1.) Two cars collide head-on and come to a complete stop immediately after the collision. What happens to momentum and total energy?

2.) A body is in static equilibrium when the sum of the forces and the sum of the torques equal what?

3.) A uniform 0.122 kg rod of 0.90 m length is used to suspend two masses as shown. At what distance x should the 0.20 kg mass be placed to achieve static equilibrium?

4.) A force \( F \) is applied to a uniform horizontal beam as shown in the diagram. What is the correct expression for the torque on the beam about pivot point \( P \) due to this force?

5.) A 450 N chandelier is supported by three cables as shown in the diagram. What is the tension in the horizontal cable?

6.) A beam is to be kept horizontal by a cord. In which of the four situations shown below will the tension in the cord be least?

7.) The unit for torque is:

8.) A car travels at a uniform speed through a level circular curve in the road. How do the magnitude of the acceleration, velocity and force acting on the car change?

9.) A traffic sign hangs from two cables as shown. If the tension in each cable is 220 N, what is the weight of the sign?

10.) A 150 kg object is suspended from a ceiling and attached to a wall. What is the tension in the left-hand rope?
11.) A uniform 1.5 kg beam hinged at one end supports a 0.50 kg block. The beam is held level by a vertical 0.80 kg rod resting on a Newton scale at the other end. What is the reading on the scale?

12.) What is the magnitude of the sum of the two forces shown in the diagram shown?

13.) Which of the four problems shown requires the application of torque?

14.) A student stands on a uniform 25 kg beam. The scale on the right reads 350 N. What is the mass of the student?

15.) An 85 kg object is suspended from a ceiling and attached to a wall. What is the tension in the left-hand rope?

16.) A 4.2 m long uniform post is suspended by a cable having a tension of 1 700 N. What is the mass of this post?

17.) A metre stick, as seen from above, is sitting on a table and is then subjected to two forces of equal magnitude as shown. In which case would the metre stick be in rotational equilibrium?