

**Question Paper For Internal Assessment Examination (Theory) - Credit 4 / 15 / SET 1****Instructions For Students / Faculty****Mid Term I (Total 80 Marks, 2 HRS. Syllabus From Beginning Of Session)**

- Part A: Total number of questions to be given are ten, 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, out of which student has to answer any four. They are long answer type (**Not More Than 50 Words For Question**), each carrying 6 marks. Total 24 marks.
- Part C: Total number of questions to be given are four, out of which student has to answer any three. They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question**)*, each carrying 12 marks. Total 36 marks.

Mid Term II & III (Total 120 Marks, 2.5 HRS. Syllabus From Beginning Of Session)

- Part A: Total number of questions to be given are ten, 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 seven, out of which student has to answer any five. They are long answer type (**Not More Than 50 Words For Question**), each carrying 8 marks. Total 40 marks.
- Part C: Total number of questions to be given are five, out of which student has to answer any four. They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question**)*, each carrying 15 marks. Total 60 marks.

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

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

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 & Student Details

Type of Exam	Internal Improvement Exam	Date of Submission	27/11/2020
Name of Faculty	Mr. Sidhartha Sondh	Date of Examination	01/12/2020
Course	B.Tech (Aeronautical Engineering)	Semester	SEMESTER : 1
Batch	-	Subject	1 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	COURSE OUTCOMES After completion of this course, the students should able to CO 1. Understanding the importance of mechanics. CO 2. Express the knowledge of electromagnetic waves. CO 3. Know the basics of oscillations, optics and lasers. CO 4. Understanding the importance of quantum physics. CO 5. Apply quantum mechanical principles towards the formation of energy bands in crystalline materials.		
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Student Name		Student Reg No.	

Part A

Question : 1	What is spectral purity?		
16	Spectral purity	Self	3
Question : 2	State Brigg's law.		
7	Brigg's law	Self	1
Question : 3	What is optical activity?		



16	Optical fiber	Self	3
Question : 4	What is the degeneracy of the energy level?		
23	Degeneracy	Self	5
Question : 5	Differentiate between ruby and He-Ne laser?		
26	Laser	Self	3
Question : 6	Give the reason for high intensity of a laser.		
28	Laser	Self	3
Question : 7	Differentiate between holography and photography.		
31	Holography	Self	4
Question : 8	Define semiconductor.		
33	Semiconductor	Self	5
Question : 9	What is Hall effect?		
25	Hall effect	Self	4
Question : 10	Define Q factor for a spectral line.		
13	Spectral	Self	3
Part B			
Question : 1	Explain Hall Effect with a suitable diagram. Show that the hall coefficient R_h is given by $R_h = -L/ne$, when n is a number of charge carriers per unit volume?		
28	Hall Effect	Self	4
Question : 2	i) Explain the basic postulates of the wave function? ii) Explain wave-particle duality?		
7	Wave function	Self	1
Question : 3	What is holography microscopy? With illustrative show outlay of a holographic interferometer and explain its working.		
23	Holography	Self	2
Question : 4	What are the differences between intrinsic and extrinsic semiconductors? Discuss the conduction mechanism through them.		
30	Semiconductor	Self	5
Question : 5	Explain the following: (i) Physical significance of wave function (ii) Normalized nd orthogonal wave function (iii) Bio-Savart Law		
4	Fundamentals	Self	1
Question : 6	What is Crompton scattering? Explain why Crompton effect is not observed experimentally for visible rays.		
18	Crompton effect	Self	2
Question : 7	With a suitable diagram explain the construction and working of a semiconductor laser.		
29	Semiconductor	Self	5
Part C			



Question : 1	A typical optical fiber ($n_1=1.50$) with cladding ($n_2=1.40$) is used in a water($n_0=1.33$) environment. Determine: (i) The numerical aperture (ii) The maximum acceptance angle.		
17	Optical fiber	Previous year question papers	3
Question : 2	Derive an expression for coherence length and coherence time in term of wavelength and frequency.		
19	Coherence	Self	1
Question : 3	Newton's ring is observed in the reflected light of wavelength 5.9×10^{-5} cm. The diameter of the 10th dark ring is 0.50cm. Find the radius of curvature of the lens and thickness of the air film at the ring.		
8	Newtons rings	Previous year question papers	1
Question : 4	An electric field is 150V/m is applied to a sample of n-type semiconductors whose hall co-efficient is $1.5 \times 10^{-2} \text{m}^3/\text{C}$. Determine the charge carrier density and current density in the sample assuming electron mobility to be $0.40 \text{m}^2/\text{v-s}$		
37	Semiconductor	Previous year question papers	5
Question : 5	Show that the expectation values of position and momentum of a particle in 1- D box are $a/2$ and 0 respectively. Here a is the width of the box.		
12	Quantum mechanics	Previous year question papers	4
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.		SS	

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