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Unit III: Bending & Shear Stresses **Sub.: SOM**

Q. No	Description	Ans	Mark
1	Which of the following statements regarding assumptions in analysis of stressed beam is false (a) The material is homogeneous and isotropic, so that it has the same elastic properties in all directions (b) Modules of elasticity in tension and compression are equal (c) The radius of curvature of the beam before bending is equal to that of its transverse dimensions (d) Normal sections of the beam, which were plane before bending, remain plane after bending	c	1
2	A steel flat 10 cm wide and 2 cm thick is bent into a circular arc of 50 meters radius. The maximum intensity of stress induced will be($E = 2.05 \times 105$ N/mm^2) (a) 31 N/mm^2 (b) 41 N/mm^2 (c) 51 N/mm^2 (d) 61 N/mm^2	b	2
3	A strip of steel 1 mm thick is bent into an arc of a circle of 1 m radius. The maximum bending stress will be($E = 200$ Gnm^{-2}) (a) 25 MPa (b) 50 MPa (c) 64 MPa (d) 100 MPa	d	2
4	An steel wire of 20 mm diameter is bent into a circular shape of 10 m radius. If E, the modulus of elasticity is 2 x 106 kg/cm^2, then the maximum stress induced in the wire is (a) 10^3 kg/cm^2 (b) 2 x 103 kg/cm^2 (c) 4 x 103 kg/cm^2 (d) 6 x 10^3	b	2
5	A high strength steel band saw of 90 mm width and 0.5 mm thickness runs over a pulley of 500 mm diameter. Assuming E = 200 GPa, the maximum flexural stress developed would be (a) 100 MPa (b) 200 MPa (c) 400 MPa (d) 500 MPa	b	2
6	A mild steel fleet of width 120 mm and thickness 10 mm is bent into an arc of a circle of radius 10 m by applying a pure moment M. If E is 2 x 10^5 N/mm^2, then the magnitude of the pure moment M will be (a) 2 x 10^6 N-mm (b) 2 x 10^5 N-mm (c) 0.2 x 10^5 N-mm (d) 0.2 x 10^4 N-mm	b	2
7	A steel cantilever beam 5 m in length is subjected to a concentrated load of 1 kN acting at the free end of the bar. The beam is of rectangular cross section, 50 mm wide by 75 mm deep. The stress induced in the beam will be (a) 0 (b) 107 MPa (c) 110 MPa (d) 117 MPa	b	2