

SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI

**Summer Examination 2020 (Backlog)
HVPM's College of Engineering and Technology, Amravati
Mechanical Engineering Department
Bachelor of Engineering Semester – III**

Subject : Mechanics of Material

Code :

Instructions :

- 1. Solve any two questions**
 - 2. All questions carry equal marks**
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Q1.

- a) Define Stress and it's types. (02)**
- b) Define Shear Force and Bending Moment. (02)**
- c) State Assumptions made in Theory of Pure Torsion. (02)**
- d) State the result for stress when load is applied with impact. (02)**
- e) Define Principal Planes. (01)**
- f) What is the relation between Deflection, Slope and Bending Moment. (01)**

Q2.

- a) Derive an expression for elongation developed in a uniformly tapering circular rod. (02)**
- b) Draw SFD and BMD for a simply supported beam subjected to point load W at centre of the beam. (02)**
- c) Calculate the torque transmitted by solid shaft. (02)**
- d) Define Hoop's Stress. (01)**
- e) Derive the expression for Longitudinal stress in thin cylinder. (02)**
- f) What is the deflection at centre of simply supported beam carrying point load at the centre. (01)**

Q3.

- a) Define Young's Modulus and Bulk Modulus. (02)**
- b) Define Point of Contraflexure. (01)**
- c) Define Polar Modulus. (02)**
- d) Define Resilience and Proof Resilience. (02)**
- e) Define Principal Stress and obliquity. (02)**
- f) Determine the value of Slope for Maximum Deflection. (01)**

Q4.

- a) Define Poisson's Ratio. (01)**
- b) State the assumptions made in theory of Simple Bending. (02)**
- c) Draw shear stress distribution for Rectangle and T section. (02)**
- d) Derive the expression for Circumferential stress in thin cylinder. (02)**
- e) Explain Mohr's circle. (01)**
- f) Derive the expression for slope and Deflection for a simply supported beam subjected to uniformly distributed load. (02)**