Question Paper

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
SECOND B.Sc (APPLIED SCIENCES)
END-SEMESTER THEORY EXAMINATIONS APRIL - 2018
DATE : 27 APRIL 2018
TIME : 9:30AM TO 12:30PM
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)
A) Derive energy equation from fundamentals (5)

B) Derive pressure, temperature density relation for isentropic flow (5)

C) Explain the working principle of low speed subsonic wind tunnel with necessary diagrams and equations. (10)

2)
A) Explain various types of drag forces associated with aircraft. Explain each with necessary equations and diagrams (10)

B) How lift co-efficient is obtained from pressure co-efficient? (10)

3)
A) Explain the terms power required and power available for both propeller and jet powered aircrafts with necessary diagrams and equations. (10)

B) Derive equations of motion for a level unaccelerated aircraft (10)

4)
A) Why L/D ratio is known as the efficiency factor of an aircraft? Explain. (6)

B) Explain aircraft take-off and turning performance with all necessary diagrams and equations (14)

5)
A) Proper co-ordination between the primary control surfaces is necessary to make any turn in an aircraft. Explain. (10)

B) Explain the terms directional stability and Lateral static (10)

stability with respect to aircraft with necessary diagrams and equations.

6)

A) Explain the working principle of Head Up Display with proper diagram. (10)

B) Explain a typical multiplex data bus system architecture with necessary diagram. (10)

7)

A) Explain VOR. What are its advantages and disadvantages? (10)

B) Explain DGPS system with all necessary diagrams and equations (10)

8)

A) Explain digitally generated moving colour map displays .What are its advantages? (10)

B) Explain a) Head down displays b) Glass cockpit (10)

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