

School of Aeronautics (Neemrana)

I-04, RIICO Industrial Area, Neemrana, Dist. Alwar, Rajasthan

Approved by Director General of Civil Aviation, Govt. of India, All India Council for Technical Education
Ministry of HRD, Govt of India & Affiliated to Rajasthan Technical University, Kota & BTU, Bikaner Rajasthan

Question Paper For Internal Assessment Examination (Theory) - Credit 2 / 21

Instructions For Students / Faculty Mid Term I (Total 40 Marks, 1.5 HRS. Syllabus From Beginning Of Session)

• Part A: Total number of questions to be given are four, 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 8 marks.

• Part B: Total number of questions to be given are five, out of which student has to answer any three. They are long answer type (**Not More Than 50 Words For Question Only**), each carrying 6 marks. Total 18 marks.

• Part C: Total number of questions to be given are three, out of which student has to answer any two. They are numerical answer type / fully elaborative type* (**Not More Than 70 Words For Question Only**), each carrying 7 marks. Total 14 marks.

Mid Term II & III (Total 60 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 Only**), each carrying 5 marks. Total 20 marks.

• Part C: Total number of questions to be given are three, out of which student has to answer any two. They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question Only**)*, each carrying 10 marks. Total 20 marks.

* **LIST OF ELABORATIVE THEORY QUESTION SUBJECTS:** 1 FY1 - 04 Communication Skills (Cr 2), 1 FY1 - 05 Human Values (Cr 2), 2 FY1 - 04 Communication Skills (Cr 2), 2 FY1 - 05 Human Values (Cr 2), 3 AN1 - 02 Technical Communication (Cr 2), 4 MH1 - 02 Technical Communications (Cr 2), 4 MH1 - 03 Economics and Financial Accounting (Cr 2), 5 AN5 - 12 Aircraft Maintenance Practices (Cr 2), 6 AN3 - 01 Mechanics of Composite Materials (Cr 2), 6 AN5 - 12 Aircraft Rules and Regulation (Cr 2), 6 MH3 - 01 Automobile Engineering (Cr 2).

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

Mid Term	Mid Term 2	Date of Submission	19/08/2020
Name of Faculty	Mr. Challa Rudesh	Date of Examination	26/08/2020
Course	B.Tech (Aeronautical Engineering)	Semester	SEMESTER : 5
Batch	Fifteenth (15)	Subject	5 AN5 - 12 Aircraft Maintenance Practices (Cr 2)

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	5AN5 - 12 Aircraft Maintenance Practices (Credit-2) COURSE OBJECTIVE 1. To impart knowledge on Safety Precautions to be followed while maintenance done in Aircraft and Workshop. 2. To understand the application of various Maintenance Practices Tools used during General Maintenance Practices. 3. To give exposure on Maintenance procedure of various Aircraft Hardware components. 4. To familiarize with various Maintenance Practices on Aircraft Transmission system. 5. To acquire knowledge on the various Material Bonding practices. 6. To Learn about the general Maintenance Procedures in aircraft maintenance. COURSE OUTCOME Upon completion of the course, Students will be able to CO1: Explain about Safety Precautions to be followed while maintenance done in Aircraft and Workshop. CO2: Gain thorough understanding about the application of various Maintenance Practices Tools used during General Maintenance Practices. CO3: Demonstrate about the Maintenance procedure of various Aircraft Hardware components. CO4: Illustrate the Maintenance Practices on Aircraft Transmission system. CO5: Get a clear idea about the various Material Bonding practices. CO6: Describe the general Maintenance Procedures in aircraft maintenance.
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Student Name		Student Reg No.	

Part A			
Question : 1	What is the purpose of gears?		
Lesson Plan No. - 15	Topic - Transmissions	Source - workshop practices	CO No. - 4

Question : 2	Briefly discuss about chains and sprockets		
Lesson Plan No. - 18	Topic - Transmissions	Source - workshop practices	CO No. - 4
Question : 3	Name the operations performed in metal tubing fabrication		
Lesson Plan No. - 17	Topic - Material Bonding	Source - workshop practices	CO No. - 5
Question : 4	What is Grommet?		
Lesson Plan No. - 14	Topic - Material Bonding	Source - workshop practices	CO No. - 5
Question : 5	Where are belts and pulleys used in transmission of motion?		
Lesson Plan No. - 17	Topic - Transmissions	Source - workshop practices	CO No. - 4
Question : 6	Give a brief account of the use and application of jack screws		
Lesson Plan No. - 15	Topic - Transmissions	Source - workshop practices	CO No. - 4
Question : 7	Give a brief description of handling and lubrication of bearings.		
Lesson Plan No. - 16	Topic - Aircraft Hardware	Source - workshop practices	CO No. - 3
Question : 8	How are metal Tubings sized?		
Lesson Plan No. - 21	Topic - Material Bonding	Source - workshop practices	CO No. - 5
Question : 9	What is push-pull rod systems?		
Lesson Plan No. - 19	Topic - Transmissions	Source - workshop practices	CO No. - 4
Question : 10	what is backlash?		
Lesson Plan No. - 16	Topic - Aircraft Hardware	Source - workshop practices	CO No. - 3
Part B			
Question : 1	What is beading operation in rigid tubing? How its procedure is carried out?		
Lesson Plan No. - 21	Topic - Material Bonding	Source - workshop practices	CO No. - 5
Question : 2	What are the instructions for rigid tubing double flaring?		
Lesson Plan No. - 12	Topic - Aircraft Hardware	Source - workshop practices	CO No. - 3
Question : 3	How is cleaning of wheel bearings performed?		
Lesson Plan No. - 13	Topic - Aircraft Hardware	Source - workshop practices	CO No. - 3
Question : 4	What is Electric current damage in a bearing		
Lesson Plan No. - 14	Topic - Aircraft Hardware	Source - workshop practices	CO No. - 3
Question : 5	Write notes on the following a) lever devices b) Inspection of gears		
Lesson Plan No. - 15	Topic - Transmissions	Source - workshop practices	CO No. - 4
Question : 6	What is the meaning of swaging of end fittings in regards to control cables.		
Lesson Plan No. - 16	Topic - Transmissions	Source - workshop practices	CO No. - 4
Part C			
Question : 1	Discuss about the Inspection and testing of control cables used in aircraft?		
Lesson Plan No. - 18	Topic - Transmissions	Source - workshop practices	CO No. - 5

Question : 2	discuss about the inspection of bearings? and how lubrication requirements of bearings?		
Lesson Plan No. - 19	Topic - Aircraft Hardware	Source - workshop practices	CO No. - 4
Question : 3	Write a note on Inspection and testing of springs.		
Lesson Plan No. - 21	Topic - Aircraft Hardware	Source - workshop practices	CO No. - 3
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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Question Paper For Internal Assessment Examination (Theory) - Credit 2 / 18

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Question Paper & Student Details

Mid Term	Mid Term 2	Date of Submission	18/08/2020
Name of Faculty	Ms. Varsha	Date of Examination	26/08/2020
Course	B.Tech (Aeronautical Engineering)	Semester	SEMESTER : 5
Batch	Sixteenth (16)	Subject	5 AN5 - 13 Fatigue and Fracture (Cr 2)


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	<ol style="list-style-type: none">1. Correctly apply fracture mechanics to predict brittle fracture. Identify and describe the basic fracture and fatigue mechanisms2. Understand crack resistance and energy release rate for crack criticality.3. Application of Linear Elastic Fracture Mechanics on brittle materials.4. Students shall be able to identify the plane stress and plane strain conditions based on the shape and size of plastic zones. This concept made them capable to select the type of analysis subjected to plane stress and plane strain condition.5. Correctly identify the cause of failure of a material based on fracture surface observations.6. Understand the relationship between crack tip opening displacement, SIF and ERR and application of such parameters for ductile and brittle materials. Understanding of experimental techniques to determine the critical values of parameters at crack tip.
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Student Name		Student Reg No.	

Part A			
Question : 1	What is the assumption for Dugdale model?		
Lesson Plan No. - 10	Topic - Dugdale model	Source - Element of Fatigue Mechanics Edited by Prashant Kumar , Chapter 6, Page no.108-112	CO No. - 5
Question : 2	What is the theorem of energy conservation?		
Lesson Plan No. - 11	Topic - J- integral Approach	Source - Element of Fracture Mechanics edited by Prashant Kumar, Chapter 6, Page no. 118-129	CO No. - 6
Question : 3	What is the Proof of Path Independence?		
Lesson Plan No. - 12	Topic - Crack opening displacement	Source - Element of fracture Mechanics edited by Prashant Kumar, Chapter 7, Page no. 149-154	CO No. - 6
Question : 4	What is the assumption for Griffith criteria?		
Lesson Plan No. - 13	Topic - Energy Balance and Crack Growth	Source - Element of Fracture mechanics edited by Prashant Kumar, Chapter 1, Page no 9- 29	CO No. - 2
Question : 5	Define crack propagation?		
Lesson Plan No. - 14	Topic - Stable and unstable crack growth	Source - Element of Fracture mechanics edited by Prashant Kumar, Chapter 2, Page no 21-29	CO No. - 4
Question : 6	What is the criteria of Dynamic energy balance?		
Lesson Plan No. - 15	Topic - Dynamic energy balance	Source - Element of Fracture Mechanics Edited by Prashant Kumar , Chapter 4, Page no.70- 82	CO No. - 4
Question : 7	What is crack branching?		
Lesson Plan No. - 16	Topic - Crack arrest mechanism	Source - Element of Fracture Mechanics Edited by Prashant Kumar , Chapter 11, Page no 233-245	CO No. - 4
Question : 8	What is stress intensity factor?		
Lesson Plan No. - 16	Topic - Crack arrest mechanism	Source - Element of Fracture Mechanics Edited by Prashant Kumar , Chapter 11, Page no 233-245	CO No. - 4
Question : 9	What is the requirement of K1c test methods?		
Lesson Plan No. - 17	Topic - K1c test methods	Source - Element of Fracture Mechanics Edited by Prashant Kumar , Chapter 8, Page no 154-164	CO No. - 2
Question : 10	What is the global energy approach?		
Lesson Plan No. - 14	Topic - Stable and unstable crack growth	Source - Element of Fracture mechanics edited by Prashant Kumar, Chapter 2, Page no 21-29	CO No. - 4
Part B			
Question : 1	How does one determine the endurance limit stress?		
Lesson Plan No. - 17	Topic - K1c test methods Introduction	Source - Element of Fracture Mechanics Edited by Prashant Kumar , Chapter 8, Page no 154-164	CO No. - 2
Question : 2	Derive the crack arrest mechanism?		
Lesson Plan No. - 16	Topic - Crack arrest mechanism	Source - Element of Fracture Mechanics Edited by Prashant Kumar , Chapter 11, Page no 233-245	CO No. - 4
Question : 3	What are the effect of Initial Strains Corresponding to Thermal Loading?		
Lesson Plan No. - 15	Topic - Dynamic energy balance	Source - Element of Fracture Mechanics Edited by Prashant Kumar , Chapter 4, Page no.70- 82	CO No. - 4
Question : 4	How crack propagate in the brittle material?		
Lesson Plan No. - 14	Topic - Stable and unstable crack growth	Source - Element of Fracture mechanics edited by Prashant Kumar, Chapter 2, Page no 21-29	CO No. - 4
Question : 5	Explain the Crack Growth Resistance Curves?		

Lesson Plan No. - 12	Topic - Crack opening displacement	Source - Element of fracture Mechanics edited by Prashant Kumar, Chapter 7, Page no. 149-154	CO No. - 6
Question : 6	Explain the the evaluation of J for the linear elastic materials?		
Lesson Plan No. - 11	Topic - J- integral Approach	Source - Element of Fracture Mechanics edited by Prashant Kumar, Chapter 6, Page no. 118-129	CO No. - 6
Part C			
Question : 1	Derive the mathematical treatment of mixed-mode fracture mechanics problems?		
Lesson Plan No. - 16	Topic - Crack arrest mechanism	Source - Element of Fracture Mechanics Edited by Prashant Kumar , Chapter 11, Page no 233-245	CO No. - 6
Question : 2	Derive the Energy release rate for fixed load-displacement ?		
Lesson Plan No. - 14	Topic - Stable and unstable crack growth	Source - Element of Fracture mechanics edited by Prashant Kumar, Chapter 2, Page no 21-29	CO No. - 4
Question : 3	Derive the Dugdale model for three mode of fracture?		
Lesson Plan No. - 10	Topic - Dugdale model	Source - Element of Fatigue Mechanics Edited by Prashant Kumar , Chapter 6, Page no.108-112	CO No. - 5
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