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 Aero	**School of Technology**	**Department: Aero**
Course Code: AET302	**Course Title: Aircraft Structures-II**	**Semester : VI**
Day and Date: Monday,07.06.2021	**End Semester Examination**	**Time : 2 Hrs.** **Max Marks : 50**

Instructions: 1) All Questions are compulsory.
2) Assume data wherever necessary

		Marks	Bloom's Level	CO
Q.1	**Answer/Solve the following (any Two)**			
a)	Explain in detail about St.Venant's principle with neat sketch.	8	L_2	1
b)	Derive the stress strain relation in terms of poisson's ratio in a 3D body	8	L_2	1
c)	Illustrate the loads acting on structural components of an aircraft	8	L_3	2
Q.2	**Answer/Solve the following (any two)**			
a)	An aircraft panel of 100* 100 mm is subjected to a bending moment of 50Nmm & 75Nmm in x& y direction .The panel is made up of aluminium. Find the radius of curvature in x & y direction	8	L_3	3
b)	Derive an expression for plates with bending load.	8	L_3	3
c)	Draw and calculate the shear force and bending moment diagram for propped cantilever beam	8	L_3	3
Q.3	**Answer/Solve the following (any two)**			
a)	Find the diameter of a rod subjected to a bending moment of 3kNm and a twisting moment of 1.8kNm according to the following theories of failure i) Maximum normal stress theory and ii) ii) Maximum shear stress theory taking normal yield stress as 420MPa and factor of safety as 3.	9	L_3	4
b)	A machine member is subjected to the following stresses σ_x=150 MPa, σ_y=0MPa, τ_{xy}=24Mpa.Find the equivalent stress as per the following theories of failure. (i) Shear stress theory (ii) Normal stress theory (iii) Von Mises theory	9	L_3	4
c)	Assume you are the maintenance engineer Explain in detail the different types of structural damage will occur in an aircraft during	9	L_4	5

operation time.

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