23AEPE321

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

Sixth Semester BE Degree Examination

Avionics

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.	Interpret the construction and working of an aircraft landing gear system, along with a suitable diagram.	10	L2	CO1
	b.	Illustrate the working of the Digital Fly-By-Wire system with a neat block diagram and highlight its role in improving aircraft performance and safety.	10	L2	CO1
		OR			
Q2	a.	Describe the architecture and working of an Auto-Pilot Flight Control System and outline its functions in aircraft operation.	10	L2	CO1
	b.	Interpret the construction and working principle of the Conventional Flight Control System used in aircraft.	10	L2	CO1
		Module- 2			
Q3	a.	During take-off roll, an engine fire warning is triggered in the cockpit. How the aircraft fire protection system can be applied to manage the response sequence and ensure flight safety.	10	L3	CO2
	b.	During climb at high altitude, severe icing causes ice accumulation on critical aerodynamic surfaces. How the de-icing system principle can be applied to restore aerodynamic performance and maintain flight safety.	10	L3	CO2
		OR			
Q4	a.	During engine start-up, the turbine fails to reach self-sustaining speed. Use the working principle of the aircraft starting system to identify the cause and the corrective measures.	10	L3	CO2
	b.	During cruise, one fuel tank in a twin-engine aircraft runs low, necessitating cross-feed operation. How the working principle of the aircraft fuel system be applied to maintain continuous engine operation.	10	L3	CO2
		Module - 3			
Q5	a.	With the help of a diagram, describe the working of an Airspeed Indicator and highlight its role in aircraft performance.	10	L2	CO3
	b.	Illustrate the working principle of a Mach Meter with a relevant diagram and list its significance in aircraft performance.	10	L2	CO3
		OR			
Q6	a.	Illustrate the working of an Altimeter with a suitable diagram and interpret its importance in altitude measurement during flight.	10	L2	CO3
	b.	Describe the working principle of a Tachometer and interpret its importance in aircraft engine performance.	10	L2	CO3
		Module - 4			
Q7	a.	During flight, the main generator fails. How the bus bar system configuration be applied to maintain power supply to essential loads.	10	L3	CO4

	b.	High electromagnetic interference is observed near avionics wiring. Articulate the criteria for selecting special-purpose cables to minimize signal disturbance.	10	L3	CO4
OR					
Q8	a.	During flight, simultaneous activation of multiple electrical loads results in an overload condition. Articulate the role of circuit control devices in isolating the fault and protecting the system.	10	L3	CO4
	b.	During cruise at high altitude, one engine-driven generator becomes inoperative in a twin-engine aircraft, causing loss of power on one main bus. How the split bus bar system configuration be applied to maintain power supply to essential loads.	10	L3	CO4
Module - 5					
Q9	a.	Describe the architecture and working of a Multi-Function Display (MFD) and highlight its role in modern aircraft cockpits.	10	L2	CO5
	b.	With a neat diagram, interpret the Hands On Throttle And Stick (HOTAS) system and describe its functioning in aircraft control operations.	10	L2	CO5
OR					
Q10	a.	Describe the components and functioning of a Head-Up Display (HUD) with a suitable diagram and interpret its significance in flight safety.	10	L2	CO5
	b.	Illustrate the communication protocol of MIL-STD-1553B with a suitable diagram and highlight its importance in reliable data transfer in aircraft.	10	L2	CO5

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