Student Exam No._____

GANPAT UNIVERSITY

B. Tech. Semester: III -Marine Engineering

Regular Examination November – December 2014

2MR307- Strength of Material

Time: 3 Hours **Total Marks: 70**

Instructions: (1) Attempt all Questions.

(2) Assume suitable data if necessary.

(3) Figure to the right indicates full Marks.

(4) Start new Question on New Page.

Section - I

Que. – 1	(a)	List the different types of Stresses and explain any one in detail.	**6**
	(b)	Explain design procedure of thin cylinder with neat sketch.	**6**

OR

Que. – 1		A solid round bar 3 m long and 50 mm in Diameter is used as a strut with both ends hinged. Determine the crippling load. Take E= 200000 N/mm^2.	**12**
Que. – 2	(a)	List assumptions made in the Euler's column theory.	**6**
	(b)	Explain stress-strain diagram with neat sketch.	**5**

OR

Que. – 2		The tensile stresses at a point across two mutually perpendicular planes are 120 N/mm^2 and 60 N/mm^2. Determine the normal, tangential and resultant stresses on a plane inclined at 30° to the axis of minor stresses.	**11**
Que. – 3		Explain theory of simple bending stress.	**12**

Section - II

Que. – 4		A solid circular shaft transmits 50 kW power at 100 r.p.m. Calculate the shaft diameter, if the twist in the shaft is not to exceed 1° in 1 meters length of shaft, and shear stress is limited to 50 N/mm^2. Take C=1 * 10^5 N/mm^2.	**12**

OR

Que. – 4	(a)	A solid circular shaft transmits 50 kW power at 100 r.p.m. Calculate the	**6**
	(b)	Define neutral axis and neutral layer.	**6**
Que. – 5		A rolled steel joints of I section has the dimensions 100*100*20. This beam of I section carried a u.d.l. of 40 kN/m run on a span of 10 m, calculate the maximum stress produced due to bending.	**11**

OR

Que. – 5	(a)	Find the moment of inertia of T section having 120*120*20 mm.	**6**
	(b)	Differentiate tensile and shear stress with neat sketch.	**5**
Que. – 6		A rectangular beam 200 mm deep and 300 mm wide is simply supported over a span of 8 m. What uniformly distributed load per meter the beam may carry, if the bending stress is not to exceed 120 N/mm^2.	**12**

END OF PAPER