

AS Level Physics A
H156/01 Breadth in Physics

Question Set 12

1 Fig. 22 shows two identical springs supporting an object.

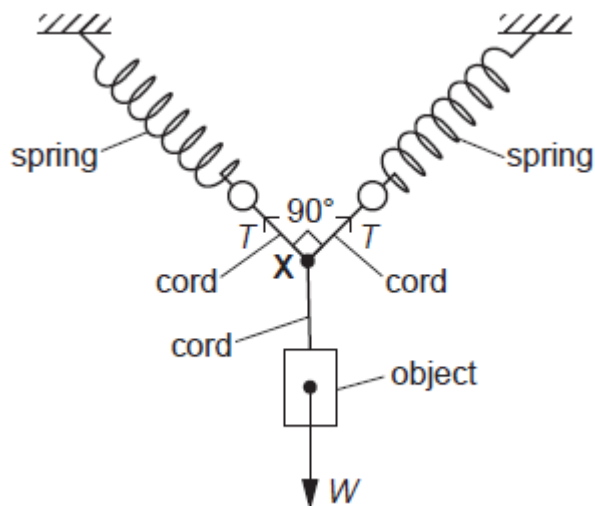


Fig. 22

Three short lengths of cord are tied together at point **X**. The other ends of the cords are attached to the ends of the springs and the object as shown in Fig. 22. The angle between the central axes of the springs is 90° . The tension in each spring is the same and equal to T . The weight W of the object is 4.8 N. The point **X** is in equilibrium.

(a) State and explain the magnitude and the direction of the resultant force at **X** due to the two forces exerted by the extended springs. [2]

(b) Sketch a **labelled** triangle of forces diagram for the three forces acting at point **X**. You do not need to draw this diagram to scale. [2]

(c) Show that the tension T in each extended spring is 3.4 N. [2]

(d) The force constant of each spring is 24 N m^{-1} . Calculate the energy stored in each spring. [2]

energy = J

Total Marks for Question Set 12: 8

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