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 BTech	**School of Technology**	**Department: Mechanical Engineering**
Course Code: MET3091	**Course Title: Experimental Stress Analysis**	**Semester : V**
Day : Wednesday **Date: 23.12.2020**	**End Semester Examination**	**Time :2 Hrs.** **Max Marks :50**

Instructions: 1) All Questions are compulsory.
2) Use Non-Programmable Calculator

		Marks	Bloom's Level	CO
Q.1	**Answer the following (any Two)**–			
a)	Explain the procedure of bonding of the gauge on metallic surfaces. What checks are usually madeon gauge installations?	9	L1	CO 309.1.1
b)	Explain the principle of working of an electrical resistance strain gauge. Describe the desirableproperties of ideal strain gauge.	9	L1	CO 309.1.2
c)	Derive following relation for Gauge factor $$k = 1 + 2\mu + \frac{d\rho/\rho}{\varepsilon}$$	9	L2	CO 309.1.2
Q.2	**Answer the following (any two) –**			
a)	Why the compensation techniques are necessary in photoelasticity? Explain any one method ofcompensation	9	L1	CO 309.1.3
b)	Explain the Tardy's Method with neat diagram	9	L2	CO 309.1.3
c)	Explain the principle of Brittle coating method of stress analysis. Sketch the crack patterns undervarious conditions of stress.	9	L1	CO 309.1.4
Q.3	**Answer the following (any one)**			
a)	ε_A= 850 Microstrain; ε_B= 300 Microstrain; ε_C= -250 Microstrain Determine the principal strains, principal stress and principal angles. Assume E= 2 x 10^5 N/mm^{2}and Poisson's Ratio is 0.3	14	L3	CO 309.1.2
b)	ε_A= 285 Microstrain ; ε_B= 65 Microstrain ; ε_C= 102 Microstrain	14	L3	CO 309.1.2

Determine the principal strains, principal stress, principal strain directions and maximum shear stress. Assume E= 70 GPaand Poisson's Ratio = 0.32

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