School of Aeronautics (Neemrana)

Question Paper For Back / Re-back Internal Assessment Examination (Theory) - Old Scheme i.e 2012 Syllabus

Instructions For Students / Faculty

Back / Re-back Internal Examination (Total 60 Marks, 2 Hrs, Syllabus From Beginning of The Session)

Total number of questions to be given are 10, each carrying 10 marks and it is compulsory to attend 2 questions from Part A and 4 questions from Part B. There is a choice of two questions out of four in part A and 4 questions out of 6 in Part B. Part A will be theoretical or derivation type **(Not More Than 70 Words For Question).** Part B will be fully numerically oriented questions **(Not More Than 70 Words For Question)**, except for the list of subjects given below. No objective type or fill in the blanks shall be given, but subpart of question can be given for both Part A & B.

* **LIST OF ELABORATIVE THEORY QUESTION SUBJECTS**: Aircraft Materials, Aircraft System, Aircraft Rules & Regulation-I, Mechanics of Composite Materials, Aircraft Design, Aircraft Rules & Regulation-II, Avionics-I, Helicopter Theory, Maintenance of Airframe and System Design, Avionics-II, Airlines and Airport Management, Maintenance of Power Plant & Systems

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

Name of Faculty*	Sidhartha Sondh	**Date of Submission of QP**	27/11/2020
Subject*	203 - Engineering Physics-II (Old)	**Date of Examination***	01/12/2020
Email Id of Faculty:*	sidharthasondh@soaneemrana.org	**Course***	B.Tech (Aeronautical Engineering)
Phone Number of Faculty*	963 455 7511	**Semester***	Semester : 2

Student Name		**Student Reg No.**	

Part A

Question : 1* What is an optical fiber? Explain numerical aperture and maximum acceptance angle for an optical fiber.

Lesson Plan*	6	**Topic***	Optical fiber	**Source***	Self

Question : 2*

Define degeneracy of an energy level. What is degeneracy of second excited state for a particle trapped in a cubicle box?

Lesson Plan* 14 **Topic*** Degeneracy **Source*** Self

Question : 3*

What is holography? How is it different from photography? Explain with a suitable diagram, how a hologram is recorded and then reconstructed?

Lesson Plan* 22 **Topic*** Holograph **Source*** Self

Question : 4*

Explain the construction and working of He- Ne Laser with neat and labelled diagram. What is role of He in this laser?

Lesson Plan* 26 **Topic*** Laser **Source*** Self

Part B

Question : 1*

Determine the expectation value of position and momentum for a particle trapped in 1-D box of side "a".

Lesson Plan* 18 **Topic*** Quantum mecanics **Source*** Self

Question : 2*

Calculate the Fermi energy in copper assuming that each copper atom contributes one free electron to electron gas. Given density of copper 8.94 X 10^-3 kg/m3 and atomic mass of copper is 63.5 X 1.67 X 10^-27.

Lesson Plan*	35	**Topic***	Fermi energy	**Source***	Previous year question

Question : 3*

Write down the Schrodinger's time-independent wave equation for a free particle confined in a one-dimensional box of size 'a' obtained Eigenvalues and normalized wave function for this particle.

Lesson Plan*	11	**Topic***	Schrodinger's time-independer	**Source***	Self

Question : 4*

Obtain an expression for density of states for a fermi gas and hence explain fermi energy level.

Lesson Plan*	36	**Topic***	Fermi energy	**Source***	Self

Question : 5

Derive the expression of numerical aperture for step index fiber.
The refractive index of core of an optical fiber is 1.5, and the refractive index difference is 0.01. Find the numerical aperture and maximum acceptance angle.

Lesson Plan	6	**Topic**	Optical fiber	**Source**	Previous year question

Question : 6

The distance between the first and the sixth minima in the diffraction pattern of a single slit is 0.5mm. The screen is 0.5m away from the slit. If the wavelength of light is used 5000A, determine the slit width.

Lesson Plan	8	**Topic**	Fundamentals	**Source**	Previous year question

Upload Scanned Document In Case of Numerical or Diagram for any of the above question

Mention question number with relevant fig / numerical / equations. Max 150 KB

Choose files or drag here

I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.