Theory of Elasticity
(2018-Pattern)

(Dec. 2018)

Marking Scheme:

Q. No.	Topics to be covered	Marking guideline	Total Marks	Degree of difficulty	CO-question mapping	Cognitive Level
1.a	i. Explain the state of strain	1.5	03	Normal	1	Knowledge, Comprehension
	ii. Derivation	1.5				
1.b	i. Numerical steps	1	03	Medium	2	Analysis, Synthesis
	ii. Body force calculations using equilibrium equation	2				
2.a	i. Explain orthotropic and isotropic material	1.5	03	Medium	2	Analysis, Synthesis
	ii. Relations between elastic constants	1.5				
2.b	i. What is Airy's stress function?	1.5	03	Medium	3	Analysis, Synthesis
	ii. Airy's stress function satisfies the bi-harmonic equation?	1.5				
3.a	i. Definition of displacements and schematic	1	02	Normal	1, 3	Application, Evaluation
	ii. Derivation of strain-displacement relations	1				
3.b	i. Stress and strain tensor for plane stress	1	02	Normal	1, 2	Comprehension, Synthesis
	ii. Stress and strain tensor for plane strain problem	1				
4.a	i. Short note on stress concentration problem	4	06	Medium	1, 3	Application, Evaluation
	ii. Stress factor	2				
4.b	i. Explain the Failure Theories	2	08	Medium	1, 3	Application, Evaluation
	ii. Rankine Theory	3				
	iii. von-Mises Theory	3				
5.a	i. Explain Kirsch problem	4				
	ii. Examples with case study	2	06	Medium	1, 2	Knowledge, Application
5.b	i. Explain the failure theory	4				
	ii. Schematic	2				
	iii. Example	2	08	Medium	1, 3	Application, Evaluation
6.a	i. Plate classification,	3				
	ii. Assumptions min.. 4	4	07	Normal	1	Knowledge, Comprehension

6.b	Discuss Stress resultants with schematic	7	07	Normal	1	Knowledge, Comprehension
7	i. Equilibrium equation for beam	5				
	ii. Equilibrium equation for plate	5				
	iii. Schematic	4	14	Medium	1, 3	Application, Evaluation
8.a	i. Discuss the beam analysis parameters	4	07	Normal	1	Knowledge, Comprehension
	ii. Differences between each theories	3				
9.a	i. Discuss the plate anlaysis problem	3	07	Medium	1, 3	Knowledge, Comprehension
	ii. Schematic	2				
	iii. Discussion on Navier solution	2				
9.b	i. Discuss the problem statement M-phi	3	07	High	2,3	Analysis, Evaluation
	ii. Importance	2				
	iii. Schamatic	2				