Question Paper

Exam Date & Time: 30-Apr-2019 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
II SEMESTER B.Sc (Applied Sciences) - End Semester Theory Examination - April / May 2019
Introduction To Aerospace Engg. and Avionics [IAV 121]

Marks: 100 **Duration: 180 mins.**

Answer 5 out of 8 questions.

Missing data, if any, may be suitably assumed

1)		Derive and analyze hydrostatic equation with proper diagrams.	(10)
	A)		
	B)	Explain the various processes behind the formation of induced drag with proper diagrams.	(10)
2)		Examine the working principle of subsonic wind tunnels	(10)
	A)		
	B)	Explain the term pressure co-efficient. Also analyze the procedure to obtain lift co-efficient from it.	(10)
3)		Explain lateral static stability with all necessary diagrams.	(10)
	A)		
	B)	What do you mean by isentropic flow? Derive pressure density relationship.	(10)
4)		Give a note on range and endurance for a jet powered aircraft	(10)
	A)		
	B)	A 2000 kg spacecraft is in a 480 km by 800 km earth orbit. Find (a) The Δ v required at perigee A to place the spacecraft in a 480 km by 16,000 km transfer ellipse. (b) The Δ v (apogee kick) required at B of the transfer orbit to establish a circular orbit of 16,000 km altitude. (c) The total required propellant if the specific impulse is 300 s.	(10)
5)		Explain the functioning of GPS with proper diagram	(10)
	A)		
	B)	Explain Head Up Displays (HUD).	(10)
6)		Explain Satellite Landing Guidance Systems with proper diagram.	(10)
	A)		
	B)	What is the need for accelerometers in an avionic systems? Explain the	(10)

working principle behind any one type of accelerometer with proper diagram.

7) What is Inertial Navigation System? Explain with proper block diagram. (10)

A)

B) Explain any one electrical data bus system in detail. (10)

8) Explain the BLEU automatic landing system . (10)

A)

B) Explain fly-by-light control system in detail. (10)

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