Question Paper For Internal Assessment Examination (Theory) - Credit 4 / 35 /

Instructions for Students/FacultyMid Term I (Total 80 Marks, 2 HRS. Syllabus from Unit-1)

- Part A: Total number of questions to be given are ten (5 from CO1 and 5 from CO2), each carrying 2 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words For both Question & Answer)**, no objective type or fill in the blanks. Total 20 marks.
- Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2). They are long answer type (**Not More Than 50 Words for Question)**, each carrying 5 marks. Total 20 marks.
- Part C: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2). They are numerical answer type / fully elaborative type (**Not More Than 70 Words for Question)** *, each carrying 10 marks. Total 40 marks.

Mid Term II (Total 120 Marks, 2.5 HRS., Syllabus from Unit-2)

- Part A: Total number of questions to be given are ten (5 from CO3 and 5 from CO4), each carrying 4 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words For both Question & Answer)**, no objective type or fill in the blanks. Total 40 marks.
- Part B: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student has to answer four (2 from CO3 and 2 from CO4). They are long answer type (**Not More Than 50 Words for Question)**, each carrying 7 marks. Total 28 marks.
- Part C: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student has to answer four (2 from CO3 and 2 from CO4). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question)** *, each carrying 13 marks. Total 52 marks.

Mid Term III (Total 120 Marks, 2.5 HRS., Syllabus from Unit-3)

- Part A: Total number of questions to be given are ten (5 from CO5 and 5 from CO6), each carrying 4 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words For both Question & Answer)**, no objective type or fill in the blanks. Total 40 marks.
- Part B: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student must answer four (2 from CO5 and 2 from CO6). They are long answer type (**Not More Than 50 Words for Question)**, each carrying 7 marks. Total 28 marks.
- Part C: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student must answer four (2 from CO5 and 2 from CO6). They are numerical answer type / fully elaborative type (**Not More Than 70 Words for Question)** *, each carrying 13 marks. Total 52 marks.

*** LIST OF ELABORATIVE THEORY QUESTION SUBJECTS**: NO SUBJECT UNDER CREDIT FOUR

Instructions For Faculties:

There should be total 6 Course Outcomes (COs) for each subject.

- Mid Term Question Papers are to be submitted as per Course Outcomes (COs) which should be divided equally in Part A, Part B and Part C according to Mid Term Examination and Credit Point.
- In Mid Term-1, the questions are to be given from CO1 and CO2. In Mid Term-2, the questions are to be given from CO3 and CO4. Similarly, in Mid Term-3, the questions are to be given from CO5 and CO6.

- **FACULTY MEMBERS, PLEASE ENSURE EXCEPT ABOVE LISTED SUBJECTS, NO THEORITICAL ELABORATIVE QUESTION SHOULD BE GIVEN IN PART 'C' OF QUESTION PAPER**

INSTRUCTION FOR STUDENTS

- **STUDENT IS ALLOWED TO ENTER LATE NOT MORE THAN 15 MIN AFTER STARTING OF EXAM, AND MAY LEAVE THE EXAM HALL ON EXPIRY OF ATLEAST OF 1 Hr FROM THE STARTING TIME OF EXAMINATION.**

QUESTION PAPER AND STUDENTS DETAILS

Type of Exam	Mid Term 1	**Date of Submission**	22/06/2021
Name of Faculty	Mr. Yatan	**Date of Examination**	28/06/2021
Course	B.Tech (Aeronautical Engineering)	**Semester**	SEMESTER : 2
Batch	Twentieth (20)	**Subject**	2 FY2 - 02 Engineering Physics (Cr 4)

COURSE OUTCOMES FOR REFERENCE TO FRAME QUESTION PAPER

(Faculties are required to mention relevant Course Outcome number against the respective question in QP)

Course Outcome	CO 1. Understand the wave optics principals and its behavior in real time application. CO 2. Outline the importance of quantum mechanics.		
Email I'd	yatannagpal@soaneemrana.org	**Phone No.**	798-226-2196
Student Name		**Student Reg No.**	

Part A

All the questions are compulsory to attend.

1. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			1
Question : 1	Define the term interference of light and coherent source.		
1	Wave Optics	Y.C. Bhatt, Ashirwad publication	
Question : 2	Mention the main principle of Michelson's Interferometer and give the applications of Michelson's Interferometer.		
2	Michelson's Interferometer.	Y.C. Bhatt, Ashirwad publication	
Question : 3	Differentiate between Fraunhofer diffraction and Fresnel diffraction.		
3	Fraunhofer Diffraction from a Single Slit	Y.C. Bhatt, Ashirwad publication	
Question : 4	Write a short note on resolving power.		

5	Resolving power	Y.C. Bhatt, Ashirwad publication	
Question : 5	Write a short note on Bragg's law.		
8	X-Ray diffraction	Y.C. Bhatt, Ashirwad publication	
2. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			2
Question : 6	Define quantum mechanics and state the concept of wave particle duality.		
10	Introduction to quantum Mechanics, Wave-particle duality	Y.C. Bhatt, Ashirwad publication	
Question : 7	Define wave function and give the physical interpretation of a wave function Ψ.		
11	Matter waves, Wave function and basic postulates	Y.C. Bhatt, Ashirwad publication	
Question : 8	Write any two postulates of wave function.		
11	Matter waves, Wave function and basic postulates	Y.C. Bhatt, Ashirwad publication	
Question : 9	Give the applications of Schrodinger equation.		
14	Applications of the Schrodinger's Equation	Y.C. Bhatt, Ashirwad publication	
Question : 10	Define particle in a 3-D box and state energy quantization.		
15	Particle in three dimensional boxes	Y.C. Bhatt, Ashirwad publication	

Part B

FOR MIDTERM 1 - Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2).
FOR MIDTERM 2 - Part B: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student must answer four (2 from CO3 and 2 from CO4).
FOR MIDTERM 3 - Part B: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6).

3. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			1
Question : 1	Explain the concept of Newton's Rings. Also explain the salient features of Newton's Rings.		
1	Newton's Rings	Y.C. Bhatt, Ashirwad publication	
Question : 2	Explain with the help of a diagram the X-ray diffraction.		
8	X-ray diffraction	Y.C. Bhatt, Ashirwad publication	

Question : 3	Explain and deduce Bragg's law in X-ray diffraction.		
9	Bragg's law	Y.C. Bhatt, Ashirwad publication	
4. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			2
Question : 4	Obtain the expression of De-Broglie wavelength.		
10	Quantum Mechanics: Introduction to quantum Mechanics	Y.C. Bhatt, Ashirwad publication	
Question : 5	Derive Time dependent Schrodinger wave equation.		
12	Time dependent and time independent Schrodinger's Wave Equation	Y.C. Bhatt, Ashirwad publication	
Question : 6	Derive Time independent Schrodinger wave equation.		
12	Time dependent and time independent Schrodinger's Wave Equation	Y.C. Bhatt, Ashirwad publication	
Question : 7 (Old Pattern)			

Part C

FOR MIDTERM 1 - Part C: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2).
FOR MIDTERM 2 - Part C: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student must answer four (2 from CO3 and 2 from CO4).
FOR MIDTERM 3 - Part C: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6).

5. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			1
Question : 1	Explain the concept of dispersive power. Derive an expression for resolving power of a grating.		
7	Resolving power of diffraction grating	Y.C. Bhatt, Ashirwad publication	
Question : 2	Describe the construction and working of Michelson's Interferometer. How would you use it to measure the wavelength of monochromatic light?		
2	Michelson's Interferometer	Y.C. Bhatt, Ashirwad publication	
Question : 3	Briefly explain with the help of a diagram the positions of maxima and minima intensity distribution in the diffraction pattern of a single slit.		
3	Fraunhofer Diffraction from a Single Slit	Y.C. Bhatt, Ashirwad publication	

6. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			2
Question : 4	Derive the Schrodinger equation of a particle in a 1-D rigid box. How energy quantization is possible for a particle in a rigid box?		
14	Applications of the Schrodinger's Equation: Particle in one dimensional	Y.C. Bhatt, Ashirwad publication	
Question : 5	Derive the Schrodinger equation of a particle in a 3-D rigid box.		
15	Particle in three dimensional boxes	Y.C. Bhatt, Ashirwad publication	
Question : 6	Find the probability that a particle in a box L wide can be found between x=0 and x=L/n when it is in the nth state.		
15	Particle in three dimensional boxes	Y.C. Bhatt, Ashirwad publication	
Upload Scanned Document In Case of Numerical or Diagram For Any of The Above Questions. *(Mention question number with relevant fig / numerical / equations. Max 150 KB)*			
I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.			

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