ANNAMALAI UNIVERSITY

FACULTY OF ENGINEERING AND TECHNOLOGY

ASSIGNMENT - I (2019-20)

BRANCH: **B.E. (CIVIL ENGINEERING)**

SEMESTER: **FOURTH**

COURSE CODE & TITLE: **CEPC 406 STRENGTH OF MATERIALS**

		PART - A	Marks	CO	BTL	PO	PSO
1		Prop means supported the beam by vertical pole at the original level before deflection – True / False	1	2	K1	1	1
2		The beam having zero slopes at the ends is known as---	1	2	K2	1	1
3		Draw a figure showing propped cantilever beam.	1	2	K1	1	1
4		Clapeyron's Theorem related to a) Moment distribution method b) theorem of three moments c) moment area method d) none	1	2	K2	1	1
5		Max. shear stress for thin cylindrical shell = ?	1	4	K1	1	1
6		According to the max. principal stress theory the max. principal stress shall not exceed--------for the material.	1	4	K1	1	1
7		In a principal plane, shear stress will be	1	4	K1	1	1
8		1/m is known as ------	1	4	K1	1	1
		PART- B					
9		What are the methods available to analyse the indeterminate structures?	3	2	K1	1	1
10		Draw the diagram showing deflection curve of a continuous beam with 4 spans subjected to UDL.	3	2	K1	1	1
11		What do you understand by indeterminate structures?	3	2	K2	1	1
12		Write the advantages of fixed beams?	3	2	K2	1	1
13		Define principal stress.	3	4	K2	1	1
14		Write the maximum strain theory of St.Venant.	3	4	K2	1	1
15		Define principal strain.	3	4	K2	1	1
16		How do you find the maximum shear stress?	3	4	K2	1	1
17		How do you classify thin and thick cylinder?	3	4	K2	1	1

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PART- C							
18		Draw shear force and bending moment diagram for a propped cantilever beam carrying central point load and propped at the free end.	10	2	K5	2 4	1 3
19		Derive the expressions for maximum deflection of a fixed beam carrying central point load.	10	2	K4	2 4	1 3
20		A rectangular block of material is subjected to a tensile stress of 110 N/mm^2 on one plane and a tensile stress of 47 N/mm^2 on a plane at right angle, together with shear stresses of 63 N/mm^2 on the same planes. Find: i) The direction of principal planes ii) The magnitude of principal stress The magnitude of greatest shear stress	10	4	K3	1 2	1 3
21		A cylindrical drum 600 *mm* in diameter has to withstand an internal pressure of 1. N/mm^2. Calculate the necessary wall thickness for a factor of safety of 3 if the criterion of failure is the max. strain energy and the elastic limit in pure tension is 237 N/mm^2. Take Poisson's ratio 0.3.	10	4	K3	1 2	1 3

Note:

Total for 75 marks. (will be converted this for internal assessment)

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ASSIGNMENT - II (2019-20)

BRANCH: **B.E. (CIVIL ENGINEERING)**

SEMESTER: **FOURTH**

COURSE CODE & TITLE: **CEPC 406 STRENGTH OF MATERIALS**

		PART - A	Marks	CO	BTL	PO	PSO
1		If product of inertia (I_{xy}) of any area is zero about the axes then the axes are called a) principal axes b) rectangular axes c) parallel axes d) centroidal axes	1	5	K1	1	1
2		Centre of twist is nothing but--------	1	5	K1	1	1
3		The principal axes on which the product of inertia (I_{xy}) will be a) 1 b) -1 c) 0 d) ∞	1	5	K1	1	1
4		Shear centre is also known as	1	5	K1	1	1
5		Condition for the principal axes is - True / False $\tan 2\theta = \frac{2Ixy}{Iyy-Ixx}$	1	5	K2	1	1
		PART- B					
6		Define unsymmetrical bending.	3	5	K2	1	1
7		What is meant by curved beam?	3	5	K1	1	1
8		What is the importance of shear centre?	3	5	K2	1	1
9		Write down the expression for Winkler-Bach formula.	3	5	K2	1	1
10		What is meant by Shear Centre?	3	5	K2	1	1
		PART- C					
11		Write the expressions derived for determining the stresses in unsymmetrical bending.	10	5	K4	2 4	1 3
12		Determine the position of shear centre for a channel section of 400 mm by 200 mm outside and 5 mm thick.	10	5	K4	2 4	1 3

Note:

Total for 40 marks. (will be converted this for internal assessment)