DEPARTMENT OF CIVIL ENGINEERING

CE3502- STRUCTURAL ANALYSIS-1

2 MARKS QUESTIONS

UNIT-1-ANALYSIS OF TRUSSES

S.No	QUESTIONS	CO'S
1.	**Define static indeterminacy of structures.** If the conditions of statics i.e. $\sum H = 0$, $\sum V = 0$ and $\sum M = 0$ alone are not sufficient to find either external reactions or internal forces in a structure. The structure is called static indeterminacy of structures.	**CO1**
2.	**Define static determinate structures.** If the conditions of statics i.e. $\sum H = 0$, $\sum V = 0$ and $\sum M = 0$ alone are sufficient to find either external reactions or internal forces in a structure. The structure is called static determinacy of structures.	**CO1**
3.	**Differentiate perfect and imperfect frame.** A structural frame that is stable under loads imposed upon it from any direction is known as perfect frame. A structural frame is unstable if one of its members were removed or one of its fixed ends became hinged is known as imperfect frame.	**CO1**
4.	**Explain Mohr's correction.** The Williot diagram does not give the true deflection of the joints but the same can be modified and correlated to the true deflection by applying certain correction is known as Mohr's correction.	**CO1**
5.	**State the basic unit load formula.** i) Find the forces P1, P2, ……. in all the members due to external loads. ii) Remove the external loads and apply the unit vertical point load at the joint if the vertical deflection is required and find the stress. iii) Apply the equation for vertical and horizontal deflection.	**CO1**
6.	**What is the significance of unit load method?** The external load is removed and the unit load is applied at the point, where the deflection or rotation is to found.	**CO1**
7.	**Write down the Castigliano's first theorem.** The partial derivative of the total strain energy with respect to an applied force or moment gives the displacement or rotation at the point of application of the force and in the direction of application of the force.	**CO1**
8.	**State and explain the principle of virtual work.**	**CO1**

	The principle of virtual work is based on the conservation of energy for a structure which implies that work done on a structure by external loads is equal to workdone on a structure by internal loads.	
9.	**Define internally and externally indeterminate structures.** **Internally indeterminate structures**: In a pin jointed frames redundancy caused by too many members is called internally indeterminate structures or internal redundancy. Externally **indeterminate structures:** In a pin jointed frames redundancy caused by too many supports is called externally indeterminate structures or external redundancy.	**CO1**
10.	**Define degree of freedom.** In a structure the number of independent joint displacement that the structures can undergo are known as degree of freedom. It is also known as kinematic indeterminacy.	**CO1**