

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, Dec,22 – Jan,23

Course: Introduction to Aerospace Engineering	Semester: III
Program: B.Tech ASE	Time 03 hrs.
Course Code: ASEG 2004	Max. Marks: 100

SECTION A

S. No.	Question	Marks	CO
Q1.	List various parts of a modern fixed wing aircraft and mention their roles.	4	CO1
Q2.	Explain the nomenclature of NACA 5 digit series and hence calculate aerodynamic properties of NACA 23115.	4	CO2
Q3.	Explain center of pressure and aerodynamic center of an airfoil.	4	CO2
Q4.	Discuss the role of Altimeter and Turn-Bank Indicator in an aircraft.	4	CO3
Q5.	Justify the use of solid rocket motor as first stage and cryogenic rocket engine as third stage in a PSLV.	4	CO4

SECTION B

Q6.	Outline the contribution of Sir George Cayley in the early development of aerospace engineering.	10	CO1
Q7	Define pressure coefficient and discuss its significance. Draw graph showing coefficient of pressure (C_p) distribution over a cambered airfoil at positive angle of attack. <p style="text-align: center;">OR</p> Define critical and drag divergence mach number. Also explain the method to delay them.	10	CO2
Q8	Emphasis on various materials used in modern aircrafts.	10	CO3
Q9	With the help of neat sketch, demonstrate the working of a solid rocket engine.	10	CO4

SECTION-C

Q 10	With the help of a neat sketch, illustrate various structural parts of an aircraft wing. Explain the construction and role of each part.	20	CO3
Q 11	With the help of neat sketch, explain various components and working of a turbofan engine. Distinguish between high and low bypass turbofan engine and list their applications. Compare turbofan with turbojet engine and hence interpret its advantages and disadvantages over turbojet engine. <p style="text-align: center;">OR</p>	20	CO4

<p>With the help of neat sketch, explain various components and working of a ramjet engine. Identify the reason behind its capability to attain high supersonic speed and list its applications. Compare it with turbojet engine and hence interpret its advantages and disadvantages over turbojet engine.</p>		
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