Sanjay Ghodawat University, Kolhapur

2020-21

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

EXM/P/09/00

Year and Program: TY B.Tech	**School of Commerce and Management**	**Department: Aeronautical Engineering**
Course Code: AET306	**Course Title: AIRCRAFT DESIGN**	**Semester : VI**
Day and Date: Wednesday 09.06.2021	**End Semester Examination**	**Time : 2 Hrs.** **Max Marks : 50**

Instructions: 1) All Questions are compulsory.

Q.1		**Answer/Solve the following (any Two)**	**Marks**	Bloom's Level	CO
	a)	Explain any 3 types of private civil aircraft.	8	2	CO1
	b)	Write in detail about computer aided methodologies.	8	5	CO1
	c)	Illustrate truss and geodesic fuselage that are used in aircrafts with neat sketches.	8	3	CO2
Q.2		**Answer/Solve the following (any two)**			
	a)	Plot W_e/W_0 for the aircrafts mentioned below using W_0 = 5000 lb, 7500 lb, 10000 lb and 15000 lb. Assume fixed sweep wings for all aircrafts. Plot it on single graph for both aircrafts. Use proper scaling. Graph paper not necessary.	8	5	CO3
	b)	Consider a cargo aircraft with features. m = 380000kg; s = 567m^2; MAC = 9.3m; $\left(\frac{t}{c}\right)_{max}$ = 18%; $c_{d\,min}$ = 0.0052; ρ = 1.225kg/m^3; This aircraft is cruising at sea level with an airspeed of 50 knots. Assume the aircraft c_{D0} is three times the c_{D0} of wings and a = 340m/s. Find the aircraft c_{D0}. Take μ = 1.785 x 10^5.	8	4	CO4

Aircraft Type	A	C
Agriculture	0.74	-0.03
Flying Boat	1.09	-0.05

	c)	Write in detail about aircraft lift and drag.	8	5	CO4
Q.3		**Answer/Solve the following (any two)**			
	a)	Sketch and explain the range-payload diagram.	9	3	CO5
	b)	Describe the engine exhaust emission given out in aviation industry.	9	2	CO5
	c)	Write in detail flight control and engine of large aircrafts.	9	5	CO6

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