

## SS 1 PHYSICS ASSIGNMENT FOR WEEK 3

**DEADLINE:**

**FRIDAY 01<sup>ST</sup> MAY, 2020**

**E MAIL:**

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- 1 (a) Explain coefficient of linear expansivity
- (b) The coefficient of linear expansivity of iron is 0.000012/K. Explain this statement.
- (c) Describe an experiment with full scientific procedure to determine the coefficient of linear expansivity of an iron rod. Diagrams, mathematical computations, precautions are very essential
  
- 2 A bimetallic strip consists of two metals with different linear expansivity. Using this knowledge, construct an appropriate design circuit DIAGRAM that you can use in your house for a fire alarm, INDICATING THE APPROPRIATE PLACE TO PUT THE ALARM.  
  
Your circuit DIAGRAM must be appropriate for an international exhibition
  
- 3 Steel bars each of length 3m at 28<sup>o</sup>C are to be used for constructing a rail line. If the linear expansivity of steel is  $1.0 \times 10^{-5}/K$ , what is the safety gap that must be left between successive bars, if the highest temperature expected is 40<sup>o</sup>C?
  
- 4 A solid material of volume 100cm<sup>3</sup> is heated through a temperature difference of 40<sup>o</sup>C. Calculate the increase in the volume of the material if its linear expansivity is  $2.0 \times 10^{-6}/K$ .
  
- 5 An iron rod is 600cm long at 0<sup>o</sup>C. It is mounted alongside a copper rod and both are always maintained at the same temperature. When they are heated to 100<sup>o</sup>C, it is found that the difference in their lengths is the same as it was at 0<sup>o</sup>C. Find the length of the copper rod at 0<sup>o</sup>C.  
  
(Linear expansivity of iron = 0.0000109/K. Linear expansivity of copper = 0.0000168/K)(C)