne Laser. He-Ne लेजर के निर्माण और कार्य प्रणाली पर्याप्त चर्चा करें।	CO4	K2
d.	Derive Expression for diameter of dark ring in Newton's rings. न्यूटन के वलयों में अदीप वलय के व्यास के लिए क्षेत्र व्युत्पन्न कीजिए।	CO3	K2
e.	Describe the experiment of Davisson and Germer to demonstrate the wave character of electrons. इलेक्ट्रॉनों के तांग चारित्र को प्रदर्शित करने के लिए एक्सिस। और जर्मर के प्रयोग का वर्णन करें।	CO1	K2

**SECTION C**

**3. Attempt any one part of the following: 07 x 1 = 07**

**BTECH**  
**(SEM II) THEORY EXAMINATION 2024-25**  
**ENGINEERING PHYSICS**

TIME: 3 HRS

M.MARKS: 70

Qno	Question	CO	Level
a.	Explain the construction and working principle of an optical fiber. Define acceptance angle and numerical aperture, and derive the relation between them. एक ऑप्टिकल फाइबर की संरचना और कार्य सिद्धांत को समझाए। स्वीकृति कोण और न्यूमेरिकल एपरचर को परिभ्रामित करें तथा उनके बीच का संबंध व्युत्पन्न कीजिए।	CO 4	K2
b.	Derive change in wavelength in Compton scattering. Why Compton effect is not observed for visible light? कॉम्पटन प्रकीर्ण में तरंगदैर्घ्य में परिवर्तन व्युत्पन्न को। दृश्य प्रकाश के लिए कॉम्पटन प्रभाव क्यों नहीं देखा जाता है?	CO 1	K2

**4. Attempt any one part of the following: 07 x 1 = 07**

Q no.	Question	CO	Level
a.	Derive relation between Einstein's coefficients. आइस्टीन के गुणांकों के बीच संबंध निकालें।	CO4	K2
b.	State and Prove Poynting theorem. पॉइंटिंग प्रमेय बताएं और सिद्ध करें।	CO2	K2

**5. Attempt any one part of the following: 07 x 1 = 07**

Qno	Question	CO	Level
a.	Discuss Fraunhofer diffraction of light at a double slit and obtain the conditions for diffraction and interference maxima and minima. द्विप्लाशी पर प्रकाश के फ्राउनहोफर विवरण पर चर्चा करें तथा विवरण और व्यतिकरण अधिकतम और न्यूनतम के लिए स्थितियाँ प्राप्त करें।	CO 1	K2
b.	Derive the wave equations for electric and magnetic fields in vacuum using Maxwell's equations. Discuss the transverse nature of electromagnetic waves and explain how the electric and magnetic fields are oriented with respect to the direction of propagation. मैक्सवेल समीकरणों का उपयोग करके निर्वात में विद्युत और चुंबकीय क्षेत्र की तरंग समीकरण व्युत्पन्न करें। विद्युत-चुंबकीय तरंगों की अनुप्रस्थ प्रकृति पर चर्चा करें और यह समझाइए कि विद्युत और चुंबकीय क्षेत्र तरंग के संचरण दिशा के सापेक्ष किस प्रकार अनुप्रस्थ होते हैं।	CO 2	K2

**6. Attempt any one part of the following: 07 x 1 = 07**

Qno.	Question	CO	Level
a.	(i) What are Newton's rings? Why are they circular in shape? Newton's rings are observed in reflected light of wavelength 5900 Å. The diameter of 10 <sup>th</sup> dark ring is 0.50 cm. Find the radius of curvature of the lens. न्यूटन के छल्ले क्या हैं? वे गोलाकार क्यों होते हैं? न्यूटन के छल्ले 5900 Å तरंग दैर्घ्य के प्रकाश पर विद्युत तरंग में देखे जाते हैं। 10वें अंधेरे बल्ले का व्यास 0.50 सेमी है। लेंस की बक्रता त्रिज्या ज्ञात कीजिए। (ii) A monochromatic light of wavelength $\lambda=600$ nm is incident normally on a plane transmission grating having 5000 lines per cm. At what angle will the first-order principal maximum be observed? 600 nm तरंग दैर्घ्य वाली एक एकवर्णीय प्रकाश एक समतल ट्रांसमिशनग्रेटिंग पर सामान्य रूप से प्रतिक्रिया करता है। जिसमें प्रति सेमी 5000 रेखाएँ हैं। पहले क्रम के प्रमुख अधिकरण को विस्तृत कोण पर काढ़ें देखा जाएगा।	CO3	K3
b.	Obtain the normalized wave function and energy Eigen values for a particle in a box. एक बॉक्स में एक कण के लिए सामान्यीकृत तरंग फंक्शन और ऊर्जा आइजेनमान प्राप्त करें।	CO1	K3

**7. Attempt any one part of the following: 07 x 1 = 07**