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 / 30

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 3	**Date of Submission**	22/09/2020
Name of Faculty	Mr. Challa Rudesh	**Date of Examination**	03/10/2020
Course	B.Tech (Aeronautical Engineering)	**Semester**	SEMESTER : 5
Batch	Combined Batches 15, 16, 17, SF 1	**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	Write the basic principles of sheet metal repair.		
Lesson Plan No. - 19	Topic - Aircraft structure	Source - Airframe & power plant mechanics 15A	CO No. - 5

Question : 2	Write a short note on rules for workshop safety.		
Lesson Plan No. - 1	Topic - Safety precautions cconstructionconstruyctio	Source - Maintenance practice air airframe	CO No. - 1
Question : 3	What is the purpose of gears?		
Lesson Plan No. - 15	Topic - Transmissions	Source - Maintenance practice air airframe	CO No. - 4
Question : 4	Give a brief description of handling and lubrication of bearings.		
Lesson Plan No. - 16	Topic - Aircraft Hardware	Source - Maintenance practice air airframe	CO No. - 3
Question : 5	What is Bevel protractor. Explain its use.		
Lesson Plan No. - 3	Topic - Maintenance Practices Tools	Source - Maintenance practice air airframe	CO No. - 2
Question : 6	Briefly discuss about chains and sprockets.		
Lesson Plan No. - 15	Topic - Transmissions	Source - Maintenance practice air airframe	CO No. - 6
Question : 7	Explain out of tolerance action (OOTA).		
Lesson Plan No. - 06	Topic - Practices Tools	Source - Maintenance practice air airframe	CO No. - 3
Question : 8	Explain briefly fire extinguishing agents.		
Lesson Plan No. - 1	Topic - Safety precautions	Source - Maintenance practice air airframe	CO No. - 1
Question : 9	Write the formula for calculating bend allowance.		
Lesson Plan No. - 19	Topic - Material Bonding	Source - Maintenance practice air airframe	CO No. - 4
Question : 10	What is dimpling and Thermo dimpling.		
Lesson Plan No. - 21	Topic - Maintenance Procedures	Source - Maintenance practice air airframe	CO No. - 5
Part B			
Question : 1	Write about soft and hard soldering.		
Lesson Plan No. - 22	Topic - Material Bonding	Source - Maintenance practice air airframe	CO No. - 5
Question : 2	Write about quality control manual.		
Lesson Plan No. - 25	Topic - Maintenance practice	Source - Maintenance practice air airframe	CO No. - 6
Question : 3	Explain control of life component.		
Lesson Plan No. - 26	Topic - Maintenance practice	Source - Maintenance practice air airframe	CO No. - 6
Question : 4	What is Brazing and types of Brazing.		
Lesson Plan No. - 23	Topic - Material Bonding	Source - Maintenance practice air airframe	CO No. - 5
Question : 5	What are the instructions for rigid tubing double flaring?		
Lesson Plan No. - 22	Topic - Aircraft Hardware	Source - Maintenance practice air airframe	CO No. - 4
Question : 6	How is cleaning of wheel bearings performed?		
Lesson Plan No. - 13	Topic - Aircraft Hardware	Source - Maintenance practice air airframe	CO No. - 3
Part C			
Question : 1	Write about inspection of welding joint.		
Lesson Plan No. - 25	Topic - Material Bonding	Source - Maintenance practice air airframe	CO No. - 4

Question : 2	Explain Bonding method & inspection carried out on various bonded joint.		
Lesson Plan No. - 23	Topic - Bonding method	Source - Maintenance practice air airframe	CO No. - 5
Question : 3	Explain general requirement & condition for store.		
Lesson Plan No. - 26	Topic - Maintenance Procedures	Source - Maintenance practice air airframe	CO No. - 6
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 / 33

Question Paper & Student Details

Mid Term	Mid Term 3	**Date of Submission**	25/09/2020
Name of Faculty	Ms. Varsha	**Date of Examination**	03/10/2020
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	1. Correctly apply fracture mechanics to predict brittle fracture. Identify and describe the basic fracture and fatigue mechanisms 2. 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
Email I'd	varsha@soaneemrana.org **Phone No.** 935-106-2262
Student Name	**Student Reg No.**

Part A			
Question : 1	What are the criteria to determine the crack through CTOD?		
Lesson Plan No. - 26	Topic - Experimental determination of CTOD	Source - Element of fracture mechanics by Prashant Kumar, Chapter 9, Page no. 206-210	CO No. - 6
Question : 2	What are the use of J integral ?		
Lesson Plan No. - 25	Topic - Experimental determination of KIC and J-Integral	Source - Element of fracture mechanics by Prashant Kumar, Chapter 9, Page no. 198-210	CO No. - 6
Question : 3	What are important requirements of a clip gauge?		
Lesson Plan No. - 24	Topic - Experimental determination of GIC	Source - Element of fracture mechanics by Prashant Kumar, Chapter 8, Page no. 175-180	CO No. - 5
Question : 4	What is the preferred pre-cleaning process for removal of oil and grease?		
Lesson Plan No. - 23	Topic - NDT methods	Source - Element of fracture mechanics by Prashant Kumar, Chapter 12, Page no. 248-265	CO No. - 6
Question : 5	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. - 3
Question : 6	What do you mean by crack stability?		
Lesson Plan No. - 18	Topic - R curves	Source - Element of Fracture Mechanics Edited by Prashant Kumar , Chapter 2, Page no 24-34	CO No. - 4
Question : 7	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. - 1
Question : 8	Explain the Nonlinear Elastic Energy Release Rate?		
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. - 4
Question : 9	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. - 5
Question : 10	What are two important issues associated with nonlinear fracture?		
Lesson Plan No. - 9	Topic - Plastic zone size	Source - Element of Fatigue Mechanics Edited by Prashant Kumar , Chapter 6, Page no.99-111.	CO No. - 2
Part B			
Question : 1	Explain the fracture phenomenon for different types of material?		
Lesson Plan No. - 1	Topic - Introduction of Fatigue and fracture	Source - Third edition Fracture Mechanics Fundamental and Applications, Chapter 1, Page no. 13-16	CO No. - 1
Question : 2	Differentiate between true strain and engineering strain?		
Lesson Plan No. - 2	Topic - The geometry of stress and strain	Source - Fatigue and Fracture Edited by F.C. Campbell , Chapter 2, Page no. 38-45	CO No. - 1
Question : 3	Derive the Airy's stresses for a cantilever beam?		
Lesson Plan No. - 5	Topic - Airy's stress function	Source - Fatigue and Fracture Edited by P.J.G. Schreurs , Chapter 6, Page no.47-60	CO No. - 3
Question : 4	Explain the fracture of infinite plate containing an elliptical hole?		
Lesson Plan No. - 7	Topic - Stationary Crack Under Loading	Source - Fatigue and Fracture Edited by F.C. Campbell , Chapter 5, Page no. 170-181	CO No. - 4
Question : 5	Explain the circular cracks according Irwin's analysis?		

Lesson Plan No. - 8	Topic - Irwin's approximation	Source - Fatigue and Fracture Edited by Prasant Kumar , Chapter 5, Page no. 105-110	CO No. - 5
Question : 6	Explain the Empirical relation describing crack growth law-life calculations for a given load amplitude?		
Lesson Plan No. - 20	Topic - Fatigue Crack Growth Curve	Source - Element of fracture mechanics by Prashant Kumar, Chapter 9, Page no. 180-200	CO No. - 4
Part C			
Question : 1	Explain the Liquid penetration method with diagram?		
Lesson Plan No. - 23	Topic - NDT methods	Source - Element of fracture mechanics by Prashant Kumar, Chapter 12, Page no. 248-265	CO No. - 6
Question : 2	Why are the dimensions of specimen for plane strain Krc-test based on material toughness K1c, Explain in detail with example?		
Lesson Plan No. - 25	Topic - Experimental determination of KIC and J-Integral	Source - Element of fracture mechanics by Prashant Kumar, Chapter 9, Page no. 198-210	CO No. - 6
Question : 3	Explain the compressive stress phenomenon for the crack propagation?		
Lesson Plan No. - 20	Topic - Effects of changing the load spectrum	Source - Element of Fracture mechanics by Prashant Kumar ,Chapter 8, Page no. 159-162	CO No. - 6
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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