



NAME OF STUDY CENTER: SCHOOL OF AERONAUTICS, NEEMRANA

Instructions for Students / Faculty

Mid Term I (Total 60 Marks, 2 HRS. Syllabus from Unit-1)

- Part A: Total number of questions to be given are six (3 from CO1 and 3 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 12 marks.
- Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student has to answer four (2 from CO1 and 2 from CO2). They are long answer type (**Not More Than 50 Words for Question**), each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student has to 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 8 marks. Total 32 marks.

Mid Term II (Total 90 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 3 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 30 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 6 marks. Total 24 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 any 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 9 marks. Total 36 marks.

Mid Term III (Total 90 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 3 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 30 marks
- 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). 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 six (3 from CO5 and 3 from CO6), out of which student has to 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 9 marks. Total 36 marks.

* **LIST OF ELABORATIVE THEORY QUESTION SUBJECTS:** 3 MH4 - 07 Manufacturing Process, 4 AN4 - 06 Aircraft Materials and Processes (Cr 3), 5 AN4 - 05 Aircraft System (Cr 3), 6 AN4 - 05 Avionics-I (Cr 3), 6 MH4 - 03 Applied Hydraulics & Pneumatics (Cr 3), 6 MH5 - 11 Principles of Management (Cr 3), 6 MH5 - 13 Aircraft Electronics System (Cr 3), 7 AN5 - 12 Maintenance of Airframe and System (Cr 3), 7 AN5 - 13 Helicopter Theory (Cr 3), 7 AG6 - 60.1 Human Engineering and Safety (Cr 3), 7 ST - 01 Avionics II (Special Theory Subject) (Cr 3), 7 MH5 - 11 Design of Mechatronics Systems (Cr 3), 7 MH5 - 12 Robotics and Machine Vision System (Cr 3), 7 MH6 - 13 Medical Electronics (Cr 3), 7 AN6 - 60.1 Aircraft Avionic System (Cr 3), 8 AN5 - 12 Maintenance of Power Plant and System



Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 122 /

NAME OF STUDY CENTER: SCHOOL OF AERONAUTICS, NEEMRANA(Cr 3), 8 AN5 - 13 Unmanned Aerial Vehicles & Systems (UAV) (Cr 3), 8 MH5 - 13 Product Development & Launching
(Cr 3), 8 EC6 - 60.2 Robotics and control (Cr 3)**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,**

QUESTION PAPER & STUDENTS DETAILS

Type of Exam	Mid Term 1	Date of Submission	28/06/2021
Name of Faculty	Mr. Yatan	Date of Examination	30/06/2021
Course	B.Tech (Aeronautical Engineering)	Semester	SEMESTER : 4
Batch	Combined Batches 18, 19, SF 2	Subject	4 AN4 - 06 Aircraft Materials and Processes (Cr 3)-

COURSE OUTCOMES FOR REFERENCE TO FRAME QUESTION PAPERS

(Faculties are required to mention Course Outcome Number against each part of the question paper)

Course Outcome	CO1: Describe the the basic properties, behavior and response of aircraft materials. CO2: Illustrate the different types and classification of materials used in an aircraft.		
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.

CO 1

Question : 1

Define material science.



Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 122 /

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1	Introduction	Principles of materials science & engineering by William F.Smith	
Question : 2	Define solid materials and crystal lattice structure.		
2	Elements of Aircraft Materials	Principles of materials science & engineering by William F.Smith	
Question : 3	State any two applications of materials generally used in aircrafts.		
7	Materials for aircraft application	Principles of materials science & engineering by William F.Smith	
Question : 4			
Question : 5			
2. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			CO 2
Question : 6	Define ferrous materials.		
8	Classification of aircraft materials: Ferrous materials	Principles of materials science & engineering by William F.Smith	
Question : 7	Define metal matrix particulate.		
14	Metal matrix particulate	Principles of materials science & engineering by William F.Smith	
Question : 8	Define and state any two ceramic materials and fibre reinforced composite materials that are generally used in aviation sector.		
11,12	Ceramic materials, Composite materials	Principles of materials science & engineering by William F.Smith	
Question : 9			
Question : 10			

PART B



Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 122 /

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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.

CO 1

Question : 1

Write a short note on crystalline solid.

2

Structure of solid materials

Principles of materials science & engineering by William F.Smith

Question : 2

Explain the types of atomic bonding in a crystal structure.

3

Atomic structure of materials and crystal structure

Principles of materials science & engineering by William F.Smith

Question : 3

Explain briefly, the concept of Polymorphism and allotropy.

6

Polymorphism and allotropy

Principles of materials science & engineering by William F.Smith

4. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.

CO 2

Question : 4

Explain about physical and mechanical properties of ferrous materials.

8

Classification of aircraft materials: Ferrous materials

Principles of materials science & engineering by William F.Smith

Question : 5

Explain in brief, the various types of polymers and it's classification.

13

Classification of aircraft materials: Polymers

Principles of materials science & engineering by William F.Smith

Question : 6

Distinguish between ceramic materials and fibre reinforced composite materials along with examples.

11,12

Classification of aircraft materials: Ceramic Composite materials

Principles of materials science & engineering by William F.Smith

Question : 7 (Old Pattern)**PART C**



Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 122 /

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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.

CO 1

Question : 1

Explain in detail - the concept of Miller indices and FCC crystal lattice.

3

Elements of Aircraft Materials: Crystal structure, Miller indices

Principles of materials science & engineering by William F.Smith

Question : 2

Derive the packing factor for Body Centered Cubic (BCC) and Simple Cubic (SC) crystal structure.

2,4

Elements of Aircraft Materials: Structure of solid materials, Packing factor

Principles of materials science & engineering by William F.Smith

Question : 3

Explain in detail the various types of defects or crystal imperfections in solid material structure.

5

Elements of Aircraft Materials: Imperfection in crystal

Principles of materials science & engineering by William F.Smith

6. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.

CO 2

Question : 4

Explain in detail the physical and mechanical properties of non-ferrous materials.

9

Classification of aircraft materials: Non-ferrous materials

Principles of materials science & engineering by William F.Smith

Question : 5

Discuss in detail the concept of alloys and various types of fibre reinforced composite materials along with examples.

10,12

Classification of aircraft materials: Alloys, Composite materials

Principles of materials science & engineering by William F.Smith

Question : 6

Elaborate and discuss the Conventional Manufacturing Processes of Aircraft Materials.

15

Classification of aircraft materials: Conventional manufacturing process of aircraft materials

Principles of materials science & engineering by William F.Smith



School of Aeronautics (Neemrana)

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& BIHARER TECHNICAL UNIVERSITY, BIHARER, RUN & MANAGED BY L. N. VERMA MEMORIAL SOCIETY

School of Aeronautics



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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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