MITE
Invent Solutions

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

Aircraft Transportation Systems

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 concept of Aircraft Transportation Systems and describe its major components and functions.	08	L2	CO1
	b.	Describe the structure and major elements of the modern air transport system.	06	L2	CO1
	c.	Discuss the early human dream of flying and describe its influence on the development of aviation	06	L2	CO1
		OR			
Q2	a.	Describe the physical principles that form the basis of flight and summarize how they contributed to the development of aircraft.	08	L2	CO1
	b.	Explain the Jet Age and describe its impact on civil aviation and global air transport systems.	06	L2	CO1
	c.	Describe the relationship between transport and mobility and explain the role of air transport in enhancing global mobility.	06	L2	CO1
		Module- 2			
Q3	a.	Explain the role of regulations in air transportation and describe how they ensure safe and efficient aircraft operations.	08	L2	CO2
	b.	Describe the concept of Air Navigation Services and explain their importance in ensuring safe and efficient air traffic management.	06	L2	CO2
	c.	Explain the importance of security in air transportation and describe the major security measures implemented at airports.	06	L2	CO2
		OR			
Q4	a.	Explain the structure, objectives, and major functions of the International Civil Aviation Organization (ICAO) in global aviation.	08	L2	CO2
	b.	Explain the role of national and regional regulatory organizations in maintaining aviation safety and operational standards.	06	L2	CO2
	c.	Describe the standards and procedures required for ensuring safe aircraft operations in civil aviation.	06	L2	CO2
		Module – 3			
Q5	a.	Explain the classification of flight vehicles based on their operating principles and applications with suitable examples.	05	L2	CO3
	b.	Describe the key passenger requirements considered during aircraft cabin design.	05	L2	CO3
	c.	Determine the temperature, pressure and density at a given altitude of 14,000 m, and explain their significance in aircraft performance. Take sea level, density=1.225 kg/m^3, temperature=288.15 K and pressure=101325 Pa.	10	L3	CO5
		OR			

Q6	a.	Discuss the principles governing aircraft cabin design and describe the key factors influencing cabin layout.	05	L2	CO3
	b.	Describe the concepts of aircraft stability and control and explain their importance for safe flight operations.	05	L2	CO3
	c.	An aircraft flying at 100 m/s has the following data: Air density = 1.225 kg/m³, Wing area = 35 m², C_l = 0.8, C_d = 0.03, Calculate: a) Lift force, b) Drag force c) Lift-to-drag ratio and d) Thrust required for steady level flight. Take mass flow rate=25 kg/s, exit velocity=310 m/s and aircraft velocity= 80 m/s.	10	L3	CO5
Module – 4					
Q7	a.	Explain the principles of operation of Air Navigation Services and describe their role in ensuring safe and efficient aircraft movement.	08	L2	CO4
	b.	Describe the concept of air transport surveillance and explain the systems used for monitoring aircraft position.	06	L2	CO4
	c.	Explain the concept of airspace and airport capacity and describe the factors affecting their efficiency.	06	L2	CO4
OR					
Q8	a.	Explain the working principle of Airborne Collision Avoidance Systems and describe their importance in aircraft safety.	08	L2	CO4
	b.	Describe the purpose and functions of flight guidance systems used in modern aircraft.	06	L2	CO4
	c.	Summarize the future trends in aircraft navigation and explain their importance for efficiency and safety in air transportation.	06	L2	CO4
Module – 5					
Q9	a.	Explain how air transport emissions affect the climate and describe their environmental impact.	07	L2	CO4
	b.	Describe the major global challenges expected to affect air transport by the year 2050.	07	L2	CO4
	c.	Explain the major sources of aircraft noise and describe the methods used to reduce aircraft noise.	06	L2	CO4
OR					
Q10	a.	Explain the methods used to assess the environmental impact of aircraft emissions.	07	L2	CO4
	b.	Describe the basic principles of noise and aeroacoustics in aircraft operations.	07	L2	CO4
	c.	Explain the concept of competitive and multimodal transport and describe its importance in modern transportation systems.	06	L2	CO4

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