23AEPE411

MANGALORE INSTITUTE OF TECHNOLOGY & ENGINEERING

(A Unit of Rajalaxmi Education Trust®, Mangalore)
Autonomous Institute affiliated to VTU, Belagavi, Approved by AICTE, New Delhi
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Model Question Paper

Seventh Semester BE Degree Examination

Aircraft Maintenance and Repair

Time: 3 Hours(180 Minutes) **Max. Marks: 100**

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: RBT (Revised Bloom's Taxonomy) level, C: Course outcomes.

		Module -1	M	L	C
Q1	a.	Explain the different types of aircraft maintenance used in aviation.	08	L2	CO1
	b.	Describe the bathtub curve and its significance in maintenance planning.	06	L2	CO1
	c.	Explain the importance of certification in ensuring aircraft safety.	06	L2	CO1
		OR			
Q2	a.	Describe the concept of redesign as a maintenance strategy.	08	L2	CO1
	b.	Explain how environmental conditions affect aircraft maintenance requirements.	06	L2	CO1
	c.	Describe the importance of manufacturer documentation, AMM and SRM in aircraft maintenance.	06	L2	CO1
		Module- 2			
Q3	a.	Describe the functions of common welding shop tools used in aircraft maintenance.	08	L2	CO2
	b.	Describe the different NDT techniques used for aircraft structural inspection.	06	L2	CO2
	c.	During routine inspection of an aircraft avionics system, technicians detected intermittent signal loss in a communication circuit. Investigation showed that a soldered connection in the wiring harness had developed cracks due to improper soldering techniques. Suggest preventive measures to avoid solder joint failures in aircraft wiring systems.	06	L3	CO3
		OR			
Q4	a.	Describe how jigs and fixtures improve accuracy during welding operations.	08	L2	CO2
	b.	Explain the factors considered when selecting materials for aircraft sheet metal repair.	06	L2	CO2
	c.	During a structural repair of an aircraft fuselage panel, inspectors detected porosity and cracks in the welded joint. Further analysis revealed improper surface cleaning and incorrect welding parameters. Suggest corrective measures to ensure high-quality welds in aircraft maintenance.	06	L3	CO3
		Module – 3			
Q5	a.	Explain the different types of plastics used in aircraft structures and interiors.	07	L2	CO2
	b.	Discuss in detail about structure and composition of FRP honeycomb sandwich panels.	07	L2	CO2
	c.	During routine inspection of an aircraft control surface, technicians detected internal delamination in a honeycomb sandwich panel. Further inspection revealed: Water ingress into the honeycomb core and Weak bonding between face sheet and core. Suggest a repair scheme for damaged honeycomb panels.	06	L3	CO3
		OR			

Q6	a.	Explain the different repair schemes used for plastic aircraft structures.	07	L2	CO2
	b.	Explain the working principle of an autoclave used in composite processing.	07	L2	CO2
	c.	After repairing an FRP structural panel, a break test was conducted on a sample laminate. The test revealed that the laminate failed at a lower load than expected. Suggest improvements in the repair process to achieve required structural strength.	06	L3	CO3
Module – 4					
Q7	a.	Describe the major components of an aircraft landing gear that require maintenance.	10	L2	CO4
	b.	During flight testing, a light aircraft experienced control surface flutter at high speed. Investigation revealed that the elevator control surface was not properly balanced after repair. Suggest corrective measures to avoid flutter problems.	10	L3	CO5
OR					
Q8	a.	Explain the maintenance procedures used to ensure proper functioning of the air-conditioning system.	10	L2	CO4
	b.	During routine inspection, a helicopter pilot reported difficulty controlling pitch and roll. Technicians found excessive play in the swashplate linkage of the helicopter flight control system. Suggest maintenance procedures to restore proper control system operation.	10	L3	CO5
Module – 5					
Q9	a.	Describe the major components of an aircraft fire detection and fire protection system.	07	L2	CO4
	b.	Explain the types of warning systems used in aircraft for safety monitoring.	07	L2	CO4
	c.	Describe the procedures for safe handling of hazardous materials.	06	L2	CO4
OR					
Q10	a.	Describe the different types of ice protection systems used in aircraft.	07	L2	CO4
	b.	Explain the functions performed by the APU during ground and flight operations.	07	L2	CO4
	c.	Explain the concept of troubleshooting in aircraft maintenance.	06	L2	CO4

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